Strategic Plan:

Progress and Strategic Adjustments
March 2013

Achieving Recognition as a
National Research University
2010 - 2020

THE UNIVERSITY OF TEXAS AT ARLINGTON

INDEX

EXECUTIVE SUMMARY

The University of Texas at Arlington has never been more focused on its mission or more certain of its future. The vision for UT Arlington to become a major national research university has now crystallized, and the institution gains new momentum with each passing day. The creation of this strategic plan charts the course for UT Arlington to achieve its ambitious goals. This Executive Summary provides a cursory outline of the University's strategic priorities for the decade ahead.

Plan to Increase Research Funding and Productivity

UT Arlington intends to reach national prominence through its research endeavors and be recognized as a national research university in the next ten years. Identifying UT Arlington's research priorities is a critical step in the institution's plan to increase external research funding and enhance student participation in science, technology, engineering, math, and other fields. The targeted disciplines in which the institution places its efforts must generate breakthroughs in innovative technology and scientific progress. Likewise, consideration must be placed on how financial and other resources are allocated, how campus space is utilized, and how additional research space is obtained.

Plan to Improve Undergraduate Education

UT Arlington is a comprehensive university serving a diverse population of students. This diversity serves as a source of strength and contributes to a campus climate that fully embraces differences in thought and culture. The financial basis for the University's strategic plan is dependent upon continued growth in both the quality and size of the undergraduate population. A series of far-reaching initiatives have been developed to improve student success — especially first-year retention and six-year graduation rates. The University also plans to increase the number of baccalaureate degrees awarded, particularly in critical fields such as engineering, science, and nursing. Central to improving undergraduate education is an ongoing commitment to provide generous financial aid packages that recognize both need and academic merit.

Plan to Enhance Doctoral Programs

Thriving doctoral research programs help drive regional economies and keep the nation globally competitive and secure. They fuel economic growth and development through innovation and technology transfer. UT Arlington plans to enhance the quality of existing doctoral programs, adhere to strict guidelines for the creation of new doctoral programs, and improve overall doctoral education. New doctoral programs will be added in areas such as geoscience (joint with UT Dallas), kinesiology, and curriculum and instruction.

Plan to Improve Faculty Development

Recruiting and retaining outstanding faculty members and students is critical to the success of a major research institution. UT Arlington plans to offer more lucrative and competitive start-up packages to help attract outstanding faculty. New initiatives will be instituted to develop, support, recognize, and reward high-performing faculty members. And research productivity will be expanded and enhanced through the nurturing of faculty collaboration both within the University and with other institutions.

Plan to Improve Student Development

High-achieving students who show early promise for prestigious national awards will be mentored and coached in order to compete more favorably for those honors. The University also will increase the diversity of its doctoral student population.

Plan to Capitalize on Other Resources

The Engineering Research Complex, which opened in January 2011, is the University's crown jewel in terms of research space. With more than 230,000 square feet of state-of-the-art laboratory and administrative space, this massive complex will become a hub of collaboration and productivity for engineering and science faculty members. The newly created UT Arlington Research Institute expands the capabilities of the former Automation and Robotics Research Institute with a strategic mission of increasing research expenditures by $50 million in five years and $100 million in ten years. Other facilities that will play a major role in the University's success are the Special Events Center (opened in late 2011), and the College Park mixed-use development (opened in 2012).

Plan to Increase National and International Visibility

UT Arlington will enhance it national visibility in research, undergraduate education, and graduate education as it embraces the transformation into a national research university. Multifaceted interactions with alumni, industry, professional associations, and others in the community are of vital importance. The generosity of alumni, corporate partners, parents, and friends creates opportunities for the institution to enhance the academic experience of its students and to support faculty members who conduct research that will transform the institution, the community, and the nation.

UNIVERSITY PROFILE

The University of Texas at Arlington is a Carnegie Research Institution (High Research Activity) whose mission is the advancement of knowledge and the pursuit of excellence in research, teaching, and service to the community. The mission statement affirms UT Arlington's commitment to expanding academic research; to attracting and retaining high quality faculty scholars who actively engage students; to providing a well-rounded academic experience that promotes student involvement, service learning and free discourse; to employing alternative access venues to meet students' needs; and to developing public and private partnerships.

Founded in 1895 as a private liberal arts institution, UT Arlington has evolved through a succession of names and missions. The institution achieved senior college status in 1959 and became part of The University of Texas System in 1965. The institution is currently authorized by the Texas Higher Education Coordinating Board to offer 80 baccalaureate, 74 master's, and 31 doctoral degree programs.

The UT Arlington Fort Worth Center serves the Tarrant County region and is committed to meeting the life-long educational needs of working professionals. The center offers upper-division undergraduate and graduate programs and has the flexibility and vision to capitalize on global opportunities that address economic development.

The UT Arlington Research Institute (created in 2012) located in an industrial park just east of Fort Worth serves as the center of gravity for commercialization of research and university-industry consortia. The Institute promotes undergraduate and graduate education by providing opportunities for exciting and stimulating research and development.

The number of students attending UT Arlington has grown from about 28,000 students in 2009 to more than 33,000 in Fall 2012 with no change in proportional growth of undergraduate students to graduate students (76% of students are undergraduates while 24% are graduate students). Other characteristics of students have also remained relatively stable.

UT Arlington is categorized by U. S. News & World Report as "selective" based on the test scores of freshmen applicants (mean composite SAT in Fall 2009 = 1066; in Fall 2012 = 1085), percentage of first-time freshmen applicants accepted (from 75 percent in Fall 2009 to 64 percent in Fall 2012) and percentage of incoming freshmen who graduated in the top quarter of their high school classes (61 percent in Fall 2009 to 64 percent in Fall 2012).

The student population is non-traditional in many ways. Most students enter UT Arlington as transfers, many with 60 or more hours already completed. The average age of students in Fall 2009 and in Fall 2012 was 26 , and 38 percent and 42 percent

(Fall 2009 and Fall 2012) were enrolled on a part-time basis. According to the 2008 Student Survey, 69 percent of UT Arlington students hold jobs, with 32 percent working 21 or more hours per week. It should be noted, however, that the cohort of traditional first-time freshman is growing. The size of the incoming freshman class has almost doubled since 1999, reaching 2,629 in fall 2009 and is about the same in Fall 2012. These students have an average age of 18, almost all attend full-time, and about 40 percent live in campus residence halls or apartments.

UT Arlington is one of the most diverse institutions in the nation. In Fall 2009, the student population was 14.5 percent African American, 16.5 percent Hispanic, 10.2 percent Asian, 0.5 percent Native American and 10 percent International. In Fall 2012 the percent of students from Hispanic backgrounds grew to almost 21% with the percent of students from African American and Asian backgrounds remaining about the same as it was in 2009.

Change at The University of Texas at Arlington occurring between Fall 2009 and Fall 2012 lead directly to adjustments in the specific strategies for achieving recognition as a university of excellence and as a major national research university. These changes include

- Achieving in Fall 2012 the enrollment growth projected for Fall 2015;
- Holding tuition and fees (including parking, food service, housing) constant beginning in Fall 2011;
- Implementing affordable, low cost degree options for undergraduate students;
- Implementing innovative and flexible alternatives to traditional classroom instruction;
- Transforming the Automation and Robotics Research Institute into the University of Texas at Arlington Research Institute under the leadership of Lt. General (retired) Rick Lynch;
- Establishing the Shimadzu Institute for Research Technologies, a partnership between UT Arlington and Shimadzu Scientific Instruments, Inc. to create research centers in advanced analytical chemistry, imaging, and forensics and environmental analysis; and,
- Significant reduction in state funding (FY2011 decreased percent of total budget and implementation of unfunded mandates).

VISION STATEMENT

The University of Texas at Arlington will become a major national research university that fosters academic excellence and student success, conducts life-enhancing research that benefits society, produces graduates who are prepared to get the job done, fuels economic growth and development, establishes strategic partnerships in Texas and around the world, nurtures a rich and robust residential campus experience, and is the beating heart of a vibrant college town community.

PRORESS AND STRATEGIC ADJUSTMENTS

Achieving Recognition as a National Research University 2010-2020 is included in its entirety as Appendix A. The update on progress and strategic adjustments is organized using the outline provided in the base document.

PLAN TO INCREASE RESEARCH FUNDING AND PRODUCTIVITY

The desired institutional profile for UT Arlington by 2020 included as Appendix I in the starting document is shown in Table 1. The changes listed in the section labeled University Profile as well as the performance metrics from 2010, 2011, and 2012 presented in Table 2 prompted changes in the goals for total research expenditures and federal research expenditures. All other goals remain as proposed in 2009. The revised goals for total research expenditure and federal research expenditures are included in Table 2.

Table 1. Desired Institutional Profile as proposed in 2009

Metric	UT Arlington 2008	Target for 2020
Total research expenditures	$51 million	$210 million
Federal Research Expenditures	$21 million	$125 million
Number of PhD Graduates	153	200
Number of Post-doctoral associates employed	79	100
Number of National Merit Scholars on Student Body	0	10
Number of National Academy Members on Faculty	0	4
Number of Faculty Awards	2	5

Table 2. Progress and Adjusted Goals

Metric	2009-2010	2010-2011	2011-2012	Target 2015	Target 2020
Total research expenditures	$69.4m	$65.9m	$71.4m	$85m	*$150m*
Federal Research Expenditures	$31.6m	$30.7m	$33.2m	$50m	*$75m*
Number of PhD Graduates	127	127	164	153	200
Number of Post-doctoral associates employed				79	100
Number of National Merit Scholars on Student Body	0	0	4	0	10
Number of National Academy Members on Faculty	0	0	1	0	4
Number of Faculty Awards				2	5

As shown in Table 3, total research expenditures, federal research expenditures, restricted research expenditures and number of faculty with externally funded research have increased even though the total number of tenured/tenure track faculty has declined.

Table 3. Metrics for monitoring progress in moving towards the goal of improving research prominence and rankings.

Metric	FY2009-2010	FY2010-2011	FY 2011-2012	Target FY 2015	Target FY 2020
Total research expenditures	$69.4m	$65.9m	$71.4m	$85m	$150m
Federal research expenditures	$31.6m	$30.7m	$33.2m	$50m	$75m
Restricted research expenditures	$42m	$40.2m	$42.8m	$49m	$92m
Total number of T/TTfaculty	663	641	653	660	710
Faculty with externally funded research	214	243	248	275	300

UT Arlington academic units continue to attract and hire quality T/TT faculty to new and vacant positions. Those who can bring external funding to the institution are given preference in the hiring process.

To increase success in hiring national academy members and national academy-level researchers, UT Arlington has begun an initiative, led by a special assistant to the Provost, to identify and recruit individuals who are positioned to assist UT Arlington in hiring national academy-level researchers and/or who may be interested in joining UT Arlington.

UT Arlington will increase the number of research faculty and post-doctoral associates primarily through efforts occurring within and through the University of Texas at Arlington Research Institute (UTARI) and the Shimadzu Institute for Research Technologies. Significant growth will occur at UTARI.

Improving research productivity of existing faculty continues to be an important aim at UT Arlington to foster an environment in which research aspirations and productivity are encouraged and rewarded. UT Arlington has successfully leveraged externally funded collaborations to launch and sustain organized centers of research excellence including the

- Nanotechnology Research & Education Center, an interdisciplinary resource open to scientists within and outside the university, is used by more than 30 faculty members and 100 graduate students and has an annual research impact of $4million.
- Center for Renewal Energy Science and Technology (CREST) is a research and development collaboration to bring renewable and alternative energy solutions to the nation with ongoing work in low-cost biomass to liquid fuel processing, CO_2 to end-use fuels, and clean coal and natural gas liquefaction.
- Medical Imaging & Device Innovation Center creates new medical imaging and devices to advance diagnosis, treatment and prognosis of disease. The center

operates three labs: one in the newly constructed Engineering Research Building at UT Arlington; one in the renovated Engineering Lab Building at UT Arlington; and, one at the UT Arlington Optical Medical Imaging laboratories located at UT Southwestern Medical Center.

- Center for Excellence in High Energy Physics is part of a worldwide collaboration of scientists conducting research on the fundamental nature of matter at two locations – the European Center for Nuclear Research in Geneva, Switzerland and the Fermi National Accelerator Laboratory in Batavia, Illinois.
- TMAC, formerly Texas Manufacturing Assistance Center, an affiliate of the Manufacturing Extension Partnership program of the National Institute of Standards and Technology, delivers training and technical assistance to a wide range of businesses in manufacturing, government, and health care that improve efficiency, cut costs, and achieve profitable growth resulting in a 13 year cumulative impact of $1.8 billion in new or retained sales and $514million in cost savings and cost avoidance.

Recent additions to the roster of organized centers of research excellence created to support collaboration among faculty members and between faculty members and external entities include the

- Center for Excellence in Health and Chronic Illnesses, established to address the changing health care landscape in the United States, systematically studies aging and life style choices that contribute to illness risk, the personal, financial and medical toll of chronic illnesses and interventions that offer important new ways to reduce illness risk and the toll of chronic illnesses.
- UT Arlington Research Institute bridges the gap between academic research and product development in advanced manufacturing, applied robotics, medical technologies, and energy, water and the environment with the goal of bringing unique, affordable solutions to the complex problems of society.
- Security Advances via Applied Nano-Technology (SAVANT) brings together faculty from science and engineering, in partnership with prototyping and manufacturing expertise, to develop science-based breakthroughs in detection of hazardous materials (nuclear and biological) to increase US security on the border, at transportation hubs, at entertainment venues and to safeguard food and water supplies.
- Shimadzu Institute for Research Technologies, a partnership between UT Arlington and Shimadzu Scientific Instruments, Inc. brings a large inventory of scientific instruments to UT Arlington to support work in advanced analytical chemistry, imaging, forensics and environmental analysis. The Translational Genomics Laboratory has been enfolded into the genomics core facility which serves as the core of the imaging center. The partnership has already resulted in an endowed professorship and will yield many other activities to increase research expenditures at UT Arlington.

These centers will each bring significant funding to the work of faculty at UT Arlington. Major growth in funding will occur through the UT Arlington Research Institute and the Shimadzu Institute for Research Technologies; the former capitalizes on the technologies being developed by UT Arlington researchers while the later positions UT

Arlington to become a leader in basic science research.

TxMED, now TxMRC (Texas Medical Research Consortia) continues to play a significant role in supporting promising medical device development. Annually, the consortium provides funding to 6 new promising, collaborative projects.

One approach implemented by UT Arlington to reward faculty receiving external funding and to reward collaboration is returning a portion of the institutional facilities and administration fee charged to external research sponsors to the organized centers of research excellence. These funds, awarded annually, may be expended at the discretion of the Center directors. Other approaches are under review.

The number of non-tenure track researchers at UT Arlington has grown modestly; however, their numbers will grow significantly primarily through the auspices of the UT Arlington Research Institute and the Shimadzu Institute for Research Technologies.

The transformation of the Automation and Robotics Research Institute to the UT Arlington Research Institute (UTARI) broadens the scope of the work to be pursued and focuses it on research commercialization. Major growth in research science staff will support the expected rapid growth of externally funded activities.

The partnership with Shimadzu Scientific Instruments, Inc. to create the Shimadzu Institute for Research Technologies (SIRT) brings a vast array of instruments to support the work of researchers at UT Arlington in advanced analytical chemistry, imaging, and forensics, materials, and environmental analysis. SIRT means a major increase in research resources to support researchers throughout the university, its centers, and its industry partners.

Research Priorities

The strategies for targeting research growth so as to increase funding and improve research productivity continue to direct efforts at UT Arlington. New centers and institutes have been established to support areas of increasing strength. In general the faculty working within these centers and institutes are working within or developing interdisciplinary teams. New faculty hires are being planned around these growing areas of strength. Table 4 captures the metrics used to monitor progress.

Table 4. Metrics for assessing progress in expanding research programs and setting priorities

Metric	2009-10	2010-11	2011-12
New faculty hires (Fall)			
Engineering	6	10	9
Science	6	6	5
Number of new centers/institutes	0	0	2

Growth in new faculty hires has occurred at a slower pace than anticipated – mostly stemming from budgetary constraints associated with reductions in state funding and no increases in tuition and fees – a decision by UT Arlington to provide to students affordable college degree opportunities.

The strategic creation of the UT Arlington Research Institute (Spring 2012) and the Shimadzu Institute for Research Technologies (Fall 2012) will significantly increase funding, support strategic growth in faculty capacity, and support effective commercialization of UT Arlington technology.

Allocation of Resources

UT Arlington President James D. Spaniolo has since the inception of this strategic plan mandated that all financial decisions at UT Arlington be scrutinized through the lens of achieving recognition as a national research university. The highest priority remains attracting nationally competitive research faculty at all ranks in highly targeted areas and providing them with sufficient research space, support personnel, and equipment necessary for cutting-edge research.

The largest costs associated with growth in faculty are salaries for new faculty, graduate students, and technical and support staff, research start-up support including new instrumentation, and renovation/acquisition of space. To achieve the priority goal of attracting nationally competitive research faculty will require growth in the funding sources included in Table 5.

Table 5. Funding sources for growth of research capacity

Metric	2009-10	2010-11	2011-12
Income from increased enrollment (E&G)	$14,717,632	$31,495,717	$19,050,265
Indirect cost recovery	$8.9	$9.37	$10.4
Research development funds	$5,133,634	$3,452,814	$3,016,377
NRUF/RUDF funds	$0	$0	$0
STARS/ETF funds	$500,000	$0	$500,000
Philanthropy	$7.6m	$9.7m	$14.7

UT Arlington's new engineering and science research facility, the Engineering Research Building, completed in January 2011, adds more than 230,000 square feet of research

space to the University's inventory. TMAC's move from the east Fort Worth campus to the Arlington campus (Summer 2012) provided space for the anticipated growth of the University of Texas at Arlington Research Institute.

The partnership with Shimadzu significantly expanded and updated the research instrumentation on campus and will play an important role in attracting new faculty.

Student Participation

UT Arlington has a strong tradition of encouraging both graduate and undergraduate students to participate in research activities. The existing programs continue to serve as vehicles for expanding research opportunities for students in the coming years. Adding an organized center for undergraduate research will support and expand existing vehicles.

PLAN TO IMPROVE UNDERGRADUATE EDUCATION

In Fall 2012, UT Arlington recruitment, advising, enrollment and support strategies have achieved the targets set for Fall 2015. In Fall 2012, student enrollment at UT Arlington was slightly more than 33,000 students; a full three years ahead of targeted growth. Much of the growth stems from implementation of innovative, alternate delivery methods. Growth in the on-campus population has been tempered by rapid growth in the population taking advantage of on-line learning options. The average SAT score of first-time full-time Freshmen has also increased. In Fall 2012 the average SAT score for first-time full-time Freshmen was 1085, the target for Fall 2015.Since UT Arlington has already achieved the targets proposed for 2015, Table 6 includes new proposed targets.

Table 6. Summary of Actual and Targeted Enrollment at UT Arlington

	Fall 2008	Fall 2012	Fall 2015	Fall 2020
Overall	25,084	33,439	36,000	39,750
Undergraduate	18,985	25,419	27,150	30,450
Graduate	6,099	8,020	8,850	9,300
Gender				
Male	49%	43.7%	47%	47%
Female	51%	56.3%	53%	53%
Ethnicity				
African American	13.9%	14.3%	15%	16%
Hispanic	15.2%	20.9%	23%	25%
White	47%	41.9%	40%	37%
Other	23.9%	22.9%	22%	22%
Average SAT score for FTFT Freshmen	1065	1085	1085	1085

UT Arlington has seen significant growth in number of baccalaureate degrees awarded as shown in Table 7. Degrees awarded in engineering, science and nursing increased with the most dramatic growth in nursing.

Table 7. Number of Baccalaureate Degrees Awarded: Particularly in Critical Fields

	FY 2009-10	FY2011-12	FY2014-15	FY 2019-20
Degrees awarded Total Engineering Science Nursing	 4,178 245 485 5.5	 5,773 341 545 1,697	 5522	 5800
First Year retention rate	69.9	71.1	76	78
4-year graduation rate (same institution)		16.9	20	25
4-year graduation rate (transfer from community college)		49.3	49	53
6-year graduation rates (same institution)		41.6	45	52

To help students understand the link between the material in foundational courses and their intended field, UT Arlington implemented in Fall 2010 First Year Experience courses for engineering and nursing students and in Fall 2011 for students in the College of Science.

PLAN TO ENHANCE DOCTORAL PROGRAMS

UT Arlington is making progress on its plan to confer 200 PhD degrees annually by significantly improving its doctoral programs and doctoral student recruiting, persistence, funding, time to degree, completion, and placement.

Effective 2012, UT Arlington incorporated all elements of the Academic Program Review policies mandated by the Texas Higher Education Coordinating Board. Program APR self-studies make use of the board's 18 Characteristics of Doctoral Programs Report that provides key measures of program quality and allows comparisons to be made among similar programs at other UT System institutions. Additionally, data extracted from the NRC report, *A Data-Based Assessment of Research-Doctorate Programs in the United States* (2010), was used to benchmark all UT Arlington doctoral programs against national averages on basic quality and performance indicators. In 2011, programs that did not meet or exceed national averages on a significant number of these measures were required to develop two-year improvement plans.
In order to attract more minority students to the University's STEM graduate programs, UT Arlington actively partners with the McNair Scholars Program and UT System's Louis Stokes Alliance for Minority Participation and hosts a regional office of the Institute of Broadening Participation. To encourage students to commit to the goal

of earning the Ph.D. sooner, UT Arlington has implemented direct bachelors to Ph.D. tracks in all of its STEM doctoral programs. The Office of Graduate Studies has aggressively sought federal funding to support doctoral students, diversify its STEM doctoral enrollments, and implement innovative graduate education practices. Competitive financial support is critical to recruiting excellent doctoral students and retaining and graduating them in a timely fashion. Since 2009, UT Arlington has implemented graduate assistantships with competitive stipends and tuition fellowships for doctoral students that provide five years of support. A significant number of doctoral students now receive this funding. Over the next five years, the University plans to complete this program and create and fund at least 300 new doctoral student assistantships. Additionally, UT Arlington has increased need-based grant aid for graduate students from $1.1 million in academic year 2007-08 to $3 million in academic year 2010-11. The Office of Graduate Studies has also helped secure endowed scholarship programs that provide additional fellowships to new doctoral students. An additional nineteen newly admitted Ph.D. students were funded in the 2011-2012 academic year.

Since 2009, UT Arlington has increased academic and professional development activities to improve Ph.D. student retention and completion rates. These activities include EDGE, a comprehensive academic, professional, and social development curriculum of orientations, workshops, round-tables, and teaching and responsible conduct of research certifications. UT Arlington also has created an extensive dissertation fellowship program that includes a dissertation writing camp. To complement this effort, UT Arlington submitted a successful proposal to join the Center for Research, Teaching and Learning. This consortium of Research I universities is building a nationwide network to develop STEM educators by creating a unique professional development program emphasizing teaching-as-research, learning communities, and learning through-diversity. As a member of this consortium, UT Arlington will develop a systematic program to offer STEM doctoral students unique opportunities to develop the skills needed to become highly effective teachers for 21st Century STEM students. National Science Foundation support for this effort is pending.

Proposals for several new doctoral programs that meet national needs are being developed, including a joint Ph.D. program in Geosciences with UT Dallas. By combining resources and creating a joint degree, the two programs will create a nationally recognizable doctoral program that will provide outstanding scholars and researchers to governmental agencies, industry, and academia. UT Arlington is also developing Ph.D. program proposals in Kinesiology and Curriculum and Instruction. Both programs have significantly expanded their research faculty and developed their master's programs and can now readily support doctoral education that will be multidisciplinary in nature.

PLAN TO IMPROVE FACULTY DEVELOPMENT

The formal third-year review required of all un-tenured faculty members in tenure-earning lines has yielded positive results. Faculty members progressing according to

plan are provided with research time in their fourth year in recognition of their success and an incentive to continue to work diligently. Faculty members not progressing according to plan are helped by developing a remediation plan for implementation during their fourth and fifth years. They are supported with research time to correct deficiencies within the year. Post-tenure reviews have become more uniform as well as more meaningful.

A program planned for implementation for tenured Associate Professors is one which mentors them to become Professors. The program will include competitive internal funding opportunities to re-engage them in scholarship/research.

A new initiative implemented in 2012 has helped to increase recognition and awards for faculty including successful nomination of four faculty members for induction in the National Academy of Inventors. The initiative includes identifying faculty with promising portfolios and support in expanding the portfolios to increase probability of successful nominations.

Collaborations and Partnerships

TxMRC (previously TxMed) continues to be highly successful in supporting cross discipline and cross institution research. UT Arlington and its partners in the consortium plan to expand consortium membership so that funds for support of seed grants can be increased.

Research collaborations and partnerships will also increase as the organized centers of research excellence evolve. Each center currently supports collaboration among and across units at UT Arlington and will grow to include collaborations with other universities and with industry.

Academic programs are also becoming more international in scope and go beyond the model used to implement the China Executive MBA program. Implementation of innovative educational delivery systems are beginning to support collaborative international degree programs and student and faculty exchange programs.

PLAN TO IMPROVE STUDENT DEVELOPMENT

Student Awards

The competition for national student awards is incredibly intense, and all students need mentoring and extensive preparation in order to be successful in winning Truman, Goldwater, Rhodes or National Science Foundation pre-and post-doctoral fellowships. The provost's office will establish a strategic initiative for Student Awards and hire a director to oversee this unit's operations. This division will identify promising candidates for national awards early in their academic career. Mentoring will begin at that time and continue through to graduation. For some awards, like Truman Scholarships, mock interviews and other individual preparation may be

critical to success. For others, like NSF awards, invited speakers from NSF or previous awardees will be invited under the auspices of this unit in the provost's office to offer advice for UT Arlington students.

Student Diversity

UT Arlington is one of the most diverse institutions in the nation. In Fall 2009, the student population was 14.5 percent African American, 16.5 percent Hispanic, 10.2 percent Asian, 0.5 percent Native American and 10 percent International. In Fall 2012 the percent of students from Hispanic backgrounds grew to almost 21% with the percent of students from African American and Asian backgrounds remaining about the same as it was in 2009. Diversity among doctoral students has also increased as shown in Table 8.

Table 8. Diversity of doctoral students: Fall 2009 and Fall 2011

	Fall 2009		Fall 2011	
	Male	Female	Male	Female
Asian	3.2%	1.9%	3.4%	2%
African American	3.4%	3.4%	3.3%	3.4%
Hispanic	1.8%	2.6%	2.9%	2.8%
Internat'l	30%	13%	30%	13%
White	19.7%	18.8%	19.4%	17.4%
Other	0.7%	1.5%	1%	1%

Undergraduate students can broadened their educational experience through actively growing study abroad and internship programs. Study abroad helps students gain international perspective while internship opportunities connect students with business and community leaders and organizations.

PLAN TO CAPITALIZE ON OTHER RESOURCES

Research Facilities

Moving TMAC from East Fort Worth to the Arlington campus provided expansion space for the University of Texas at Arlington Research Institute. The Building which houses the Research Institute has been renovated permitting creation of additional labs and office space to support the anticipated growth in research personnel and activities.

PLAN TO INCREASE NATIONAL AND INTERNATIONAL VISIBILITY

The national and international visibility of UT Arlington is evidenced by the growing number of academic programs achieving national ranking.

The number of students and faculty who annually receive national or international awards also contributes to UT Arlington's increased national and international visibility. Student and faculty awards transcend the continuum including awards in fine arts, social science, engineering, healthcare, sustainability and design. The lists below highlight UT Arlington award winners over the last ten years.

National Academy of Inventors
N.Y. Chen
George Kondraske
Khosrow Behbehani
Robert Magnusson

Major Award Winners in Liberal Arts
Stanley Palmer (History), Woodrow Wilson Fellow
Patryk Babiracki (History), Woodrow Wilson Kennan Institute Fellow
Darryl Lauster (Art), Joan Mitchell Foundation Fellow
Ken Roemer (English), Pulitzer Prize nominee
Christopher Morris (History), Pulitzer Prize nominee

Fulbright Fellows
Alusine Jalloh (History)
Ritu Khanduri (Anthropology)
Wendy Faris (English)
Luanne Frank (English)

NSF Career Award Winners Since 2010
Haiying Huang (CoE)
Kevin Schug (CoS)
Samir Iqbal (CoE)
Matthew Wright (CoE)
Yue Deng (CoS)
Vassilis Athitos (CoE)
Fuqiang Liu (CoE)
Baohong Yuan (CoE)

Fellow of Learned Societies or Professional Organizations*
Bill D. Carroll (CSE), IEEE Fellow
Frank Lewis (EE), IEEE Fellow
Zeynap Celik-Butler (EE), IEEE Fellow
Wei-Jen Lee (EE), IEEE Fellow
George Kondraske (EE), IEEE Fellow
Robert Magnusson (EE), OSA Fellow

Robert Magnusson (EE), SPIE Fellow
Dereje Agnofer (MAE), ASME International Fellow
Abdolhossein Haji-Sheikh (MAE), ASME International Fellow
Erian Armanios (MAE), ASC Fellow
Khosrow Behebhani (Bioeng), AIMBE Fellow
Khosrow Behebhani (Bioeng), IEEE Fellow
Tom Strom (Chem & Biochem), ACS Fellow
Krishnan Rajeshwar (Chem & Biochem), ECS Fellow
Pat D. Taylor (Architecture), CELA Fellow
Barbara Becker (SUPA), AICP Fellow
Jianling Li (SUPA), AICP Fellow
Judy LeFlore (Nursing), AAN Fellow
Jeanette Crenshaw (Nursing), AAN Fellow
Maxine Adegbola (Nursing), NLN Fellow

As UT Arlington's stature has grown so too have the number of collaborative research and academic program engagements.

Appendix A: Strategic Plan: Achieving Recognition as a National Research University 2010-2020

Strategic Plan

Achieving Recognition as a
National Research University
2010 - 2020

THE UNIVERSITY OF TEXAS AT ARLINGTON

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UT Arlington is a comprehensive university serving a diverse population of students. This diversity serves as a source of strength and contributes to a campus climate that fully embraces differences in thought and culture. The financial basis for the University's strategic plan is dependent upon continued growth in both the quality and size of the undergraduate population. A series of far-reaching initiatives have been developed to improve student success — especially first-year retention and six-year graduation rates. The University also plans to increase the number of baccalaureate degrees awarded, particularly in critical fields such as engineering, science, and nursing. Central to improving undergraduate education is an ongoing commitment to provide generous financial aid packages that recognize both need and academic merit.

Plan to Enhance Doctoral Programs

Thriving doctoral research programs help drive regional economies and keep the nation globally competitive and secure. They fuel economic growth and development through innovation and technology transfer. UT Arlington plans to enhance the quality of existing doctoral programs, adhere to strict guidelines for the creation of new doctoral programs, and improve overall doctoral education. New doctoral programs will be added in areas such as sustainability, nano-science/engineering/technology, globalism and development economics, and mind-brain education.

Plan to Improve Faculty Development

Recruiting and retaining outstanding faculty members and students is critical to the success of a major research institution. UT Arlington plans to offer more lucrative and competitive start-up packages to help attract outstanding faculty. New initiatives will be instituted to develop, support, recognize, and reward high-performing faculty members. And research productivity will be expanded and enhanced through the nurturing of faculty collaboration both within the University and with other institutions.

Plan to Improve Student Development

High-achieving students who show early promise for prestigious national awards will be mentored and coached in order to compete more favorably for those honors. The University also will increase the diversity of its doctoral student population.

Plan to Capitalize on Other Resources

The Engineering Research Complex, which opens in January 2011, will be the University's crown jewel in terms of research space. With more than 230,000 square feet of state-of-the-art laboratory and administrative space, this massive complex will become a hub of collaboration and productivity for engineering and science faculty members. Other facilities that will play a major role in the University's success are the Special Events Center (opening in late 2011), and the planned College Park mixed-use development (opening in 2012)

Plan to Increase National and International Visibility

UT Arlington will enhance it national visibility in research, undergraduate education, and graduate education as it embraces the transformation into a national research university. Multifaceted interactions with alumni, industry, professional associations, and others in the community are of vital importance. The generosity of alumni, corporate partners, parents, and friends creates opportunities for the institution to enhance the academic experience of its students and to support faculty members who conduct research that will transform the institution, the community, and the nation.

UNIVERSITY PROFILE

The University of Texas at Arlington is a Carnegie Research Institution (High Research Activity) whose mission is the advancement of knowledge and the pursuit of excellence in research, teaching, and service to the community. The mission statement affirms UT Arlington's commitment to expanding academic research; to attracting and retaining high quality faculty scholars who actively engage students; to providing a well-rounded academic experience that promotes student involvement, service learning and free discourse; to employing alternative access venues to meet students' needs; and to developing public and private partnerships.

Founded in 1895 as a private liberal arts institution, UT Arlington has evolved through a succession of names and missions. The institution achieved senior college status in 1959 and became part of The University of Texas System in 1965. The institution is currently authorized by the Texas Higher Education Coordinating Board to offer 80 baccalaureate, 74 master's, and 31 doctoral degree programs.

UT Arlington currently serves more than 28,000 students, including more than 6,700 graduate students.

The UT Arlington Fort Worth Center serves the Tarrant County region and is committed to meeting the life-long educational needs of working professionals. The center offers upper-division undergraduate and graduate programs and has the flexibility and vision to capitalize on global opportunities that address economic development.

UT Arlington is categorized by *U. S. News & World Report* as "selective" based on the test scores of freshmen applicants (mean composite SAT = 1066), percentage of first-time freshmen applicants accepted (75 percent) and percentage of incoming freshmen who graduated in the top quarter of their high school classes (61 percent).

The student population is non-traditional in many ways. Most students enter UT Arlington as transfers, many with 60 or more hours already completed. The average age of students in fall 2009 was 26, and 38 percent were enrolled on a part-time basis. According to the 2008 Student Survey, 69 percent of UT Arlington students hold jobs, with 32 percent working 21 or more hours per week. It should be noted, however, that the cohort of traditional first-time freshman is growing. The size of the incoming freshman class has almost doubled since 1999, reaching 2,629 in fall 2009. These students have an average age of 18, almost all attend full-time, and about 41 percent live in campus residence halls or apartments.

UT Arlington is one of the most diverse institutions in the nation. In fall 2009, the student population was 14.5 percent African American, 16.5 percent Hispanic, 10.2 percent Asian, 0.5 percent Native American and 10 percent International. It is

estimated that the Hispanic student population will be UT Arlington's fastest growing student segment in the coming decades.

I. VISION STATEMENT

The University of Texas at Arlington will become a major national research university that fosters academic excellence and student success, conducts life-enhancing research that benefits society, produces graduates who are prepared to get the job done, fuels economic growth and development, establishes strategic partnerships in Texas and around the world, nurtures a rich and robust residential campus experience, and is the beating heart of a vibrant college town community.

II. PLAN TO INCREASE RESEARCH FUNDING AND PRODUCTIVITY

Over the next decade, UT Arlington aims to reach national prominence through its research endeavors and be recognized as a national research university. It is generally agreed that an academic institution that ranks among the top 125 research institutions in the United States is recognized as a nationally prominent research institution. The dominant metric used to rank and compare the performance of research institutions is the annual expenditures on research. Research expenditures are measured by a number of approaches that reveal how research is funded (sources of funds), how peer institutions scrutinize the research activity of the institution (peer reviewed versus non-peer reviewed activity), and the general productivity of the faculty (average external funding per faculty member).

However, research expenditures alone do not provide a comprehensive profile of a university's overall reputation as a national research institution. *The Center for Measuring University Performance* (http://mup.asu.edu/) is the one entity that captures a more complete profile of national prominence by ranking institutions in the United States by several metrics. The metrics include: annual total research expenditures, annual federal research expenditures, size of endowment, number of National Academy members, annual number of faculty awards, annual number of graduating doctoral students, number of post-doctoral fellows employed every year, and annual giving. Appendix I provides key metrics with their current and projected threshold targets for UT Arlington to strive for over the next decade.

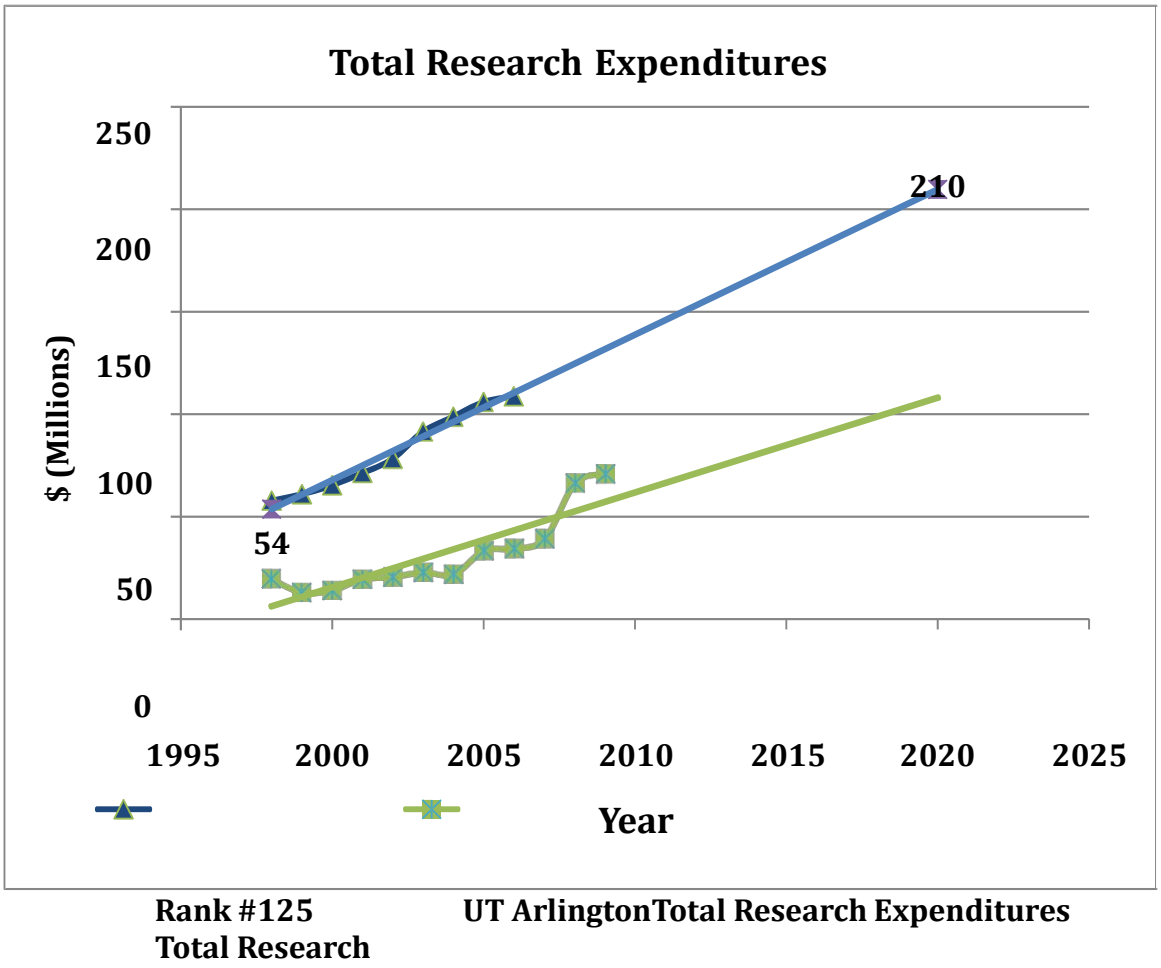
Identifying UT Arlington's research priorities is a key step toward the institution's plan to increase external research funding and enhancing student participation in science, technology, engineering, and math (STEM) and other research activity. The targeted disciplines in which the institution places its efforts have to generate breakthroughs in innovative technology and scientific progress. Likewise, consideration must be placed on how campus space is utilized, resources are allocated for greatest impact, and additional research space obtained.

A. ANNUAL RESEARCH EXPENDITURES: INCREASING EXTERNAL RESEARCH FUNDING AND MONITORING PROGRESS

Annual research expenditures are the most commonly used measure for recognizing the research prominence of an academic institution. For an institution to be considered a national research university, the often-stated rule is that its total research expenditures should exceed $100 million per year. However, analyses show that this amount is a moving target and will be higher through the years of 2010-2020. Most research-intensive institutions have steadily increased their annual research expenditures at rates much faster than the rate of inflation. Figure

1 shows how the threshold for annual research expenditures has changed from 1998 to 2006 for an institution to be ranked as the 125th research institution in the United States. It is clear that the threshold value of $100 million in annual research expenditures was relevant in 2001-2004, but in 2010 the value is probably too low by at least 25 percent for an institution to be ranked in the top 125, and will be by a much wider margin in the next ten years as shown, by the projected trend lines in Figure 1.

Figure 1. Annual Research Expenditures at UT Arlington and the 125th Ranked Research Institutions in the United States from 1998 to 2008, and projected values to 2020

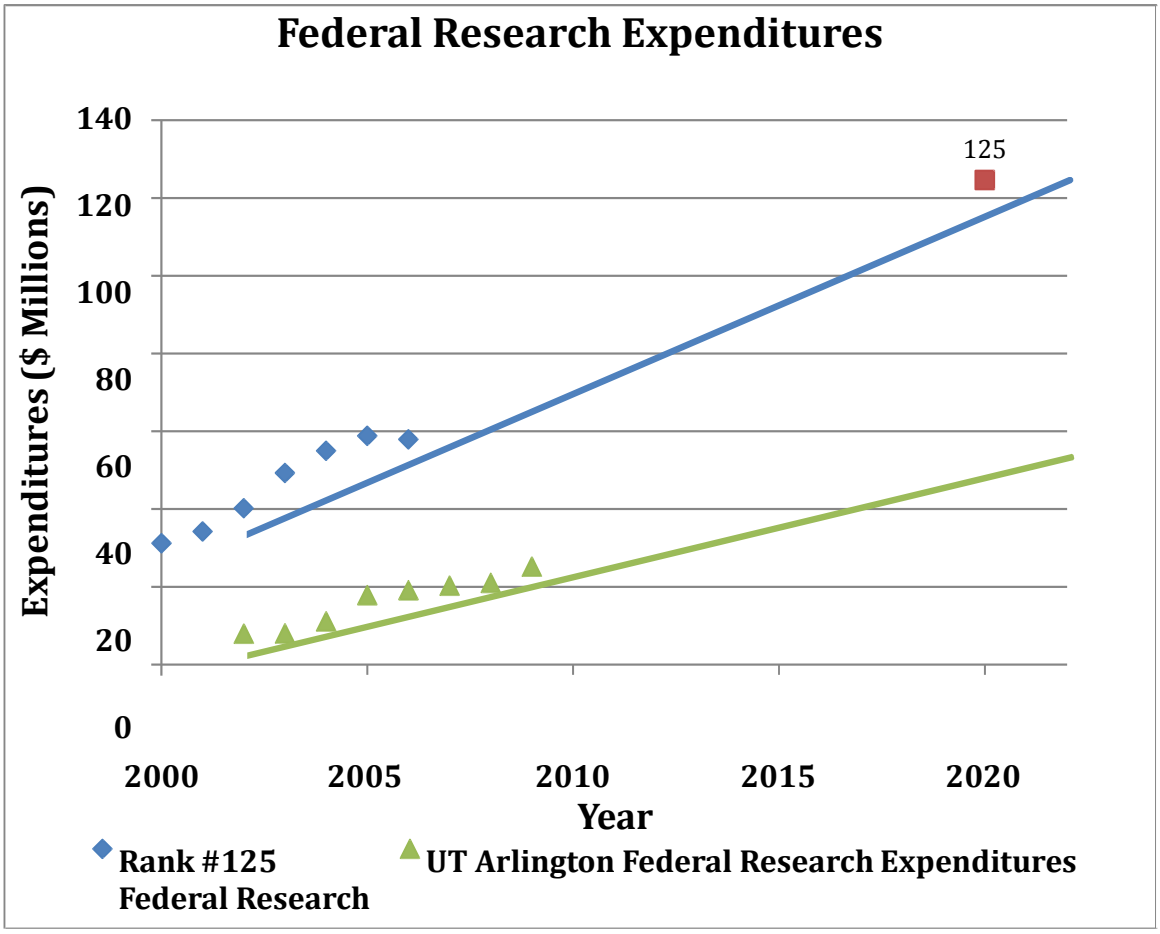


Priority 1. Enhance external research expenditures at UT Arlington to be competitive with at least the 125th ranked institution in the country

UT Arlington's goal for the next decade is to bolster its total research expenditures to be competitive with at least the top 125th ranked institution in the nation. For this reason, it is important to extrapolate the data in Figure 1 to at least the year 2020, and compare UT Arlington's progress against the extrapolated data points, both in terms of absolute value and slope of the curve. The primary focus of UT Arlington's strategy will be identifying key initiatives to significantly close the gap by the end of the decade between values projected between UT Arlington and the 125th ranked institution as shown in Figure 1.

While total research expenditures provide a measure of overall research activity, research expenditures from funds acquired from external sources (restricted research expenditures) measure the competitiveness of the institution for research funds. Indirectly, this metric recognizes the quality of the faculty at the institution because it measures success in securing competitively-awarded funds. Among these external sources, the federal government dominates through its federal funding agencies, including the National Institutes of Health (NIH), the National Science Foundation (NSF), Department of Defense (DoD), Department of Energy, Department of Education, National Institute of Standards and Technology (NIST), Health and Human Services, and Homeland Security. National research institutions in the United States obtain the majority of their research funding from these sources. For this reason, annual federal research expenditures are also an important metric for ranking the research prominence of institutions (see rankings of research institutions by the National Science Foundation; http://www.nsf.gov/statistics/rdexpenditures/). Figure 2 shows how federal research expenditures at the 125th ranked institutions have increased from 1998 to 2006, and what the projected thresholds will be in the year 2020. This same figure shows the growth in federal research expenditures at UT Arlington from 1998 to 2009.

Figure 2. Federal Research Expenditures for UT Arlington and the 125th Ranked Institutions Projected to 2020.

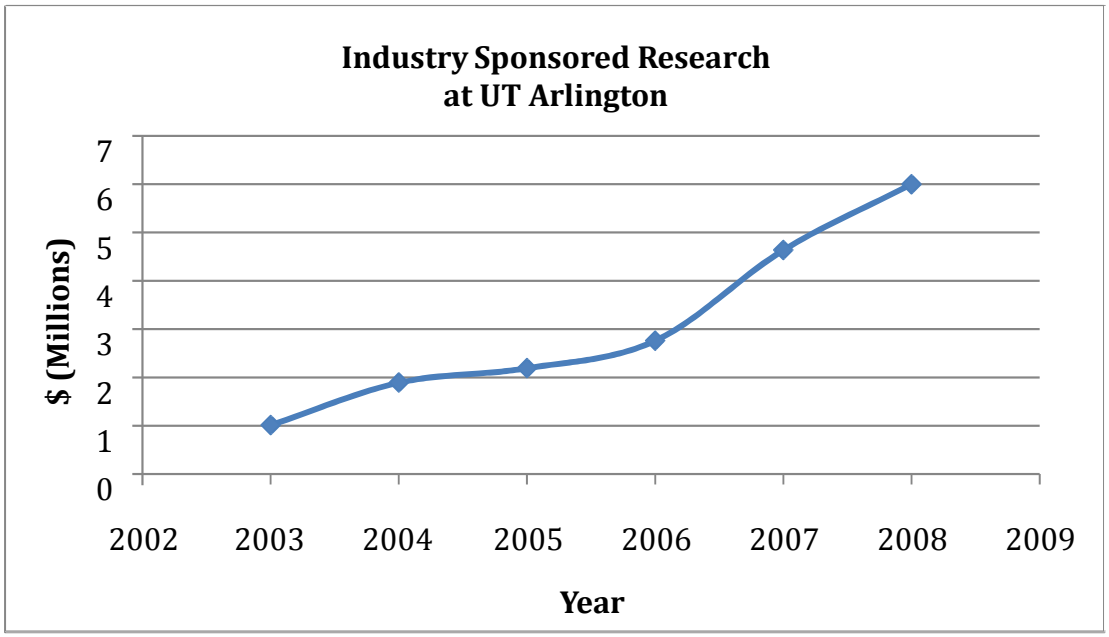


Private foundations and commercial sources are also important sources of external funding. For UT Arlington, located in the heart of the Dallas/Fort Worth region and the fourth-largest metropolitan statistical area in the United States[1], industrial support for research constitutes a major portion of its research funding. Figure 3

[1] "According to the estimate by the U.S. Census Bureau on July 1, 2008, the metropolitan area's population exceeded 6.3 million people — a larger population than 34 states in the U.S. The U.S. Census Bureau also said on April 5, 2007 that the Dallas-Fort Worth-Arlington metropolitan area was the second fastest growing area by population after Atlanta. The Dallas–Fort Worth–Arlington metropolitan statistical area is the largest metropolitan area in Texas and the fourth-largest in the United States. The Metroplex encompasses 9,286 square miles of total area of which 8,991 square miles is land and 295 square miles is water. The Metroplex is larger geographically than the combined areas of Rhode Island and Connecticut. It is also the fourth largest metropolitan area by population and sixth largest gross metropolitan product (GMP) in the United States, and approximately tenth largest by GMP in the world."
(http://en.wikipedia.org/wiki/Dallas%E2%80%93Fort_Worth_Metroplex)

shows the growth in industry-supported research at UT Arlington over the last ten years. Continued growth from this sector plays a prominent role in UT Arlington's overall strategic plan for enhancing research expenditures in the next decade. This will be further addressed in Section IV.2.C *Regional Impact.*

Figure 3. Industry-Sponsored Research at UT Arlington

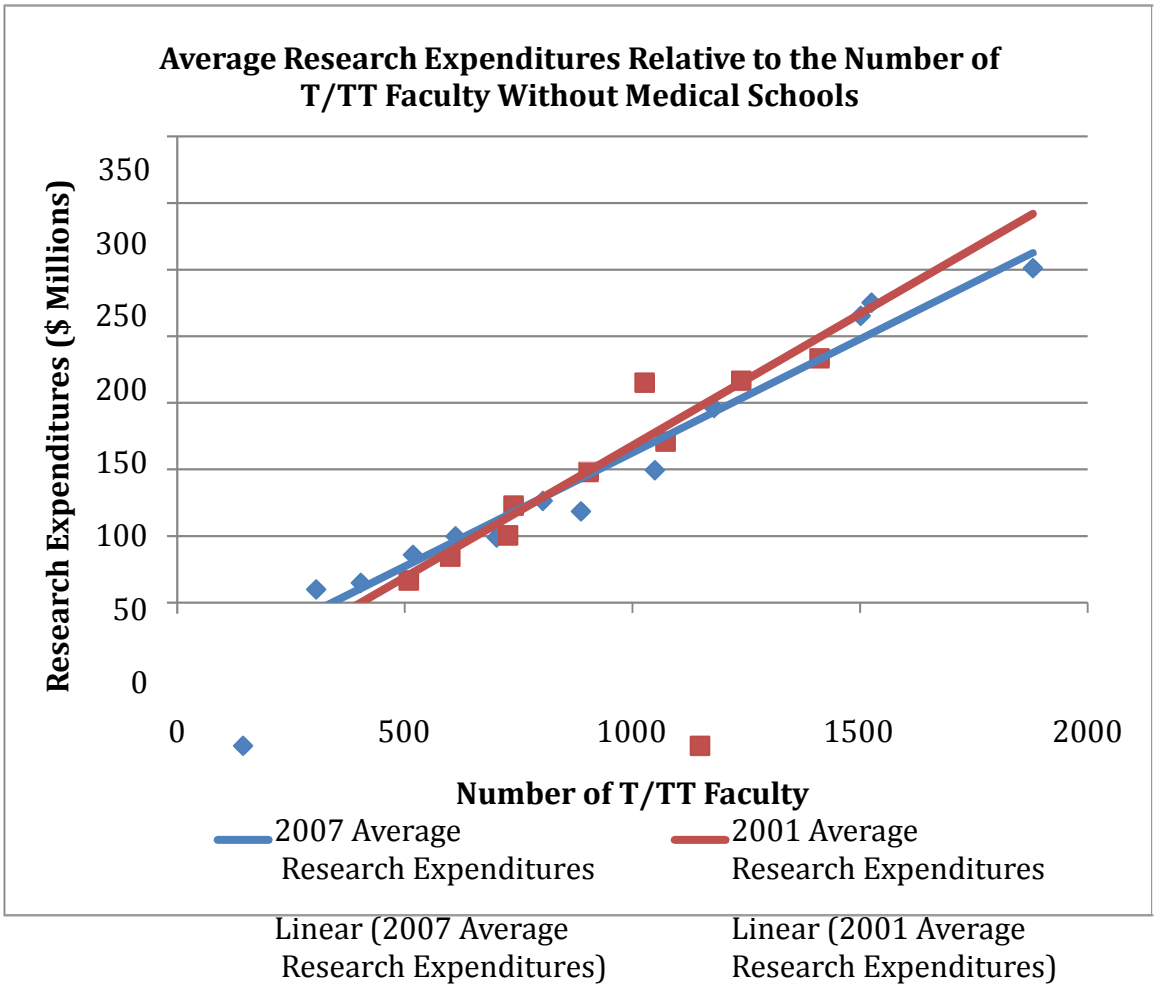


To summarize, the institution will have to focus its efforts on securing significantly more research funds from a variety of sources. Two key strategies to meet this goal are described below. They must include increasing the total number of faculty active in research and increasing the productivity of the existing faculty.

Strategy 1.1. Increase the Number of Research Faculty

National research institutions have an average of 1,000 tenure or tenure-track faculty members. Using 2007 data from The Integrated Postsecondary Education Data System from the National Center for Educational Statistics (http://nces.ed.gov/IPEDS/), a strong correlation can be seen between the number of tenure and tenure-track (T/TT) faculty members and total research expenditures at academic institutions without medical schools. Academic institutions without medical schools represent the most appropriate peer group for UT Arlington. Figure 4 shows that, on average, institutions with $100 million in research expenditures (which in 2001 represented the threshold for an academic institution ranked in the top 100) had about 900 T/TT faculty. Using the thresholds noted above for an institution to be ranked among the top 125 in total research expenditures in 2007 ($109 million), it is apparent that, on average, a comprehensive academic institution without a medical school would have more than 900 T/TT faculty.

Figure 4. Correlation Between Faculty Size (T/TT Faculty) and Total Research Expenditures Using 2001 and 2007 Expenditure Data at Academic Institutions Without Medical Schools.



From 2003 to 2009, UT Arlington added more than 100 T/TT faculty members to its ranks to reach a total of 635 T/TT faculty members in 2008. Over this same time period, total research expenditures increased 236 percent, from $23.3 million to $55 million. An important strategy for UT Arlington to increase its research expenditures over the next decade will be to continue to add new faculty but in specific and targeted ways.

For UT Arlington to reach a target of 900 T/TT faculty members in the next decade, approximately 25 T/TT faculty members per year, on average, would have to be hired.

Strategy 1.1.1 Preferentially hire T/TT faculty at all ranks who currently have grants they can bring to the institution.

Strategy 1.1.2 Hire National Academy members and National Academy-level researchers with significant research grants in targeted research disciplines who can establish or expand recognized centers of excellence on campus.

Strategy 1.1.3 Hire research faculty and post-doctoral associates[2] in limited, non-tenure track positions to act as industry liaisons.

These individuals will drive for-profit research and expand collaborative efforts with the regional business community, e.g. Texas Instruments, Alcon, Raytheon, Lockheed Martin, Bell Helicopter, Texas Health Resources, and others. The option is particularly attractive because salaries for the non-tenure track research faculty could be split with corporate partners, paid from corporate donations, or paid entirely from sponsored research grants and contracts.

Strategy 1.2. Improve Research Productivity of Existing Faculty

In addition to building research capacity by the addition of new research faculty, UT Arlington will foster an environment in which the research aspirations and productivity of current faculty are encouraged and rewarded. UT Arlington aims to improve the research grant productivity of faculty currently on campus by implementing the following strategies:

Strategy 1.2.1. Expand, encourage, and create collaborative research and instrumentation centers across campus by continuing to support existing research facilities and identifying new areas of research strength.

One of the most efficient ways to improve research productivity is to expand collaborative research both internally and externally. The immediate benefit is to move away from the predominant single-investigator grants of minimal size and short duration to more collaborative, consortia or center-type grants of significant size for longer periods of time. Recent examples of collaborations that have secured millions of dollars in research support at UT Arlington in the last five years:

[2] The number of post-doctoral associates employed annually is an important metric for measuring university performance (see Appendix I).

- The Strategic Partnership for Research in Nanotechnology (SPRING) that led to the development of the Nanofab facility and Center for Nanostructured Materials. The facility and center today house and benefit more than 25 faculty members, 100 graduate students, and numerous collaborators from the Colleges of Science and Engineering.
- The Optical Medical Imaging Center brings together collaborators from the Departments of Bioengineering and Electrical Engineering; researchers from UT Dallas; and clinicians from UT Southwestern Medical Center in Dallas.
- The Center for Renewable Energy Research and Technology (CREST) that has collaborators from the Departments of Engineering and Science working jointly on important energy solutions.

New industry-led consortia are beginning to emerge in North Texas where UT Arlington faculty members play a significant role. These include the Texas Advanced Medical Technologies (TxMED) research consortia (Texas Instruments, Texas Health Resources, UT Arlington and UT Dallas), The Texas Institute for Sustainable Energy (electric smart grid), and the Nanomaterials Design and Commercialization Center (NDCC) (Lockheed Martin, Bell Helicopter, UT Arlington and UT Dallas). In addition to attracting considerable research funds from industrial sources, these have the opportunity to secure significant federal funds as well. (Additional comments on this strategy will be provided in section II.B. on Research Priorities, and in section V.C. on Collaborations and Partnerships.)

Research facilities on campus that promote faculty collaborations generally house expensive instrumentation that is useful to several research faculty members. Within the next decade, the institution envisions creating more shared facilities for multidisciplinary and multi-faculty research programs in energy and carbon foot-print reduction (CREST), advanced intelligent manufacturing (the Texas Microfactory at ARRI), and a research facility for developing advanced technology to assist the disabled and aging population (SMART CARE).

In addition to creating shared research centers on campus, UT Arlington will upgrade and expand its currently successful research facilities to promote more research activity. This strategy includes upgrading and expanding the Nanofab facility, the robotics facilities at Automation and Robotics Research Institute (ARRI), the SMART Hospital, and the Translational Genomics Laboratory.

Strategy 1.2.2. Reward faculty who secure significant external funding or succeed in licensing intellectual property.

A useful strategy for increasing external funding is to reward principal investigators who secure more research grants. One aspect of the plan is to explore opportunities to reward research faculty whose salaries during the academic year are funded by grants and contracts or obtain income from licensing intellectual property. Such

rewards can come in the form of research stipends for faculty and additional stipends for recruiting high-quality graduate students.

Strategy 1.2.3. Increase the number of non-tenure track researchers, e.g., postdocs, research associates, and industry-supported faculty liaisons, and Ph.D.-level students to work with tenure-earning faculty to enhance research productivity.

Many universities have multiple ways to expand their research footprint through non-tenure-earning researchers that are paid by grants or other means where researchers work with tenure-earning faculty. In a limited number of cases, the non- tenure track researchers may even work independently if they are successful in being awarded their own research grants. In most cases, their laboratory space is housed within departmental or research center spaces.

Key Metrics for Monitoring Progress

UT Arlington will monitor several important metrics to assess progress in moving towards the goal of improving research prominence and rankings. These include:

Metric 1.1. Tracking total research expenditures, federal research expenditures, and research expenditures from industry (for-profit) sources,
Metric 1.2. Tracking the total number of new faculty added annually (T/TT, research faculty, and industry-faculty liaisons), and
Metric 1.3. Monitoring the percentage of faculty with sponsored programs.

These parameters will help to assess progress toward UT Arlington's overall goals in research productivity. They will also identify the most effective strategies in achieving those goals so that appropriate adjustments can be made to ensure the institution continues to make meaningful progress each year.

B. RESEARCH PRIORITIES

Priority 2. Identify areas for targeted research growth at UT Arlington

UT Arlington has identified three important strategies for targeting research growth so as to increase its research funding and improve research productivity.

Strategy 2.1. Expand basic and applied research in targeted disciplines.

UT Arlington's primary strategy is to continue to grow its basic and applied research activities in engineering, science, and related disciplines. These are undoubtedly the areas that dominate UT Arlington's current research expenditures, as well as the institution's opportunities for external funding. These disciplines will be targeted for substantial numbers of new faculty hires. UT Arlington also is planning for significant growth in the humanities and other areas of scholarship.

Strategy 2.2 Enhance and create new interdisciplinary institutes and research centers in disciplines that are strong at the institution and address technology needs of the region.

The expansion and development of interdisciplinary research institutes and centers will be created to focus on areas of existing research strengths at UT Arlington and/or areas of critical technology needs for the Dallas-Fort Worth region. Specific target areas that relate to UT Arlington research strengths include:

- Advanced Medical Technologies – integrating medical devices and imaging with sensors, wireless technologies, nanoelectronics, nanophotonics, and micromanufacturing;
- Health and Health Informatics – integrating strengths in nursing, biomechanics, genomics, proteomics, pain management, as well as computer science, applied mathematics and quantitative biology;
- Sustainability and the Environment – bringing in civil engineering with landscape architecture and environmental science and engineering,
- Energy - combining coal and natural gas liquefaction with mechanical engineering, chemistry and materials science;
- Transportation – bringing together civil engineering, systems engineering and computer science and engineering with urban and public affairs;
- Homeland Security – collaborating among the College of Science, College of Engineering, and the Departments of Sociology and Criminology and Criminal within the College of Liberal Arts;
- Gerontology: Aging in Place – collaborating among science, nursing, social work, and engineering; and
- Forensics – bringing together science, social work, sociology, and criminal justice in the state's Innocence Project.

Strategy 2.3. Promote innovation and commercialization of university-developed technology.

The third strategy for targeted research growth is to promote innovation and commercialization of university-developed technologies through collaborations. UT Arlington has developed strong partnerships with the Arlington Chamber of Commerce and more recently, with the Center for Innovation in Arlington. Together with the Office of Technology Management at UT Arlington, these agencies facilitate the creation of new companies, assist in finding venture capital, and provide additional support for the commercialization of new products and services in the region.

Just recently, the Center for Innovation in Arlington has become the latest Department of Defense Partnership Intermediary where the institution will assist with the translation of DoD technology into commercial products. The main advantage of this relationship is that commercialization of new technologies almost always requires further research and development for them to be ready for the market. Thus, the potential exists for considerably more sponsored research projects to be awarded to UT Arlington to assist with this process.

Key Metrics for Monitoring Progress

UT Arlington has to monitor several important metrics over time to assess progress toward its goal of expanding research programs and setting priorities. These metrics include:

- Metric 2.1. Annual number of new faculty hires in engineering, science, and related disciplines,
- Metric 2.2. Total number of new research centers and institutes created,
- Metric 2.3. Amount of sponsored research funds awarded to these new institutes and centers, and
- Metric 2.4. Amount of sponsored research funds from UT Arlington-licensed technologies and the DoD Partnership Intermediary to assist with commercialization of these technologies.

Monitoring this group of parameters helps to assess progress toward UT Arlington's overall goals in research productivity (total research expenditures as well as federal funding sources). It also identifies which of the strategies outlined above are having the most impact on achieving the goals. Appropriate adjustments of these strategies can be made to ensure the institution continues to make meaningful progress each year.

C. ALLOCATION OF RESOURCES

Priority 3. Provide the budget necessary to sustain staff resources, facilities and other assets needed to achieve targeted research goals.

UT Arlington President James D. Spaniolo recently stated that all future financial decisions at the institution will be scrutinized through the lens of the strategic plan to become a national research university. The highest priority of the plan is to attract nationally competitive research faculty at all ranks in highly targeted areas and provide them with sufficient research space, support personnel, and equipment necessary for cutting-edge research. Significant investments will be made in recruiting new faculty with national prominence (such as National Academy members and aspiring members), top-quality graduate students, and skilled staff to support these new hires. New research instrumentation will be purchased and research facilities to house these new hires will be expanded.

Financing this major increase in people, space, and equipment will require a significant boost in the operating budget of the institution over the next decade.

Strategy 3.1. Estimated budget for salary and fringe benefit expenses needed to support the planned expansion in personnel, and identify potential external sources of funds.

By far, the largest projected expense over the next decade is associated with salaries and fringe benefits for new faculty, graduate students, technical, and support staff. The next major expense is associated with start-up costs and new research instrumentation, followed by costs for renovation and acquisition of new research buildings.

With projected annual hiring of an average of 20 new faculty members, 60 new graduate students, and support staff, estimates are that an annual budget increase of about $4 million per year will be necessary over the next decade. This includes budgeting for a few distinguished faculty hires, including at least two National Academy members within five years, and at least one to two more by the end of the decade to put UT Arlington on par with the top 125th ranked research institutions (see Appendix I). Establishing endowed chairs in the $2 million to $2.5 million range through philanthropic gifts will be essential to achieving this goal. The UT Arlington Maverick Match program (http://www.uta.edu/giving/maverick- match.pdf) will provide donors with a 1:1 match of their gifts for endowments over $25,000. This significant incentive should help in establishing the endowments necessary to attract suitable faculty candidates.

Strategy 3.2. Estimated costs for new faculty set-up and purchase of new

instrumentation

Laboratory set-up and new instrumentation costs for new faculty are estimated to be about $6 million/year. Set-up and instrumentation costs are budgeted and allocated over at least a two-year period. These are one-time costs, and a significant portion of this budget already exists from indirect costs (IDC) recovered from external grants and contracts. With an expected increase in external funding, there will be a proportional increase in IDC, and much of this expense will, in effect, be self-funded. Significant sources of funds will also be provided to UT Arlington and the other "emerging research institutions in Texas" through HB 51, including the Research University Development Fund and the National Research University Fund to help offset these costs. There are also other sources of substantial funds available to assist with hiring prominent research faculty. One source is the STARS (Science and Technology Acquisition and Retention) program administered by UT System, and the other is the Acquisition of Superior Talent pool in the State's Emerging Technology Fund. It is anticipated that the very high set-up costs associated with prominent faculty hires will be substantially covered by these sources.

Strategy 3.3. Identify and estimate costs for adding new research space.

The third essential resource to accommodate the additional faculty, student and staff hires is more research space. For the projected number of new hires, it is estimated that an additional 400,000-600,000 square feet of research space will be needed. UT Arlington will implement three strategies to provide the additional research space.

Strategy 3.3.1. Build new research facilities

UT Arlington's new engineering and science research facility, the Engineering Research Building will be complete in January 2011 and will add more than 230,000 square feet of research space to the University's inventory. In the near term, this facility will provide some of the space needed for new faculty hires in engineering and science.

However, given the current economic situation in Texas, it is uncertain whether there will be any Tuition Revenue Bonds (TRBs) issued to academic institutions in the next four to six years to fund the construction of additional research buildings. Assuming that TRBs will again become available for new research buildings in the second half of this decade, an overview of what additional research buildings are planned and how they relate to the campus master plan will be provided in section VI. A. Major Research Facilities.

Strategy 3.3.2. Conduct a campus-wide space survey to evaluate current space usage (both research and teaching space) to specifically identify:

a. Existing space that may be renovated for research use.

b. Existing research laboratories that can be reassigned to more productive faculty members.

UT Arlington must assess the current utilization of all space both on and off campus. It is anticipated that a significant amount of space can be reassigned.

Strategy 3.3.3. Explore possibility of off-campus expansion of research activity. Another alternative in the near term for providing more research space is leasing space off campus. Again, given the current economic environment, several vacant commercial sites relatively close to campus are now available that are quite suitable for research laboratories.

Whether space is reassigned on campus, or leased off campus, there will be renovation and/or lease costs to consider. It is estimated that approximately 100,000 square feet of space will have to be leased or renovated in the next four to six years, at an annual cost of approximately $1-2 million. One-time renovation expenses can be off-set by Library, Equipment, Repair and Renovation (LERR)[3] funds provided each year to UT Arlington by UT System (typical awards have been $1 million to $2.3 million per year). Estimated annual costs of $1 million are projected to provide additional research space on or off campus in the near term.

Key Metrics for Monitoring Progress

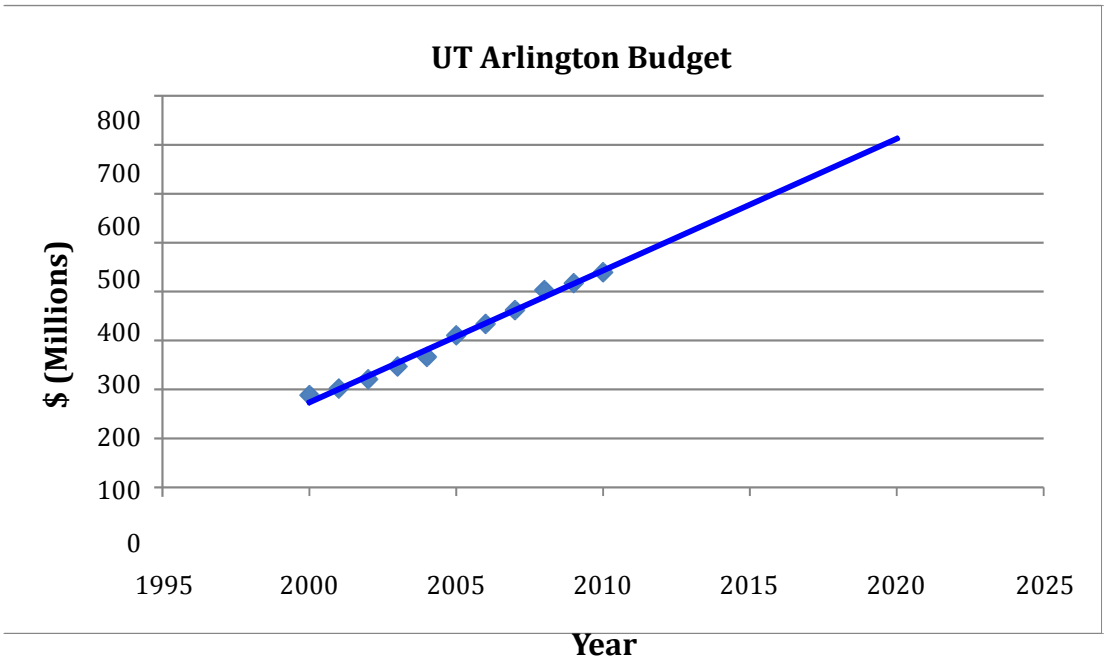
Assessment of progress and degree to which the institution remains on track with its expansion of research activity will largely be determined each year through the budgeting process. Specifically, the allocations for new faculty hires, start-up costs, graduate student support, new support staff allocation, facilities renovation, and maintenance costs are the key items to consider. Likewise, in order for the institution to gauge its rate of growth, it will be important to monitor the magnitude of these costs and the extent to which these costs are offset by external sources of funds.

Over the last ten years, UT Arlington has experienced a sustained and significant increase in its overall operating budget (Figure 5). This substantial increase in budget has helped the institution implement many of the initiatives in its strategic plan for achieving the status of a national research university. For example, in the last five years, UT Arlington added more than 100 T/TT faculty and graduate students to its ranks. Nearly 250,000 square feet of research space has been added to the campus. If the budget continues to grow as projected, most costs, if not all,

[3] *Library, Equipment, Repair and Rehabilitation (LERR)*: Generally refers to library and equipment materials, Faculty STARS, or small Repair & Rehabilitation Projects that are approved annually through the UT System LERR Budget or Annual Operating Budget, and funded with PUF Debt proceeds.

associated with the proposed additions in personnel, equipment, and research space outlined above could be met.

Figure 5. Growth in UT Arlington's Budget for the Last Ten Years and Projected Budget to 2020



Key Metrics for Monitoring Progress

Metric 3.1. Income from increased enrollment (Educational and General funds)
Metric 3.2. Annual amount of indirect cost (IDC) recovery returned to the institution
Metric 3.3. Annual amount of research development funds (RDF) provided to the institution
Metric 3.4. Annual allocations made from the National Research University Fund and/or the Research University Development Fund
Metric 3.6. Funds received from the STARS and Emerging Technology Fund (ETF) funds
Metric 3.7. Annual funds received from philanthropic gifts and donations

D. STUDENT PARTICIPATION

UT Arlington has a strong tradition of encouraging both graduate and undergraduate students to participate in research activities. The following programs provide examples of the institution's commitment to involving students in research. These programs will be important vehicles for expanding research opportunities for students in the coming years.

The Annual Celebration of Excellence by Students (ACES) program is a university-wide program designed to encourage and reward student research. Undergraduate and graduate students work with faculty mentors in their disciplines to write and submit abstracts for the ACES competition. The approved abstracts are then turned into oral presentations or posters to be presented at the annual symposium. Faculty judges evaluate the research presentations and select the best for awards. Past winners have presented research on gene therapy, business relations, pain control, biochemistry, and engineering. Student participation in ACES has increased significantly since the first program in 2003, and UT Arlington plans to continue to support and expand this program.

The Ronald E. McNair Achievement Program is a federally funded initiative designed to help promising undergraduates from low-income, first-generation college, or under-represented backgrounds pursue higher education careers in research and teaching. At UT Arlington, McNair scholars are given support to conduct original research under the supervision of a faculty member. Past participants in the program have gone on to develop technology that could revolutionize the pharmaceutical industry, analyze brain tissue for clues to what causes Lou Gehrig's disease, and assist the U.S. government detect paramilitary groups hidden in wooded areas. Over the years many students have built their research careers on the strong foundation provided by the McNair program.

The UT Arlington "Active Learning: Pathways to Higher Order Thinking" Quality Enhancement Plan (QEP) was developed as part of the Southern Association of Colleges and Schools (SACS) requirement for reaffirmation. Approved by SACS in 2007, the plan involves modifying teaching practices to increase student engagement and thereby improve critical thinking skills. Extensive programming including faculty workshops, invited speakers, and teaching circles is devoted to techniques by which faculty can more effectively engage students in the learning process to achieve this important learning outcome. Involving students in research activities is one highly effective means of enhancing student engagement in the learning process and improving the higher order thinking skills of application, analysis, synthesis and evaluation. SACS requires institutions to devote substantial resources to the fulfillment of their QEPs; thus, UT Arlington will use this initiative as a key means of enhancing student research opportunities on campus over the next decade.

III. PLAN TO IMPROVE UNDERGRADUATE EDUCATION

A. STRENGTHEN AND IMPROVE THE QUALITY OF UNDERGRADUATE EDUCATION, INCLUDING THE STUDENT PROFILE

UT Arlington is a comprehensive university serving a diverse population of students in the Dallas-Fort Worth Metroplex, the larger seven-county region, the state of Texas, and the nation. This diversity serves as one of the institution's strengths and it contributes to a campus climate that fully embraces differences in thought and culture. *U.S. News & World Report* recently counted UT Arlington as one of the 15 most diverse institutions in the U.S. The undergraduate student population comes predominantly from the middle to the lower economic classes as over 50 percent of the student body receives some type of need-based financial aid. UT Arlington must build upon this diversity. As President James D. Spaniolo has stated, "Although we will strive to be among the elite universities in the world, we will never be elitist." It is thus critical that the plan for UT Arlington embrace this diversity and its mission to the state.

The financial basis for UT Arlington's strategic plan is dependent upon continued growth in both the quality and size of the undergraduate student population. The institution's goal is to increase headcount from its current 28,000 students to 35,000 students by 2020. The additional revenue associated with enrollment growth and formula funding over the next decade will total approximately $110 million annually. It will be used to hire about 200 to 250 additional tenured and tenure track faculty, hire proportional support staff, provide for campus facilities upgrades including the library, and enhance the student experience at UT Arlington.

A summary of UT Arlington's enrollment goals, based upon the 'Closing the Gaps' initiative, is provided below. In order to meet these ambitious goals, the institution will have to increase its recruitment efforts modestly, but improve its first year persistence and 6-year graduation rates significantly.

Table 1. Summary of Actual and Targeted Enrollment at UT Arlington

	Fall 2008 Actual	Fall 2009 Actual	Fall 2015 Target	Fall 2020 Target
Overall	25,084	28,085	33,500	35,000
Classification				
	18,985	21,370	25,500	27,400
Undergraduate				
Graduate	6,099	6,715	8,000	8,600
Gender				
Male	49%	47%	47%	47%
Female	51%	53%	53%	53%
Ethnicity				
African	3,491	4,084	4,760	5,220
American				
Hispanic	3,824	4,623	5,700	6,500
White	11,820	13,069	15,400	16,200
Other	5,949	6,309	7,640	8,080
Avg. SAT Score of FTFT Freshmen	1065	1071	1085	1100

These are aggressive but attainable goals for the institution based on the plan outlined below, which will be implemented beginning in fall 2010.

A University-wide task force spent the past year developing a series of initiatives to improve first-year retention and the institution's six-year graduation rate. As a result of this effort, a comprehensive plan is in place to meet the needs of entering freshman and transfer students. This plan includes a $2 million renovation of Ransom Hall, a historically significant building located in the very center of the campus, to repurpose it to serve as the physical home for University College. This new administrative unit will bring together an expanded freshman advising center (one advisor per approximately 200 students), confidential counseling services, and tutoring and supplemental instruction in one vertically oriented unit designed to enhance student success. Advisors will be up to date on core course requirements, financial aid opportunities, a wide array of available support services, co-curricular opportunities, and career counseling. Advisors also will specialize in the requirements of the majors in a particular college or school (e.g. engineering or nursing). At the conclusion of approximately 30 hours of completed coursework, each student will be transitioned seamlessly to an advisor in the department of the student's major. The goal of this effort is to aggressively advise and support students with the goal to move them to sophomore status in good academic standing. University College will be open and operational by fall 2010.

The task force also recommended expansion of campus co-curricular activities and the creation of a First Year Experience course. These recommendations will be phased in over the next few academic years. Overall student academic success is correlated with success in a limited number of gateway courses, including Introduction to Biology, University Chemistry, English Composition and both College Algebra and Calculus I. An academy of Freshman Scholars will be created comprising faculty who agree to teach a gateway course each semester. Faculty so honored for membership will receive additional resources in terms of salary and instructional support. In return, they will agree to utilize the full array of support services for their students, take attendance, share student progress information with his or her advisor, and offer early-semester exams to allow students to assess their progress in time to address deficiencies.

By advising all freshmen and students with undeclared majors in the University College Advising Center, significant college and school advising resources will be made available to support upper class and transfer students.

Simultaneous with UT Arlington's plan to increase the size of the undergraduate student population is the goal to increase the quality of the freshman class. For the fall 2009 cohort, the mean SAT score for entering FTFT freshman was 1071, an increase of six points over the fall 2008 cohort. Further, 25 percent of the fall 2009 cohort graduated in the top 10 percent of their high school class, while 65 percent graduated in the top quarter of their class. UT Arlington's goal is to enroll a FTFT freshman cohort by 2020 that graduates in the top 25 percent (i.e. 100 percent) of their high school class with 50 percent graduating in the top 10 percent. To accomplish these goals, the institution has expanded its recruiting base to include most of the state of Texas, and has greatly expanded merit-based scholarships to attract the best and the brightest students in the region and state. For example, the Honors College Distinction Scholarship provides more than $20,000 per student each academic year for exceptional students. Recipients may accumulate funds and use them to cover the costs of an academic semester or a year abroad. Other merit-based scholarships provide resources at similar levels. The object of these opportunities is to provide the resources to allow creative and motivated students to fully explore the educational opportunities available at UT Arlington, both on campus and through the institution's international partners.

UT Arlington has a unique role to play in the area of higher education in the state of Texas. Although the institution's academic standards for unconditional admission will gradually increase over the next ten years to require top 25 percent status, there still must be the opportunity for all motivated students to be admitted and given the chance to succeed. Students not meeting standards in place at the time they apply can request admission through a more nuanced mechanism in which they will be asked to provide additional supporting materials including a detailed

personal statement explaining their circumstances and a face-to-face interview. Those who are properly motivated will be given the chance. Others will be encouraged to spend a year or two at a community college to complete their preparation prior to beginning studies for their baccalaureate. UT Arlington has developed articulation agreements with more than 20 community college districts in the state and plans to include additional institutions. In these detailed agreements, exact course equivalencies are established and, on some campuses, dual transcripts are created so that students can assess their progress toward their baccalaureate degree at any point in their program.

The campus also has expanded the number of courses available through a distance education (DE) format including a hybrid arrangement in which a combination of DE delivery and personal coaches is used to assure success. The crux of these initiatives is to ensure that UT Arlington has a comprehensive plan in place to provide the opportunity for all students who desire a baccalaureate degree to successfully complete one. Finally, as part of the institution's recruitment strategy, advisors will be placed on all Tarrant County Community College campuses. A preliminary effort involving a few campuses has been highly successful and will be expanded.

B. INCREASE THE NUMBER OF BACCALAUREATE DEGREES AWARDED, PARTICULARLY IN CRITICAL FIELDS

The previous section described UT Arlington's ambitious goals to increase the size and quality of the undergraduate student body and the number of degrees awarded annually. The emphasis on retention and graduation rates is designed to apply broadly across the institution and will enhance the opportunity for success for students in all colleges and schools. However, the Student Success Task Force has indentified additional obstacles facing students majoring in the Colleges of Engineering, Science and Nursing. Students majoring in these colleges must take technically challenging courses as part of the core requirements for the majors in these colleges. Several of these courses, including chemistry and calculus have been identified for inclusion in the Freshman Scholars initiative and this will ensure that the top faculty teach these key courses. However, it is important that students understand the foundational basis of the material in these courses so that their knowledge base will support their continuing studies in their major. Specifically, a grade of less than B in any of these courses suggests that the student does not possess the requisite base to be successful in a technically challenging STEM major. The task force has suggested that the best way to help students understand the link between the material in these courses and their intended field is to orient the First Year Experience course specifically toward their college major. In that light, FYE courses for engineering and nursing students will be fully implemented by fall 2010 and a course for students majoring in the College of Science will be implemented by fall 2011.

The number of scholarship opportunities available for undergraduates majoring in STEM fields will be enhanced by the Maverick Match Program. Through this innovative program, royalties received from the on-campus natural gas program will be used to match philanthropic gifts for undergraduate scholarships in STEM areas. Further, plans are in progress to expand opportunities for undergraduates to participate in faculty research and scholarship. This opportunity will prove particularly important in STEM areas as it will help students better understand the relationship between the material covered in their classes and in their disciplines, thereby solidifying their career choices.

Progress in meeting the goals outlined in sections A and B will be assessed annually. Each dean now receives a report card at the beginning of each academic year that evaluates the college or school in terms of the key metrics driving the move toward becoming a national research university. Student success is a critical piece of this assessment exercise.

IV. PLAN TO ENHANCE DOCTORAL PROGRAMS

A. SUMMARY OF EXISTING PROGRAMS

UT Arlington is a comprehensive research university with 31 doctoral programs across a range of fields, with special emphasis on science and engineering. (Appendix A contains a table that lists the institution's doctoral programs.). From fall 1999 to fall 2009, the institution increased overall graduate student enrollment by 72.9 percent and new graduate student enrollment by 50.9 percent. The diversity of the graduate student population also has increased during this time, including a 153 percent increase in African-American graduate students, a 207 percent increase in Hispanic graduate students, and a 191 percent increase in Asian-American graduate students. Moreover, from 2001 to 2009, doctoral enrollment grew from 589 students to 969 students.

Doctoral degree conferrals increased significantly as well. The following table shows doctoral and doctoral-bound student enrollment for fall 2009 broken out by gender and ethnicity.

TABLE 2. DOCTORAL STUDENT ENROLLMENT BY GENDER AND ETHNICITY, FALL 2009

Gender	Ethnicity							
	Asian	African-American	Hispanic	Inter-national	Native American	Unknown	White	Total
Male	35	38	20	336	2	6	214	651
Female	21	38	29	148	1	7	207	451
Total	56	76	49	484	3	13	421	1,102

Reflecting national trends, the percentages of women and minorities with U.S. citizenship enrolled in science, technology, engineering, and math (STEM) graduate programs are lower than those for the institution as a whole. As of fall 2008, 66.9 percent of STEM students were male and 33.1 percent were female. African-Americans, Hispanics, Asians and Native Americans comprise only 6.5 percent, 10.8 percent, 13.2 percent, and 0.6 percent, respectively, of the institution's U.S. graduate student STEM population.

The quality of the institution's doctoral programs is assessed through a periodic academic program review that requires the participation of external reviewers. Overall, these program reviews have indicated that the institution's doctoral programs are strong; however, the review process has revealed some recurrent

issues, prompting aggressive action (detailed in Section C) to strengthen these programs.

1) Program reviews have indicated that institutional financial support for some of the doctoral students is too low. As a result, some doctoral programs have had difficulty attracting top students, especially U.S. citizens in some technical fields, and creating cohorts of full-time students. While it is appropriate to have some working professionals enrolled part-time in a doctoral program, a full-time cohort of doctoral students is important for increasing retention and accelerating completion rates.

2) Program reviews have indicated that the curricula for some doctoral programs needs to be reviewed with an eye toward reducing the hours required to complete a program of work, especially when a student's prior preparation justifies the reduction. Some courses and tracks need to be consolidated, and some highly specialized courses relating to faculty research need to be trimmed.

3) Program reviews have indicated that some doctoral programs need to increase academic quality by attracting better-qualified students.

4) Finally, program reviews have indicated a need to increase the number of U.S. citizens, especially from under-represented groups, in some of the STEM doctoral programs.

B. QUALITY CONTROL

UT Arlington has developed a more comprehensive doctoral program reporting methodology that is modeled after the reporting in the Council of Graduate Schools' Ph.D. Completion Project, which involves 46 Research-Very High Activity and Research-High Activity universities. This reporting has been integrated into the academic program review process. Doctoral programs and their external reviewers analyze attrition, retention, and completion rates in relation to national norms for their field or disciplinary cluster. UT Arlington's Office of Graduate Studies works with those programs that fall below their peers to improve their performance by attending to a range of issues that include but are not limited to admissions criteria and financial support.

When the THECB implements the new higher thresholds in its Low Producing Program reporting—ten Ph.D.s conferred over five years—UT Arlington will assess doctoral programs at the institution to ensure that they meet these new minimums. The doctoral program improvement initiatives described in Section C will help the institution in this regard. In addition, THECB's new "18 Characteristics of Doctoral Programs" will also be used to help doctoral programs improve their performance.

C. QUALITY ENHANCEMENT

UT Arlington has begun an aggressive initiative to strengthen its current doctoral programs. A detailed study of doctoral student stipends has been completed, and significant increases are being provided in financial support for Doctoral and Doctoral-Bound Graduate Teaching Assistants that include competitive stipends and full tuition fellowships. Within three years, all doctoral stipend levels will be at nationally competitive levels. After completing this initiative, the size of this cohort will be expanded. Additionally, the institution has also significantly increased need- based grant aid to doctoral students.

In addition to making doctoral student support more competitive, numerous other aspects of doctoral education are also being enhanced. To support this effort, UT Arlington has invested considerable resources in staff and in retention and completion activities such as academic and professional development workshops. All doctoral programs are developing recruiting plans to attract a stronger pool of applicants, and some are increasing their admissions standards. The institution is also implementing a University-wide annual visitation program for top doctoral program prospects.

To improve doctoral retention, attrition, time-to-degree, and degree conferral rates, UT Arlington is ensuring that a five-year program of work is available in each Ph.D. program so that competitively funded full-time doctoral and doctoral-bound

students can complete their degrees in a timely fashion. Additionally, all funded doctoral students and their mentors are required to participate in annual degree progress reporting that sets milestones and provides written feedback to students. In addition, doctoral program retention and completion reporting has been integrated into the academic program review process. On a case-by-case basis, the University is assessing doctoral programs to review and revise curricula, as necessary. THECB's recent collection of program length for all Texas doctoral programs will be useful in this review. Finally, the University is aggressively seeking to secure significant federal, private and corporate foundation funds for graduate student support; innovative graduate education practices; and recruiting, retaining, and graduating U.S. doctoral students from under-represented populations. The funding that has been acquired and will continue to be acquired helps drive these reforms in the institution's doctoral programs.

D. COMPARISONS WITH NATIONAL PEERS

To better align with UT Arlington's doctoral program quality enhancements, the institution will revise its inventory of aspirational peer doctoral programs. Accordingly, in 2010, the provost, deans, and department chairs will identify several nationally ranked aspirational peer doctoral programs for each of the 34 doctoral programs. The following metrics are being considered for comparison: research expenditures, faculty publications, full-time enrollment, student financial support, doctoral degree conferrals, and time-to-degree rates.

2. NEW DOCTORAL PROGRAMS

A. AREAS OF INTEREST

UT Arlington confers doctoral degrees in 31 disciplines. New Ph.D. programs proposed for UT Arlington must meet the following guidelines:

1. The degree program must be truly multidisciplinary and involve two or more colleges or schools.
2. A core of faculty expertise must already exist in the area with complementary skills and common interests involving a functioning research center.
3. The program must be in an area considered a critical need of the region, the state of Texas, and/or the nation.
4. Federal and/or industrial/private resources must be available to support research in the area, and economic opportunities must exist for graduates.

Ph.D. in the Area of Sustainability. This will be a collaborative effort involving the Schools of Architecture and Urban and Public Affairs, and the Colleges of Engineering, Liberal Arts, and Science. It is proposed that students engaged in this degree program will conduct research involving everything from policy issues to basic research in sustainable engineering. The Center for Renewable Energy Science and Technology (CREST) is an existing center of excellence in energy utilization and efficiency. Additionally, the institution has several centers that investigate policy issues related to sustainability issues. There is presently no Ph.D. program specifically oriented toward sustainability in the north Texas area or the state of Texas.

Ph.D. in Nano-Science, Nano-Engineering and Nano-Technology. Materials science at the nano-regime is now understood to be a distinct area of research in that nanomaterials exhibit novel and useful properties not observed in the bulk. Research in this area is extremely broad and can include everything from the development of catalysts to enhance energy extraction and efficiency to the development of nanostructured surfaces for medical implants. This effort is anticipated to involve faculty in the Colleges of Engineering, Science, and Nursing. There are several materials science Ph.D. programs in the state but only three that specifically target the nano-regime (UT Austin, Texas A&M, and Rice).

Ph.D. in Globalism and Development. Thomas Friedman's "Flat Earth" analogy clearly explained the interdependence of the world's economies, and economic opportunity in those countries. This program will be a collaborative effort involving the Department of Sociology and Anthropology in the College of Liberal Arts, the College of Business, and the Schools of Social Work and Urban and Public Affairs.

Ph.D. in Mind-Brain Education. Research into the relationship between neurodevelopment and the process of learning is now an area of intense national interest. Research in this area involves a diverse group of disciplines including researchers in the College of Education and Health Professions, and the Departments of Philosophy (College of Liberal Arts, cognitive science) and Psychology (College of Science). Currently there are several masters' level programs on mind-brain education in the U.S. (e.g. Harvard University, the University of Southern California) but no Ph.D. programs exist. The Southwest Center for Mind, Brain and Education is currently under development at UT Arlington.

B. ASSESSMENT

All doctoral programs are rigorously reviewed on a schedule established by the UT System. Institutional policy requires that all reviews include a thorough self-assessment to identify strengths and weaknesses, followed by an on-site review by a team of external experts in the field.

C. REGIONAL IMPACT: MEETING THE NEEDS OF THE REGION BY ENHANCING DOCTORAL RESEARCH PROGRAMS

National research universities, with their diverse graduate programs, help drive regional economies and keep the nation globally competitive and secure. Doctoral programs, particularly in STEM areas, promote the knowledge-based economy of a rapidly changing world and attract major financial investments from federal and private sources. They enhance the quality of life for everyone in the immediate region and state, producing citizens who are highly educated, creative, and more inclined to build their lives and careers near these institutions.

Doctoral programs at UT Arlington have regional influence in several ways, including:

a. Direct economic impact
b. Workforce development
c. Future growth of technology-based economic development.

UT Arlington is estimated to have a direct economic impact in the North Texas region equal to about $1 billion per year, more than twice the institution's annual budget. A significant portion of this impact derives from the doctoral programs at the institution, in particular programs in STEM fields that are driven primarily by external funding.

Expand doctoral programs that address critical technology needs of the region by increasing the number of Ph.D.s and the number of post-doctoral associates employed annually

Graduating highly trained students with advanced degrees constitutes perhaps the most valuable technology transfer activity at the institution. Doctoral programs in science, engineering, nursing, and education, along with training in health-industry professions, directly prepare a highly skilled workforce to sustain the aerospace, electronics, communications, and healthcare industries in North Texas. Expanding doctoral programs offered by the institution, especially in interdisciplinary areas in response to industry needs, and increasing the number of doctoral students graduated, will help sustain the economic viability of the region for decades to come.

Improve Opportunities for Technology Transfer

Doctoral programs also help to fuel the economic growth in the region. They support innovation and technology-based economic development through new discoveries, start-up company formation, and commercialization of developed intellectual property. Supporting these activities through continued interaction with UT Arlington's Office of Technology Management in partnership with the Center for Innovation in Arlington and the Texas Manufacturing Assistance Center (TMAC) remains an important strategy for the institution to enhance its regional impact.

Key Metrics to Monitor Progress

Several important metrics to monitor over time to assess the impact doctoral programs have on the region include annually tracking numbers of doctoral students graduated, doctoral graduates employed locally, doctoral students enrolled in new doctoral programs, and number of graduate students working with new start-up companies in the Arlington Center for Innovation and other regional technology incubators.

V. PLAN TO IMPROVE FACULTY DEVELOPMENT

A. FACULTY RESEARCH

UT Arlington provides competitive start-up packages for all new faculty hires. Packages in STEM fields range from $350,000 to $2 million for experienced investigators. In non-STEM fields, start-up packages also are offered, although at a lower level. Start-up funds can be used for summer salary, graduate student and post-doctoral fellow support, purchase or rental of equipment and instrumentation, travel, supplies, and lab renovation.

New faculty members who are hired at the rank of Assistant Professor are offered an extensive array of mentoring opportunities to support their teaching and scholarship. A well-established support base is in place to help faculty quickly become productive in both the classroom and the laboratory.

To support a nationally recognized faculty, campus policies to evaluate annual performance will be enhanced including:

1. A formal third-year review will be required for all untenured faculty members in tenure-track lines. Non-successful performance will require a remediation plan, and faculty members will be given one year to correct deficiencies.
2. Annual evaluations will be standardized across the institution and will be made more rigorous. All raises will be based entirely on merit.
3. The post-tenure review policy for the institution will be revisited with the goal to make it more uniform and meaningful.

The goal of these policy initiatives is to develop, support and reward faculty who are clearly contributing to the institution's goals toward becoming a national research university.

B. FACULTY RECOGNITION

The Office of the Provost serves as the central source for all nominations for prestigious faculty awards. The associate provost for faculty development serves as the resource for such nominations. Through the academic deans, nominations are solicited and/or supported for institutional as well as state and national awards. UT Arlington's recent success in securing University of Texas System Regents' Outstanding Teaching Awards is recognition of the success of this approach.

C. COLLABORATIONS AND PARTNERSHIPS

Nurturing research collaborations is an effective way to rapidly expand research productivity, both in terms of securing more and larger research grants as well as providing better training to more graduate students. The scope of a collaborative project and the financial support needed for it usually exceed that provided by single investigators. Expanded project scope and involvement of interdisciplinary activities usually provide broader exposure and better training to the graduate students (and faculty). This is perhaps why funding agencies generally prefer to support collaborative projects.

By far, the most fruitful collaborations are those established at the investigator-to-investigator level. Institutions are generally not effective at mandating collaborations between faculty, either within or between institutions, but they can be successful in promoting them. Two key elements seem to be necessary for meaningful collaborations: motivation for the faculty and a means to easily identify and cultivate potential collaborators.

Provide motivation for faculty to collaborate

Motivation for faculty to engage in collaborations has been successfully employed in several cases. For example, UT Arlington engaged in a pilot project five years ago with the University of North Texas Health Science Center in Fort Worth. Each institution provided funds to create a collaborative research program. Each research proposal had to have at least one principal investigator from each institution. Five proposals were funded (determined by a joint institutional peer review panel) from the 14 submitted proposals. This seed program was successful enough to be repeated two years later. As a result of this program, joint institutional proposals were submitted to NIH, and a new start-up company was formed from one of the funded proposals, which is still in operation today.

This model was replicated by establishing several joint seed collaborative programs between UT Arlington and UT Dallas; UT Arlington's College of Science and College of Engineering; and UT Arlington, UT Dallas, and UT Southwestern Medical Center.

Expanding this model to include industry also has succeeded. In a recent example, the presidents of UT Arlington and UT Dallas provided funds to foster collaborations. These funds were matched by Texas Instruments and Texas Health Resources to launch a research consortium directed at establishing research collaborations between UT Arlington, UT Dallas, and Texas Health Resources that were focused on developing new electronic/diagnostic health care technologies in areas of critical need. In December 2009, seven proposals (from 18 submitted) were selected for funding, averaging $100,000 each.

As a direct result of these seed programs, significant numbers of faculty members at each institution began a dialogue and eventually started writing joint proposals. The value of the new interactions and discussions between these faculty members far outweighs the small costs associated with funding these seed projects. Establishing these types of programs—especially those joined by our regional corporate and industrial partners who are focused on meeting their critical needs—is now an important strategy for UT Arlington to expand its research capacity and value in the community.

Provide expedient ways for faculty to find potential collaborators

Besides motivating faculty with financial incentives, another essential element in establishing collaborations is to provide a way for investigators to find others with complementary skills so they can effectively compete for specific grant funding opportunities. UT Arlington's Office of Research developed the *Faculty Profile System* and the *Collaborative Partnership*, both of which are user-friendly, web-based tools for finding faculty expertise either at UT Arlington or at several member institutions (noted above in the *Collaborative Partnership*). UT Arlington believes universities must become proactive partners for economic development by identifying and associating their resources with industrial clusters and then actively marketing these resources to industry in generating innovation. To date, there are ten academic and health institutions in Texas that have licensed UT Arlington's technology and have implemented or will be implementing it soon. For more information, please see: http://www.uta.edu/ra/real/aboutrsp .

Key Metrics for Monitoring Progress

Metrics to assess and monitor success at establishing new collaborations include annually tracking the number of funded collaborative projects involving UT Arlington faculty members, the number of institutions that join the Collaborative Partnership, and the number of new faculty members.

D. NEW FACULTY

All new faculty members hired into tenure-track lines at UT Arlington must be able to meet the institution's standards, which are aligned with its goal toward becoming a national research university. At the rank of assistant professor, national searches are required and employment offers extended only when the candidate clearly meets the high standards set for the institution. Faculty hires at advanced rank follow from a coherent plan designed to identify and recruit talented, nationally recognized researchers to UT Arlington who can immediately contribute to the institution's goals.

VI. PLAN TO IMPROVE STUDENT DEVELOPMENT

A. STUDENT AWARDS

The competition for national student awards is incredibly intense, and all students need mentoring and extensive preparation in order to be successful in winning Truman, Goldwater, Rhodes or National Science Foundation pre-and post-doctoral fellowships. UT Arlington will establish the Office of Student Awards and hire a director to oversee this unit's operations. This office will identify promising candidates for national awards early in their academic career. Mentoring will begin at that time and continue through to graduation. For some awards, for example, Truman Scholarships, mock interviews and other individual preparation may be critical to success. For others, for example, NSF awards, invited speakers from NSF or successful candidates will be invited under the auspices of this office to offer advice for UT Arlington students.

B. STUDENT DIVERSITY

UT Arlington is undertaking a range of activities to recruit and retain a more diverse doctoral student body. Recruiting activities include *GradFest*, a program that exposes UT Arlington undergraduate students to graduate and professional school opportunities and showcases the institution's own graduate programs. The Office of Graduate Studies continues to support and contribute to college/school level recruiting activities such as the *MavGrad* program in the College of Engineering. UT Arlington staff members also actively recruit at a number of local universities; participate in the Texas Swing, a series of graduate and professional day programs held at Texas colleges and universities, and the annual Lone Star Graduate Diversity Colloquium that was established in 2006 as a way to encourage underrepresented minorities, women, and first generation college students currently enrolled at Texas colleges and universities to stay in Texas to complete their graduate education. UT Arlington will host the Lone Star Graduate Diversity Colloquium in 2011.

In partnership with UT Brownsville, UT Pan-American, UT Permian Basin, and UT Tyler, UT Arlington is creating a Maverick Bridge program to increase the number of master's students receiving doctorates in STEM disciplines. The University will collaborate with on-campus departments and seek external funding to support this bridge program that will provide undergraduates with opportunities for hands-on research with guidance from and interaction with faculty, staff, and graduate students who are experienced researchers.

UT Arlington aggressively seeks external funding from federal agencies for doctoral students. For example, the Department of Education Graduate Assistance in Areas of National Need (GAANN) provides fellowships to assist graduate students pursuing

research in areas of national need. UT Arlington currently has GAANN programs in math, physics, computer science and engineering and has submitted proposals for additional funding. The annual GAANN Day on campus will help attract and recruit new GAANN Fellows. The campus visitation program for top doctoral program prospects will be held in conjunction with GAANN Day.

The University actively pursues students from underrepresented groups by attending and exhibiting at regional and national conferences and meetings that feature undergraduate research and provide professional development and mentoring activities for students from underrepresented groups. Each year, UT Arlington sends representatives to the conferences of the Texas National McNair Scholars Research and the National Society of Hispanic Professional Engineers (SHPE). The University also recruits at the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) conferences.

In order to increase the visibility of UT Arlington graduates and reach more women and minorities in recruiting efforts, the University is an active partner in the McNair Scholarship program and the UT System Louis Stokes Alliance for Minority Participation (LSAMP) program. In addition, the University has adopted a holistic approach for evaluating the potential of applicant success and has removed many barriers that have historically limited access of underrepresented students to graduate study.

To retain students, the University has developed a wide variety of workshops aimed at the academic and professional development for graduate students. These workshops include online webinars and face-to-face sessions that cover topics such as effective writing skills, research skills and work-life balance.

The institution has made aggressive attempts to diversify its faculty, especially in STEM programs. Programs such as the Pre-Doctoral and Post-Doctoral Fellowship Program, Pre-Faculty Internship Partnership with Howard University, and other programs geared toward faculty diversity will also help diversify the doctoral student population.

VI. Plan to Capitalize on Other Resources

A. Research Facilities

Engineering Research Complex

UT Arlington's Campus Master Plan was approved by the Board of Regents in May 2007 and includes an additional one million square feet of research space to support the institution's goal of becoming a national research university. The new Engineering Research Building (ERB) scheduled for completion in January 2011 will provide a significant step forward. The ERB totals over 230,000 gross square feet (gsf) with a capital budget of approximately $128 million, providing much needed research space for the College of Engineering as well as the College of Science. The building will house the College of Engineering's Computer Science Engineering Department, research labs for the Department of Chemistry, and research labs for Bio-Medical Engineering. Much of the entire east wing of the building contains lab space for collaborative research between The Colleges of Engineering and Science. The building also will contain faculty offices, conference rooms and lab support space.

The ERB is part of a larger project known as the Engineering Research Complex (ERC). The ERC also includes a third floor addition to the existing Engineering Lab Building, as well as extensive lab renovations on floors one and two of that building. Overall, the project added more than 28,000 gsf of research space with the third floor addition for the College of Engineering. This phase of the project was completed in summer 2009 for just under $22 million.

Prior to the Engineering Lab Building addition and renovation, a new $10 million Civil Engineering Laboratory Building totaling over 27,000 gsf was constructed on the west campus. This multipurpose building includes lab space for asphalt, environmental, construction, transportation, geotech, and material/structures civil engineering. The building opened in August 2008.

There are also numerous renovation projects currently under way that directly support UT Arlington's research enterprise. These projects include:

- Science Hall 307/310 – a new wet chemistry lab to support the Center for Renewable Energy Science and Technology (CREST).
- Nedderman Hall 254/255 – a new Class 100,000 clean room to include support space for research faculty to be used for nanolithography and nanophotonics research.
- Engineering Lab Building 126 – a new research lab for sponsored projects concerning air bearings and high temperature fuel cells.

- Woolf Hall 223 – a new autonomous vehicles laboratory to conduct both externally sponsored research as well as undergraduate research.
- Science Hall 317 – a new research lab for the annealing of glass quartz tubing to fabricate custom glassware to support magnetic nanoparticle and nanocomposite magnet research.
- Woolf Hall 226 – a new research lab to support both NIH and NSF CAREER projects.

In addition to these new, large capital construction projects, and the on-going lab renovation projects, UT Arlington plans to construct a new shared facility between the College of Engineering and the College of Science for animal research. The current animal research facility comprises approximately 15,000 gsf, or 9,000 assignable square feet. The preliminary plan is to construct a new facility that doubles the current space, and then renovate the vacated space for the College of Science (Biology). The new facility will total approximately 25,000 gsf with a capital budget of $15 million. The budget for the renovation for the vacated space will be approximately $3 million, for a total project cost of just under $20 million.

Another short-to-mid-term capital requirement is an addition to the Nanofab Building, which currently comprises approximately 40,000 gsf. The building is at capacity with many faculty members housed in other buildings across the campus and no excess clean room utilization or capacity is available. Included in the Campus Master Plan is an addition of approximately 50,000 gsf, aimed to double the current building's capacity to further support the research enterprise in this ever-expanding field of study. The capital budget for the project is estimated at $37.5 million.

As consideration is given to budgeting and funding for the capital research projects contained in the Campus Master Plan, there is a realization that project funding will need to come from multiple sources — to include state Tuition Revenue Bonds, Permanent University Fund Bond Proceeds, UT System Revenue Financing System Bond Proceeds, external funding (gifts, grants, private donations/contributions), natural gas royalties (the institution's 2008 Natural Gas Plan approved by the Board of Regents specifies that 20 percent of such revenues will be used to fund the Campus Master Plan), and Unexpended Plant Fund Balances, as well as the possibility of additional allocations from the designated state funds to support the emerging research institutions.

Finally, while not related to research infrastructure, it is still worth noting two additional construction projects that will get under way in fiscal year 2010.

The first is a 6,500 seat Special Events Center that will dramatically change the landscape in the university and downtown district. The center will be home to UT Arlington athletics and also will provide an exceptional venue for commencement,

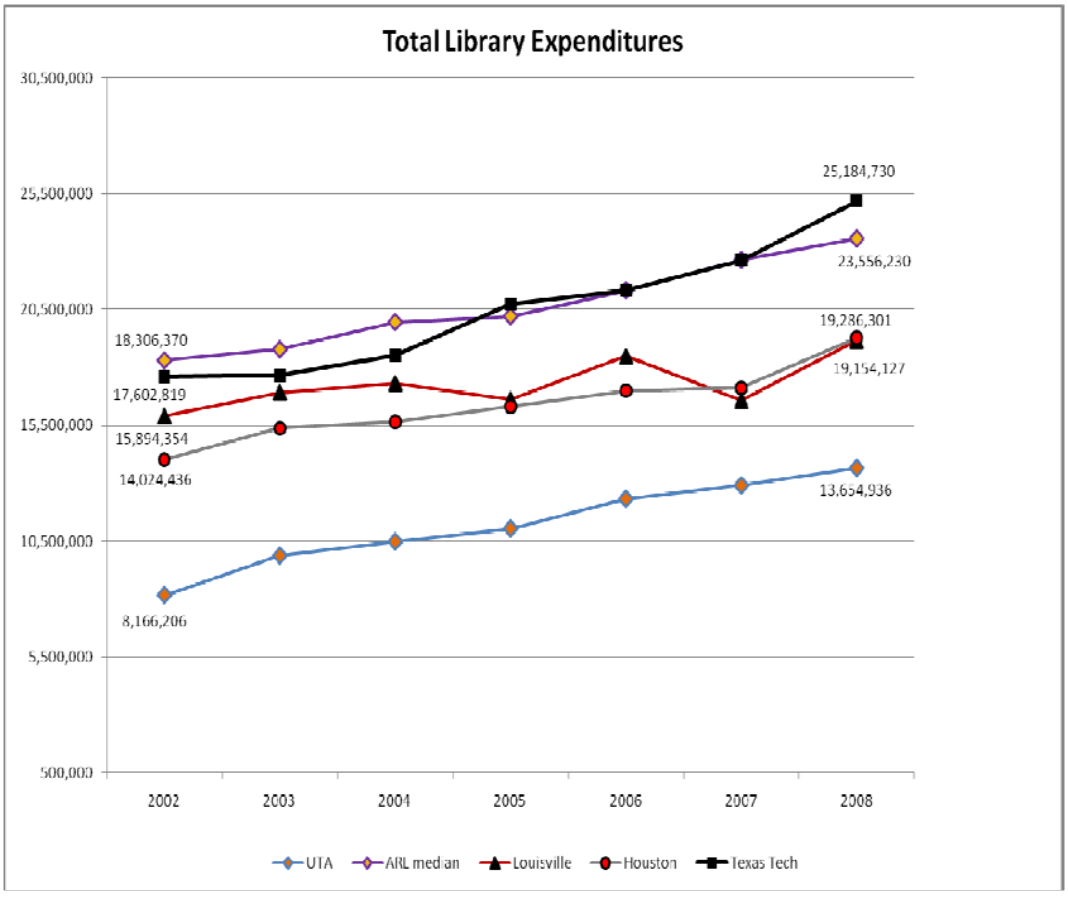
concerts, and many other community events. This venue will be ideally suited for high-profile lectures involving nationally and internationally recognized researchers. The facility will total over 218,000 gsf and is included in the UT System Capital Improvement Plan at $78 million. It is a key component of the institution's co-curricular and enhanced student experience plans. The center will open in late 2011.

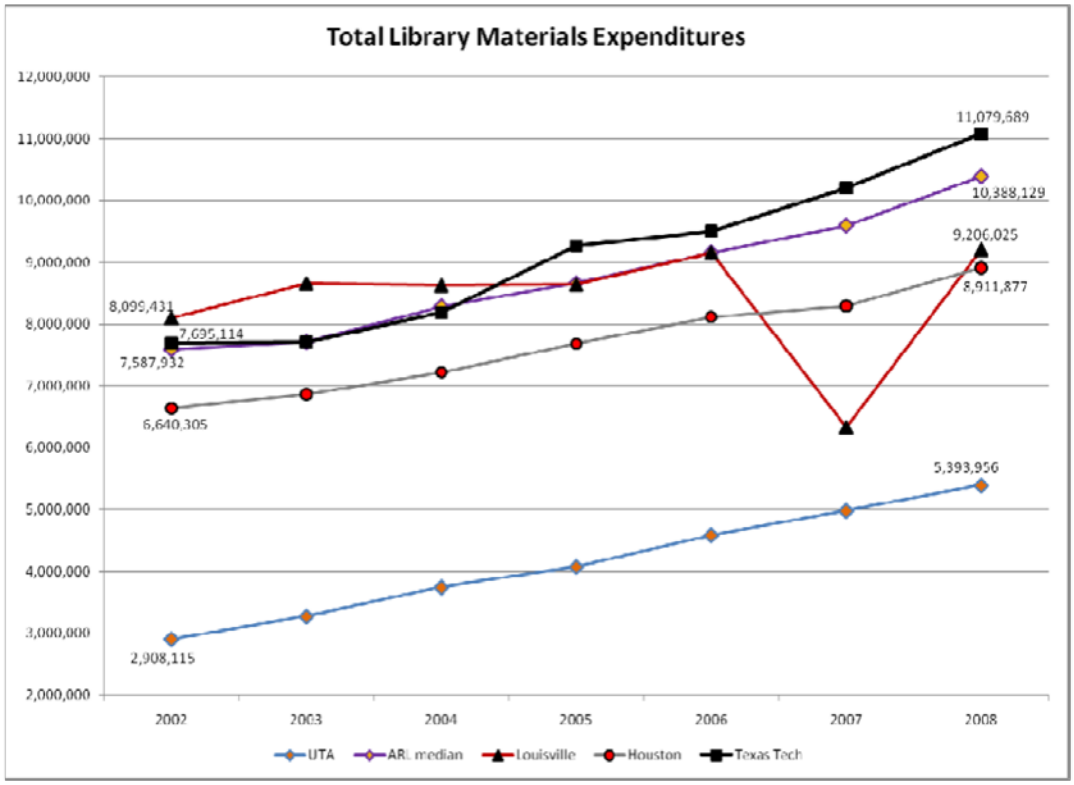
The second project is College Park, a planned mixed-use development to be constructed immediately north of the Special Events Center that will include an 1,800 car parking garage wrapped with a residence hall and student apartments, approximately 15,000 square feet of office and retail space, and the institution's new Welcome and Information Center. The preliminary project budget for College Park, which is expected to open in 2012, is $80 million.

The Special Events Center and College Park will dramatically transform the university and downtown district, creating a more engaging college town community and achieving many of the university's goals related to student success initiatives.

B. LIBRARY RESOURCES

It is the goal of UT Arlington to build library resources, services, and facilities to seek membership in the Association of Research Libraries (ARL) in the next fifteen years. Library staff members have been studying the current criteria for ARL membership and comparing UT Arlington data with those of various ARL libraries, including the University of Louisville, the most recent U.S. university to be invited to join ARL (2002); University of Houston and Texas Tech, both universities with ARL libraries; and the ARL median. Below are several graphs that plot where the UT Arlington Library stands in relationship with the above universities and the ARL median score.




Total Library Materials Expenditures
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11,000,000
10,000,000
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
11,079,589
10,388,129
9,206,025
8,911,877
8,099,431
7,695,114
7,587,932
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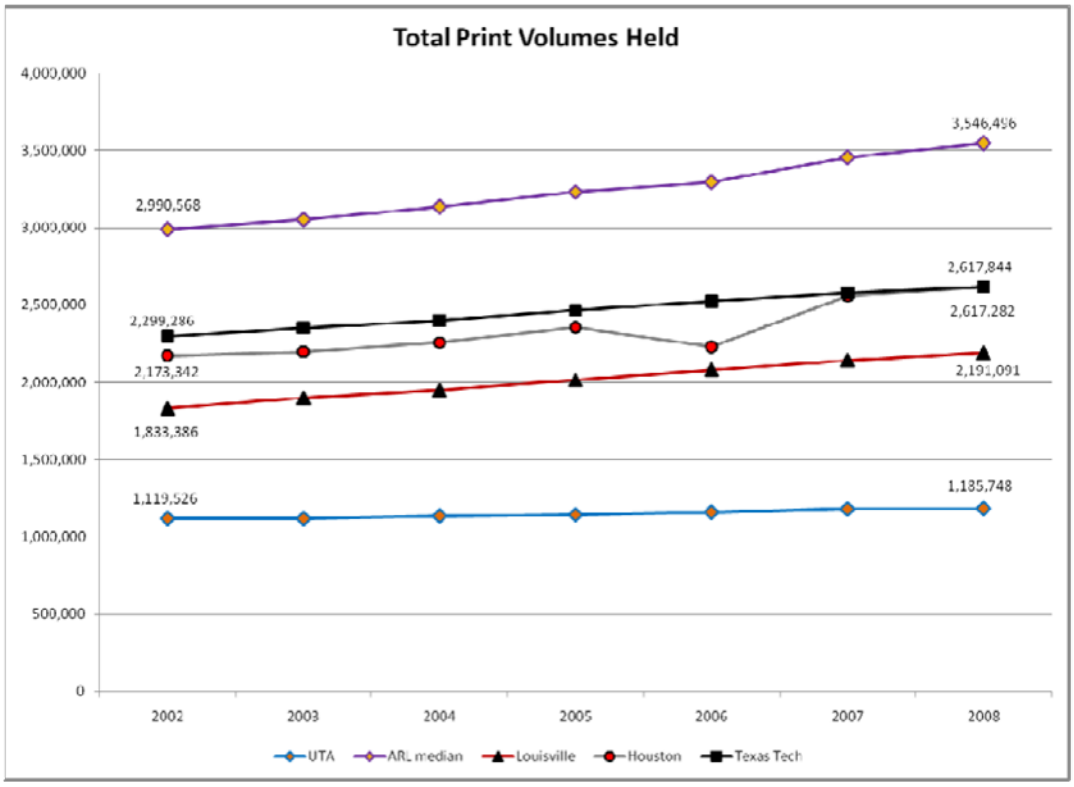
2,908,115
2002
2003
2004
2005
2006
2007
2008
UTA
ARL median
Louisville
Houston
Texas Tech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3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
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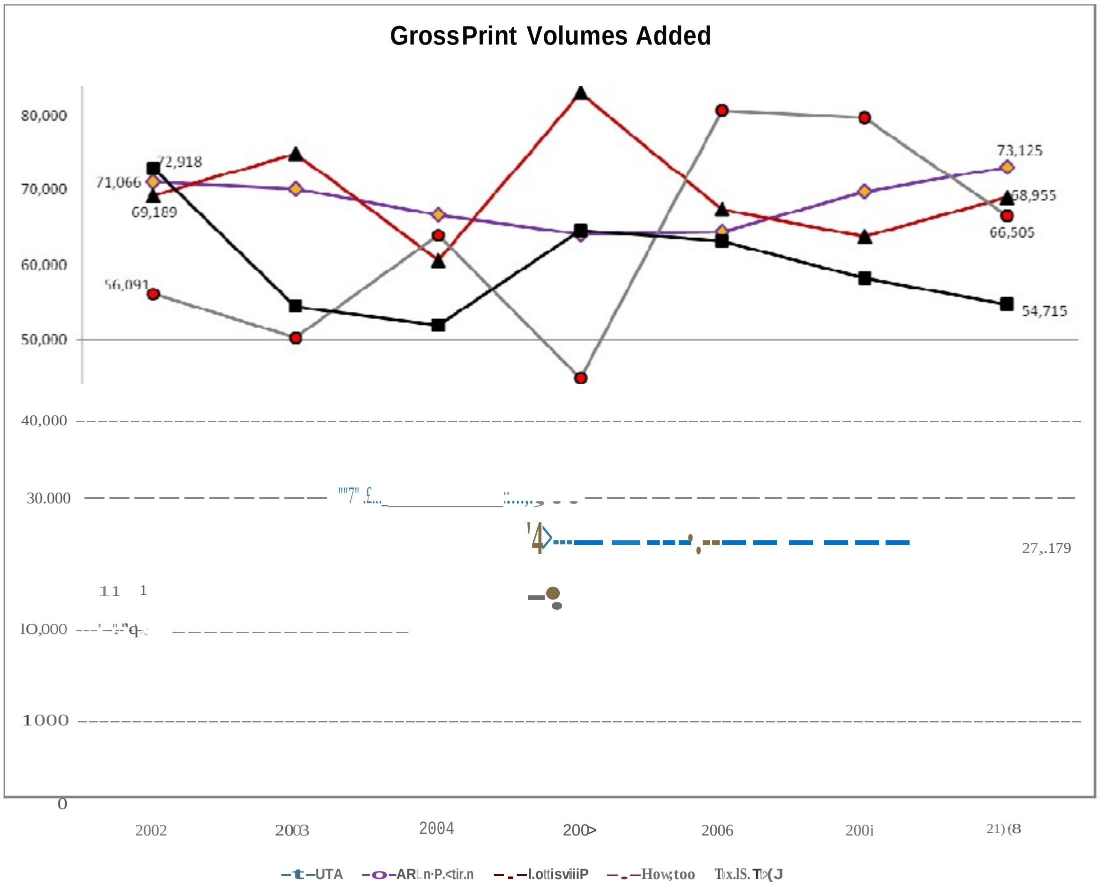
3,546,456
2,990,568
2,617,844
2,617,282
2,299,286
2,173,342
2,191,091
1,833,386
1,135,748
1,119,526
2002
2003
2004
2005
2006
2007
2008
UTA
ARL median
Louisville
Houston
Texas Tech


GrossPrint Volumes Added
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70,000
60,000
50,000
40,000
30.000
10,000
1000
0
72,918
71,066
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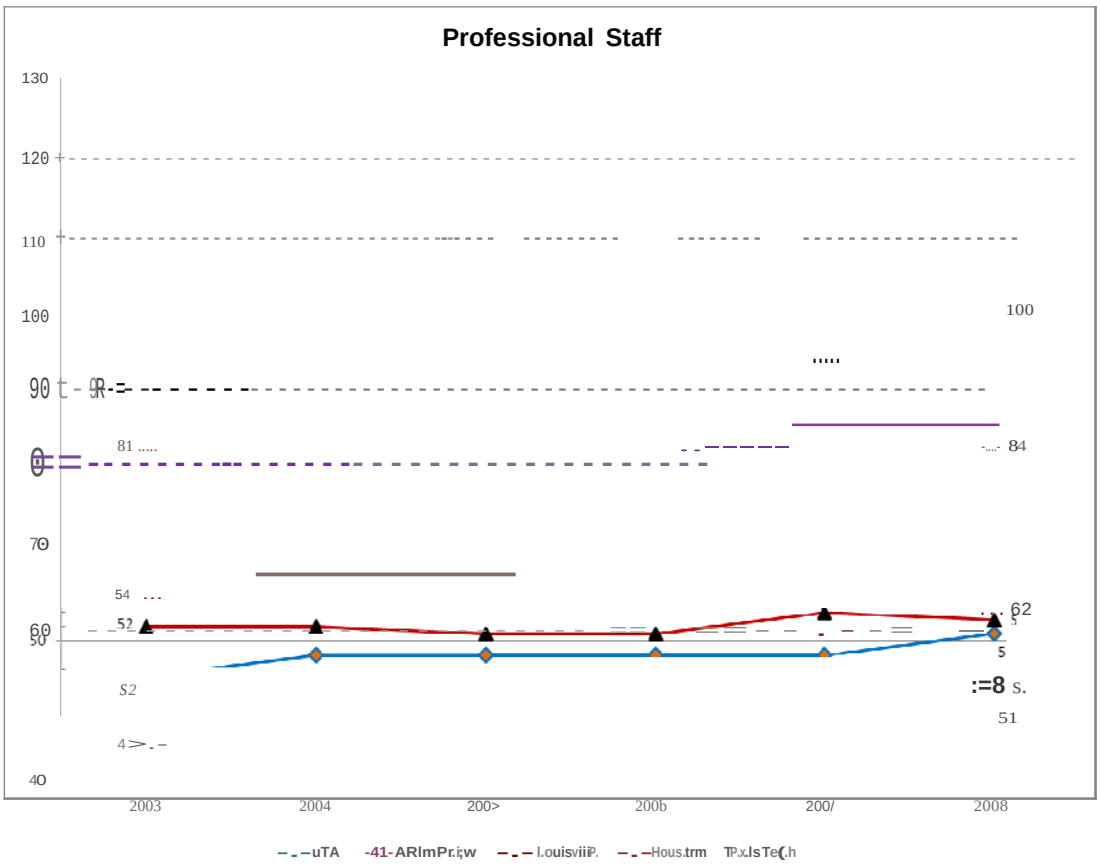
68,955
66,505
54,715
27,.179
2002
2003
2004
2006


Professional Staff
130
120
110
100
90
80
70
60
50
40
100
84
62
51
2003
2004
200>
200b
200/
2008
uTA
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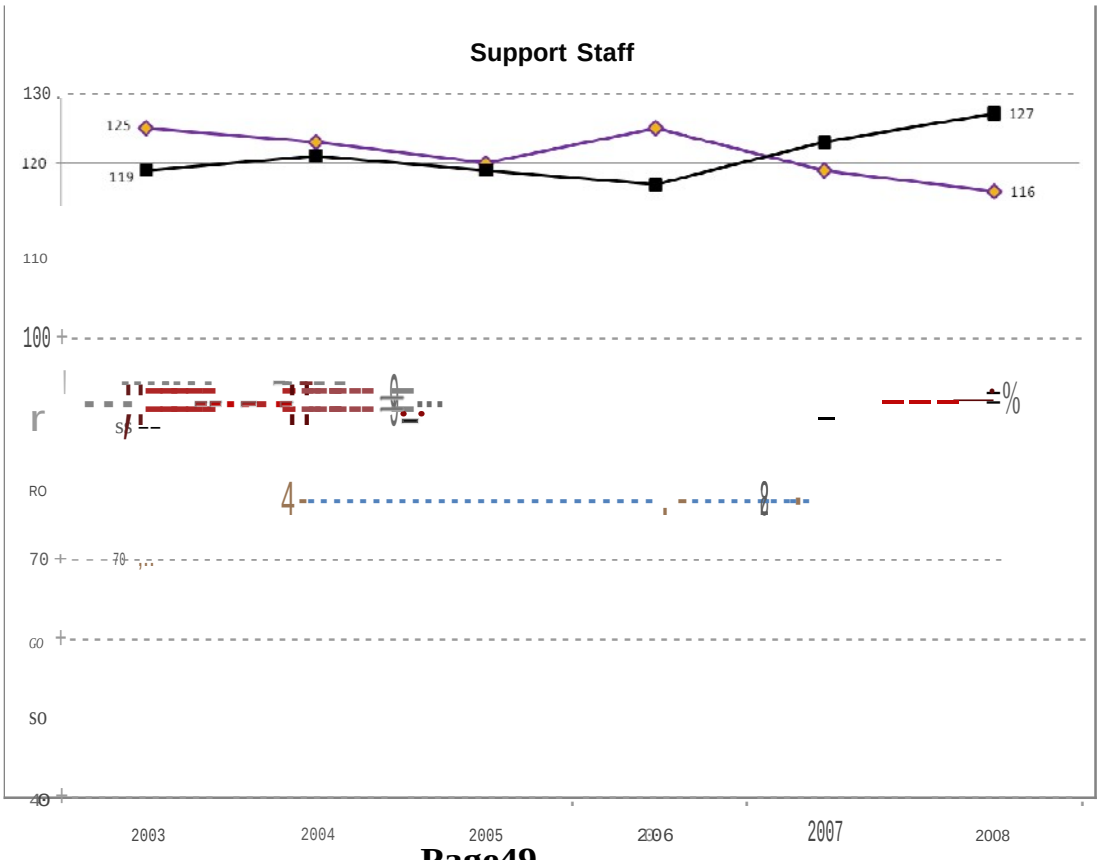
Support Staff
130
120
110
100
RO
70
60
50
40
125
119
127
116
2003
2004
2005
2006
2007
2008

In order for UT Arlington to apply for ARL status in 15 years, however, the following strategic goals and metrics for the library must be met in the next ten years, by 2020, and sustained at that level or greater for four succeeding years. Once these metrics are met, the institution will be ready to apply for ARL status in the fifteenth year (2025).

The library goals for the next ten years are:

1. The number of print volumes in the library collection will increase from 1.2 to 2.2 million volumes.
2. The total materials budget (acquisitions budget) will increase by 115 percent from $6 to $13 million.
3. The number of professional staff members will increase from 51 to 55 and support staff from 82 to 90.
4. The current Library Collections Depository (the library's remote storage facility) will be at least doubled in size to accommodate the storage of more than a million volumes and thousands of boxes of archival and manuscript collections (and will include cold storage) while the Architecture and Fine Arts Library will be expanded to accommodate additional users and services.
5. UT Arlington will dedicate funds to establish a digital laboratory to digitize the internationally important collections in the library's Special Collections, making them accessible to scholars around the world.
6. UT Arlington will fund the application of RFID tags on library volumes to better track, protect, and inventory its collection and prevent theft.
7. The library budget will increase by 70 percent to a total of $23.8 million.

C. GRADUATE STUDENT SUPPORT

Attracting highly qualified and motivated doctoral students is pivotal to UT Arlington's strategic plan toward becoming a national research university. Qualified and motivated students will progress quickly in their studies and graduate on time, thereby increasing the number of doctoral degrees awarded annually. Having an exceptionally well-qualified graduate student body will greatly impact undergraduate student success.

UT Arlington does not currently offer competitive graduate assistantship stipends in all programs— nationally or regionally. In addition, very few of the institution's available teaching assistantships carry with them full tuition remission. A comprehensive plan has been developed to increase all graduate teaching assistantships to a nationally competitive level within three years. Competitive stipend levels have now been established in all doctoral programs across the institution.

Competition for the best graduate students is intense. Each doctoral program will be required to develop rigorous selection criteria for graduate assistantships, and they

must also develop a recruiting plan to ensure that UT Arlington's recruitment strategy extends beyond the region for all its doctoral programs. Students who hold such assistantships will be formally reviewed each year in order to ensure that acceptable progress is being made toward their degree.

Coinciding with the increase in graduate teaching assistantship stipends to nationally competitive levels is a plan to increase all graduate research assistantships to that same level. Beginning in September 2010, Principal Investigators (PI) will be required to use the Graduate Teaching Assistant stipend level plus tuition in all proposals. For those principal investigators seeking funding from organizations that do not, as a matter of policy, cover tuition, or that limit the amount that can be requested for a Graduate Research Assistant line, a separate funding source will be established to cover these situations.

VII. PLAN TO INCREASE NATIONAL AND INTERNATIONAL VISIBILITY

UT Arlington will enhance its national visibility in research, undergraduate and graduate education as it strives to transform itself into a national research university. Multifaceted interactions with industry, alumni, professional associations, and others in the community are of vital importance to the success of this endeavor.

The generosity of alumni, parents, corporate partners and friends creates opportunities for the institution to enhance the academic experience of its students and to support faculty to conduct research that will transform the institution, the community, and the nation through technology transfer.

A number of UT Arlington's programs are already nationally ranked or are on the cusp of national visibility. The College of Engineering has nationally recognized programs in Biomaterials and Tissue Engineering, Database Systems and Data Mining, and Nano-photonics. In addition, the Pulse Detonation and Supersonic Wave Engine Program and Texas Manufacturing Assistance Center have national visibility. The School of Urban and Public Affairs Program in Public Administration is recognized nationally as a regional leader. The College of Nursing Graduate MSN Program (Nurse Practitioner) has national recognition and the MSN in Nursing Administration is moving toward regional and national prominence with its Academic Partnership in Nursing Administration and the Executive MSN in Nursing Administration, which will be structured similar to Executive MBA programs.

The College of Liberal Arts programs in Art, History, and Linguistics have achieved national recognition in their fields. Two graduate programs within the School of Architecture have been recognized (Architecture) and ranked (Landscape Architecture) by Design Intelligence. Additionally, faculty members in the College of Science have generated international interest with their work in high-energy physics and genomics. Several programs within the College of Education and Health Professions are also recognized within their field.

China Immersion Executive MBA Program

Globalization is driving today's business, and success will certainly be influenced by the ability to navigate in international business environments. UT Arlington's China Immersion Executive MBA Program is an invaluable opportunity to understand and experience the power of global business. Students are connected with corresponding EMBA working professionals in China and provided the opportunity to unlock the potential of international collaboration. Students learn what they need to know about the global landscape, new emerging international markets and innovative approaches to global product development.

Throughout the EMBA program, the unique Asian global experience model, developed by UT Arlington's College of Business, serves as the cornerstone of the Graduate Certificate in Asian Studies in addition to the Executive MBA graduate degree. This dual combination of Executive MBA degree and Graduate Certificate in Asian Studies is unique UT Arlington's College of Business EMBA program.

APPENDIX

Performance Measures that Characterize National Research Institutions in the U.S. (Institutions that rank in the top 125 in the country)

The following metrics were derived from information provided by the *Center for Measuring University Performance* (http://mup.asu.edu/). This center is perhaps the only entity that ranks research institutions in the U.S. using a variety of metrics. Specifically, the Center ranks institutions on total research expenditures, federal research expenditures, size of endowment, annual giving, number of doctoral students graduated annually, number of post-doctoral associates employed annually, number of national academy members among faculty ranks, number of national merit scholars among student ranks, and number of prestigious faculty awards received annually.

A significant aspirational goal for UT Arlington is to meet the threshold value that defines the 125th ranked institution in the US for several of these measures. The table below provides the current institutional profile along with the values UT Arlington strives to meet within the next ten years.

DESIRED INSTITUTIONAL PROFILE FOR UT ARLINGTON BY 2020

Metric	UT Arlington 2008	Target for 2020
Total Research Expenditures	$51 million	$210 million
Federal Research Expenditures	$21 million	$125 million
Number of Ph.D. Graduated	153	200
Number of Post-Doctoral Associates Employed	79	100
Number of National Merit Scholars on Student Body		10
Number of National Academy Members on Faculty	0	4
Number of Faculty Awards	2	5

UT ARLINGTON DOCTORAL PROGRAMS

Authorized Doctoral Degree Programs				
January 2010				
College/School	**Doctoral**	**Professional**	**Programs**	**CIP Code**
College of Business	PHD		Business Admin - Management	52.0201.00
	PHD		Business Admin - Management Sciences	52.0201.00
	PHD		Business Admin - Finance	52.0803.00
	PHD		Business Admin - Business Statistics	52.1302.00
	PHD		Business Admin - Marketing	52.1401.00
	PHD		Business Admin - Accounting	52.0301.00
	PHD		Business Admin - Information Systems	52.1201.00
College of Education	PHD		Educational Leadership	13.0401.00
College of Engineering	PHD		Biomedical Engineering (joint program with UT Southwestern Medical Center, Dallas)	14.0501.00
	PHD		Civil Engineering	14.0801.00
	PHD		Computer Engineering	14.0901.00
	PHD		Computer Science	11.0101.00
	PHD		Electrical Engineering	14.1001.00
	PHD		Industrial Engineering	14.3501.00
	PHD		Materials Science & Engineering	14.1801.00
	PHD		Aerospace Engineering	14.0201.00
	PHD		Mechanical Engineering	14.1901.00
College of Liberal Arts	PHD		English	23.0101.00
	PHD		Linguistics	16.0102.00
	PHD		Transatlantic History	54.0199.01
School of Nursing		DNP	Nursing Practice	51.1699.70
	PHD		Nursing Science	51.1608.00
College of Science	PHD		Environmental and Earth Sciences	03.0104.00
	PHD		Quantitative Biology	26.1101.00
	PHD		Chemistry	40.0501.00
	PHD		Mathematics	27.0101.00
	PHD		Physics and Applied Physics	40.0801.01
	PHD		General Experimental Psychology	42.0801.00
School of Social Work	PHD		Social Work	44.0701.00
School of Urban and Public Affairs	PHD		Urban Planning & Public Policy	44.0401.00
	PHD		Public and Urban Administration	44.0401.00
Total	30	1		
Source: Texas Higher Education Coordinating Board Program Inventory				

UNIVERSITY OF
TEXAS
ARLINGTON

THE UNIVERSITY OF TEXAS AT AUSTIN

2013 STRATEGIC PLAN FOR RESEARCH

Prepared in Response to House Bill 51, 81st Texas Legislature

for the

Texas Higher Education Coordinating Board

by the

Office of the President
The University of Texas at Austin
Main 400, G3400
Austin, TX 78712

March 8, 2013

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THE UNIVERSITY OF TEXAS AT AUSTIN

2013 STRATEGIC PLAN FOR RESEARCH

EXECUTIVE SUMMARY

MISSION OF THE UNIVERSITY

- The University of Texas at Austin is a Research University and among the elite education institutions in the world.
- This Strategic Plan for Research does not represent a change in the University's vision or mission; rather, it is a continuing commitment to contribute to an ever-increasing level of excellence.

PLAN TO INCREASE RESEARCH FUNDING AND PRODUCTIVITY

- The allocation of resources over the next 10 years will focus heavily on faculty, staff, and students, on administrative support, and on facilities.
- The University anticipates increasing its research expenditures from $580 million/year currently to a target of $873 million/year in FY2025 (not including the recently approved medical school). Tenured and tenure-track (T/TT) faculty productivity (i.e., annual research expenditures per T/TT faculty FTE) will likely increase from more than $320,000/year in research expenditures per T/TT faculty FTE currently to about $460,000/year per T/TT faculty FTE by FY2025.
- Energy and health-related research, advanced computation, and computational science and engineering will continue to be major research efforts on campus with growing efforts in sustainability and informatics.
- Based on anticipated funding, faculty hiring to support expansion of academic and research programs may be limited to replacement of current faculty or to a modest increase of 80 new faculty, some of whom are STEM faculty, over the 12 year period between FY2013 and FY2025. About $12 million in recurring funds will be needed to hire the 80 new faculty (at an average of $150,000 per new faculty) at all ranks between FY2013 and FY2025 to meet undergraduate and graduate teaching needs and to produce the increase in research expenditures.
- Increases in staff and research-support services are also needed to meet these hiring goals.
- Costs for new facilities will increase from the $710.4 million being spent on current construction and construction about to begin to over $1.6 billion needed to construct facilities in engineering, natural sciences, and pharmacy alone (not taking into account facility needs in other disciplines) in future years.
- Renovation costs for new STEM faculty alone will average about $5.5 million/year.
- Graduate and undergraduate student participation in research activities is imperative.

PLAN TO IMPROVE UNDERGRADUATE EDUCATION

- In response to internal initiatives and new Texas Higher Education Coordinating Board requirements, major improvements in the University's Basic Education Requirements have occurred over the past eight years and will be fully implemented over the next five.
- Achievement of the Closing the Gaps targets for baccalaureate degrees by ethnic group, STEM field, and overall as well as four-, five-, and six-year graduation rates is a high priority for the University.
- The quality of these Basic Education Requirements and the more than 135 undergraduate degree programs is being enhanced through outcomes-based assessment coupled with substantial efforts in the Provost's Office and the schools/colleges across campus to improve teaching/learning.

- Support for and encouragement of enhancing teaching effectiveness is in place.

PLAN FOR DOCTORAL PROGRAMS

- The University has a full array of graduate programs offering 133 master's degrees, 93 doctoral degrees, and 3 professional degrees - some 229 programs in fourteen schools and colleges.
- Of these programs, some 43 rank in the top 10 nationally now and more can be moved to the top 10 through strategic allocation of resources.
- No new doctoral programs are being proposed as part of this Plan (although a Doctor of Medicine program will be added as the medical school develops) and doctoral program discontinuations are not anticipated.

PLAN FOR FACULTY AND STUDENT DEVELOPMENT

- Numerous programs, activities, and policies are in place to support and recruit high quality faculty and graduate students including excellent teaching and research facilities, challenging teaching loads, research-oriented colleagues, and the formal recognition of innovative teaching and research.
- Graduate support in the form of fellowships and assistantships has been a high priority of the University. The University administers the awarding of several million dollars in recruiting and continuing fellowships each year and also provides modest travel support for students to attend conferences to present their scholarly work.
- Over 100 organized research units as well as dozens of school- or college-specific research centers, including the Marine Science Institute in Port Aransas, the McDonald Observatory in West Texas, the Pickle Research Campus in north Austin, and the Bee Cave research facility in west Austin are in place to support faculty research.
- The University supports limited research leaves for T/TT faculty through its Faculty Research Assignment and Summer Research Assignment programs. A Faculty Travel Grant program enables faculty to attend conferences to present their scholarly work and learn of the most recent findings of others.
- In addition, each school and college in the University has its own, sometimes unique, plan to assist faculty in becoming more productive, more innovative, and more effective in conducting research.
- Schools and colleges have programs to assist junior faculty members in obtaining external funding for their research.
- Faculty are recognized for their research and teaching through awards such as the Nobel Prize, the national academies, the Academy of Distinguished Teachers, the Donald D. Harrington Faculty Fellow Program, the Wolf Prize, a number of University-wide and school/college awards and awards external to the University, and over 800 endowments that provide salary, salary supplements, and discretionary funds to outstanding faculty.

OTHER RESOURCES

To provide the facilities necessary for the University to continue its quest to become the best public research university in the nation:

- The University has adopted a comprehensive facilities strategy that includes a systematic maintenance plan for existing facilities that continue to support its research mission, and a strategic program of modernization, repurposing, and replacement of those facilities no longer able to support this mission.
- Some $710.4 million has been spent on construction of 1.2 million gross square feet of facilities that support teaching and research in the past few years.
- Some $642 million is being spent on construction of 1.2 million gross square feet of facilities that support teaching and research to be constructed in the next five years.
- Over $73 million has been or is being spent on facility renovation that will support teaching and research.

- It is estimated that $1.6 billion will be needed to address new construction and renovation needs in the foreseeable future in schools/colleges conducting the majority of external research.
- The University of Texas Libraries is a major support source to all, but especially to faculty conducting research. It contains more than 10 million volumes, is housed in fourteen separate library and archival collections, is the fourth largest academic library in the nation, and is highly ranked.
- The Libraries provide access to hundreds of online databases supporting every academic program at the University, as well as in excess of 800,000 e-books and access to more than 85,000 e-journals.
- The Libraries are members of several consortia that greatly expand the purchasing power and number of resources available to University students and faculty members, such as: the UT System digital library contracts, TexShare, the State Library Program; the Greater Western Library Alliance consortia; and the Research Library Cooperative Program with the University of California at Berkeley and Stanford University.
- The Libraries are one of the five patent and trademark depository libraries in Texas, part of the Federal Depository Library Program.
- The Libraries provides digital stewardship services to University faculty and campus units by providing repository services (UT Digital Repository), data management planning services (Data Management @ UT), and alternative publishing platforms (through the Texas Digital Library open journals service).
- The University has world-renowned collections, museums, and centers and hosts the LBJ Library.
- A major resource for researchers at the University as well as researchers world-wide is the Texas Advanced Computing Center (TACC), the home of the University's unparalleled supercomputers, including Lonestar, Ranger, the recently christened world-class Stampede, and the leading-edge Visualization Laboratory.
- Another University-wide research resource is the Animal Resources Center (ARC) which provides animal husbandry and veterinary consultation services, and training for all University research involving 10,000 - 15,000 laboratory animals yearly. It permits the most efficient and up-to-date environmental control for sanitation and animal health monitoring.

NATIONAL VISIBILITY

- The University of Texas System's Science and Technology Acquisition and Retention (STARS) program, among others, has enabled the University to recruit outstanding faculty and thus enhance its national visibility. Since put in place in FY2004-05, more than $150 million has been made available to component campuses, and the University has received $74 million from the STARS program through FY2012.
- There are hundreds of endowments from a multitude of donors who have given funds for specific purposes, specific research centers and laboratories, and/or to specific disciplines. Typically the yield of these endowments is used for faculty salaries or salary supplements, fringe benefits, and discretionary funds used to support research activities. It is estimated that about $85 million annually from endowments and gifts go to research support in the form of salary supplements, operating costs, and so forth.
- Research from the University is promoted in a number of ways, including personal contacts with the media, University-issued press releases, use of journalists' resources such as Newswise and EurekAlert, and, increasingly, through social media.

THE UNIVERSITY OF TEXAS AT AUSTIN

2013 STRATEGIC PLAN FOR RESEARCH

I. MISSION OF THE UNIVERSITY

The mission of the University of Texas at Austin is to achieve excellence in the interrelated areas of undergraduate education, graduate education, research and public service. The University (a) provides superior and comprehensive educational opportunities at the baccalaureate through doctoral and special professional educational levels; (b) contributes to the advancement of society through research, creative activity, scholarly inquiry and the development of new knowledge; and (c) preserves and promotes the arts, benefits the state's economy, serves the citizens through public programs, and provides other public service.

The vision of the University is to be the best in the world at creating a disciplined culture of excellence that generates intellectual excitement, transforms lives, and develops leaders. The University will define for the 21st century what it means to be a university of the first class.

The University is a Research University as defined in the Texas Higher Education Coordinating Board's accountability system, i.e., it:

- Offers a comprehensive range of excellent undergraduate and graduate programs;
- Awards 100 or more doctoral-research/scholarship degrees annually in excellent programs that span at least 15 disciplines; and
- Places significant emphasis on research and creative activities and generates at least $150 million annually in research expenditures.

By all measures, the University offers a wide range of excellent undergraduate and graduate programs, its mission reflects its research emphasis and conducting research and scholarly activities is one of the primary duties of its faculty. In FY2012 it awarded 844 doctoral degrees and generated over $580 million in research expenditures.

In Fall 2012 the University enrolled 52,186 students (39,955 undergraduate, 10,622 master's, and doctoral, 1,108 in Law, and 501 in Pharm.D) in 135 baccalaureate, 133 master's, 93 doctoral, and 3 professional degree programs. In FY2011 the University graduated 8,860 baccalaureate, 3,130 master's, and 843 doctoral students. There were also 504 doctoral degrees awarded that qualify recipients for entry into professional practice (namely Audiology, JD, Pharm D) for a total of 13,337 degrees granted.

In the current Carnegie Classification system, the University is classified as a Research University with very high research activity, i.e., awards at least 20 doctoral degrees per year (excluding doctoral-level degrees that qualify recipients for entry into professional practice) and has very high research expenditures overall and per faculty member.

The University is true to its mission and is already among the elite education institutions in the country, indeed the world, and it strives continually "to achieve excellence in the interrelated areas of undergraduate education, graduate education, research and public service."

This 2013 Strategic Plan for Research (hereinafter called the Plan) is a description of how the University is enhancing its research activities and graduate and undergraduate programs to serve better the state and nation. The Plan does not represent a change in the University's mission; rather, reflects a continuing commitment to contribute at an ever-increasing level of excellence to the "advancement of society through research, creative activity, scholarly inquiry, and the development of new knowledge."

II. PLAN TO INCREASE RESEARCH FUNDING AND PRODUCTIVITY

The plan to increase research funding and productivity includes information on external funding (targets, progress, and peer comparisons), research priorities (targeted priorities and focus of efforts), allocation of resources (budget needed and allocation), and student participation (in research at graduate and undergraduate levels). While targets may be established for research funding, achieving those targets is dependent on the number of faculty conducting research and the productivity of those faculty measured as research expenditures per faculty member.

A planning horizon to 2025 is used herein for planning purposes.

External Funding

Projected Research Expenditures

The University's institutional targets for the Texas Higher Education Coordinating Board's "Closing the Gaps" program and as submitted to The University of Texas System for total sponsored research expenditures (i.e., external funding) in FY2015, FY2020, and FY2025 are $649.7 million, $753.1 million, and $873.1 million, respectively, in annual expenditures as shown in Table 1 below. Federal research expenditures are about 60% of total research expenditures. Although peer-based data are not available for total research expenditures, by comparison the University ranked 10th out of 12 public peer institutions in terms of federal research expenditures in FY2010. However, only four of the 12 institutions do not have medical schools, and within those four the University is ranked third behind the University of California at Berkeley and the University of Illinois-Urbana/Champaign.

Table 1. Total and Federal Research Expenditures: Actual and "Closing the Gaps" Targets

	Actual FY2010	Actual FY2011	Actual FY2012	Target FY2015	Target FY2020	Target FY2025
Total	$548.9	$591.9	$580.3	$649.7	$753.1	$873.1
Federal	$350.3	$355.4	$354.9	$405.5	$470.1	$545.0

Source: UT Austin's Closing the Gaps targets and UT Austin's 2012 Goal Setting report to UT System
Note: Amounts in millions

Lists of UT Austin's National Comparison Group and its Extended Comparison Group are given in the appendix.

External research funds are awarded/expended through the schools and colleges and their associated research centers, or they are awarded/expended through research centers reporting directly to the Office of the Vice President for Research. More than one-third of the total University research awards/ expenditures are through the latter.

The University will monitor its monetary progress toward achieving the institutional financial targets through its Office of Sponsored Projects and Office of Industry Engagement (units within the Office of the Vice President for Research). In addition, the number of research proposals submitted for external funding and the number of external research grant awards received will continue to be tracked. For FY2011, the University received notice of award for over 40% of the proposals submitted to all funding sources.

Basis for Projection

The basis for this projection of research expenditures is simply: (a) the number of faculty measured full-time equivalents (or FTEs) of tenured and tenure-track (T/TT) involved in externally funded research projected into the future; (b) the productivity of the faculty measured as research dollars expended each year per T/TT faculty FTE also projected; and (c) the

product of "a" and "b" which is future research expenditures. Projecting "a" and "b" into the future based on past experience and factors that may influence the projections provide estimates of future research expenditures. Elaboration on these points follows.

Because it is part of their duties as faculty at a research institution, sponsored research is conducted largely by the T/TT faculty, but non-TT faculty are also involved as well as reseach staff, graduate and undergraduate students, and in some cases postdoctoral fellows. Typically new faculty initiate their research programs by deciding where to focus their research (usually extensions of their own doctoral research), writing proposals, securing awards, conducting research, beginning to supervise graduate students, preparing reports and publications, and giving presentations to disseminate their research findings and to build their reputation and enhance that of the University. As their research programs grow, the faculty develop an organizational structure needed to support the particular kind of research they conduct as well as its magnitude. Support-personnel numbers expand, and collaborative efforts within the institutions and with researchers at other institutions become natural ways to expand the scope and intensity of the research. Institutional support in the form of start-up packages, instrumentation and computational capacity, and other kinds of support is critical to new faculty members until they have established their programs and can become more self-sufficient. Throughout, however, the T/TT faculty member remains the key element and the FTE unit defines the amount of faculty time and, indirectly, cost. So in this Plan, the T/TT faculty FTE unit is used, and this use is consistent with the UT System Dashboard and with most institutional and governmental databases. Thus, for consistency, normalization, and comparisons with peer institutions, full-time equivalent (FTE) faculty units are used when discussing externally funded research.

Faculty Numbers

The number of T/TT faculty FTEs at the University has increased over the years to 1,820.5 FTE in FY2012 (see Table 2). Extrapolations of T/TT faculty FTEs into the future depends on the assumption made about growth in faculty numbers over the planning period. One scenario is the anticipated number of faculty numbers will grow gradually following a trend line from historic numbers so that the FY2015, FY2020, and FY2025 T/TT faculty FTE members are projected to be 1,820 FTE, 1,850 FTE, and 1,900 FTE, respectively. The other scenario assumes no growth in faculty numbers (i.e., there is only replacement of faculty who leave the University) and that the number of faculty is constant from FY2012 through FY2025 at about 1,820 T/TT faculty FTE. These assumptions are also reflected in Table 2.

Table 2. Tenured and Tenure Track FTE Faculty: Actual and Targets

	Actual FY2008	Actual FY2009	Actual FY2012	Target FY2015	Target FY2020	Target FY2025
Growth	1,757.0	1,785.7	1,820.5	1,820	1,850	1,900
Replacement	1,757.0	1,785.7	1,820.5	1,820	1,820	1,820

Source: UT Austin's Office of Information Management and Analysis followed by trend analysis

The University is in a period of limited budgets, and faculty replacement is the only faculty hiring taking place at this time. Whether this situation persists for the next ten years, it is one that is assumed to be possible. On the other hand, modest faculty hiring over the planning horizon is assumed to be more likely, and beginning after FY2015 the number of T/TT faculty FTEs is assumed to increase to 1,900 FTEs by FY2025, an increase of 80 FTEs total or roughly 8 FTEs per year, i.e., less than 1% growth in T/TT faculty FTEs per year. About $12 million in recurring funds will be needed to hire the 80 new faculty (at an average of $150,000 per new faculty) at all ranks between FY2013 and FY2025 to meet undergraduate and graduate teaching needs and to produce the increase in research expenditures.

Enhancing Productivity

Faculty productivity across campus may be enhanced in a number of ways: (a) involve a larger portion of the faculty in externally and internally funded research; (b) faculty currently doing externally funded research may be able to increase the amount of funding or move into research areas with funding; (c) take advantage of increases in external and internal funding sources in areas of faculty expertise; (d) conduct research more efficiently; (e) involve more graduate students and postdoctoral fellows to increase research capacity; (f) secure more modern equipment and thereby also increase research capacity; (g) secure new or renovated laboratory space to increase research capacity; (h) hire professionals who can help faculty prepare proposals; and (i) other ways. Elaboration on some of these points follows.

It has already been noted that research is conducted by T/TT faculty as well as others, and it should also be noted that not all faculty conduct externally funded research. In fact, in FY2011 approximately 46.4% of the T/TT faculty at the University had external research funding. While this proportion is expected to increase to more than 50% by FY2020 as faculty productivity continues to increase, the research awards obtained and research funding expended are spread over the faculty conducting externally funded research as well as those faculty whose scholarly activities do not normally involve obtaining such funding. The productivity of those faculty with external research funding is enhanced with the participation of postdoctoral fellows, i.e., individuals who have completed their doctoral work and received their degrees. These fellows typically assist the T/TT faculty in supervising master's and doctoral students as well as conducting research. Also, postdoctoral positions are opportunities for new doctoral graduates to obtain valuable experience in research and teaching, and increasingly new tenure-track faculty are expected to have some postdoctoral experience. In FY2012, there were 665 postdoctoral students at the University; this represents a 38% increase over FY2008, when there were 482 doctoral fellows.

A much larger group of individuals supporting faculty research are the master's and doctoral graduate students, who are seeking advanced degrees in which research is a major component, and undergraduates who wish to obtain experience working in a research laboratory. It is not uncommon at any given time for a faculty member to be supervising five to 10 graduate students in a modest research laboratory. Larger research laboratories will involve postdoctoral fellows to expand the capacity of graduate student (and undergraduates if involved) supervision and to assist with the preparation of proposals to secure research awards as well as to conduct the research that emanates from these awards. It was noted earlier that about 40% of the research proposals to funding sources are in fact funded. Thus, on the average, between two and three proposals must be prepared and submitted for funding for each proposal that is funded. While T/TT faculty most often write these proposals, those proposals can be facilitated greatly with the help of postdoctoral fellows, graduates students, and where the school/college provides them and the sources of the funding permit, the help of professional proposal preparers.

Two assumptions are made regarding external funding. First, federal funding will continue and will in fact increase to support critical national research needs in the areas of energy and health in particular, and many other areas in which the University faculty have expertise and strong research programs. State funding of research will not change significantly and will remain small compared to federal support, and corporate support will remain small as well. Second, health-related research will grow as the medical school is developed and begins operation; no estimates of medical school research funding are included in this Plan, however.

The primary target for research funding is the federal government, mainly the following departments:

National Institutes of Health (in the Department of Health and Human Services);
National Science Foundation;
Department of Energy;

Department of Housing and Urban Development;
Department of Education;
Department of Defense;
Department of the Interior; and
National Aeronautics and Space Administration.

Historically about 60% of the University's sponsored research annual expenditures have been derived from the federal government with 40% emanating from the state, private sector, foundations, and institutional sources. This percentage breakdown reflects the cumulative expectations of the various schools and colleges in the University. The percentage is expected to continue into future years as the prestige of the faculty continues to attract more funding and as the medical- and health-related portion of the research continues to increase.

For FY2011, research awards were almost evenly divided between federal and other sources. Funding from federal sources accounted for 49.6% of the total while 16.8% came from state sources, 11.8% from industry, 7.3% from foundations, 9.7% from non-profits, and 4.8% from other sources. The variance between the expenditures and funding percentages is attributable to expenditures reflecting solely those funds expended in a single year while award amounts may include commitments spanning multiple years.

University faculty productivity, measured as total annual research expenditures divided by T/TT faculty FTE, is substantial as shown in Table 3. In FY2003 the research expenditures were nearly $224,000 per T/TT faculty FTE. Ten years later in FY2012 that figure had increased to $318,800, a 42% increase. The anticipated increase in productivity from $318,800 per T/TT faculty FTE in FY2012 to nearly $460,000 per T/TT faculty FTE in FY2025 is 44.1%, very similar to the previous decade. It is anticipated that with the assumed increase in faculty numbers and with increases in research productivity, the amounts of research forecasted for FY2015, FY2020, and FY2025 as shown in Table 1 will be achieved.

Table 3. Tenured and Tenure Track FTE Faculty Productivity (Annual Research Expenditures per T/TT Faculty FTE): Actual and Targets

	Actual FY2008	Actual FY2009	Actual FY2012	Target FY2015	Target FY2020	Target FY2025
Growth	$300,000	$299,500	$318,800	$357,000	$407,000*	$460,000*

Source: UT Austin's Office of Information Management and Analysis followed by trend analysis
* Targets rounded

While consistent with the University's mission, each school or college within the University has its own mission, has different resources, offers a different educational focus, and will have a different research funding target and planned approach for achieving the target. Apart from the institutional and school and college financial targets, there is a general desire for the schools and colleges in the University conducting the largest amount of research to be ranked among the top five comparable entities nationally.

Research Priorities

Each school and college in the University determines its own research priorities over time, consistent with the University's mission and vision, and how it will focus its efforts in addressing those priorities. Even so, the schools and colleges share the objective of producing high-quality, innovative, impactful, and useful research for society. Whereas some schools and colleges such as the College of Fine Arts, which is heavily performance oriented, do not codify their research priorities, other schools and colleges specify their research priorities in order to focus the research efforts of their faculty members and capture synergies that may emerge. Example school and college research priorities include the following:

Cockrell School of Engineering
- Sustainable energy
- Engineering human health care

- Manufacturing and design innovation
- Sustainable and secure infrastructure
- Space and earth engineering

College of Pharmacy
- Oncology
- Chemical biology/drug delivery
- Translational research in drug delivery
- Infectious disease
- Neuropharmacology/addiction
- Neurobiology and development
- Toxicology and environmental disease

McCombs School of Business
- Energy management
- Creativity and innovation
- Business and public policy including health care management

College of Natural Sciences
- Neuroscience
- Materials science associated with energy
- Learning and memory
- Addiction research
- Drug development
- Human genetics/genomics
- Nanomaterials
- Systems and Computational Biology

School of Information
- Health informatics
- Data science
- Digital records management
- Intelligence/Security

Although research priorities vary among schools and colleges, there are common research priorities across the University, and where appropriate and feasible, the University fosters interdisciplinary research across schools and colleges to facilitate the achievement of interdisciplinary research goals. One example is **energy**. Energy is a natural focus of the University given the importance of petroleum and gas to the economy of the state. The Department of Petroleum and Geosystems Engineering in the Cockrell School of Engineering is the number one department of petroleum engineering in the country, and the Jackson School of Geology has world-class energy researchers. In addition to being a research priority in the Cockrell School of Engineering and the Jackson School of Geosciences, it is also a priority in the McCombs School of Business, the College of Natural Sciences, the LBJ School of Public Affairs, the School of Law, and the School of Architecture. This emphasis on energy in these seven schools and colleges is given institution-wide focus by the University-wide Energy Institute. Finally, there are numerous institutes and centers focused on a variety of aspects of energy in the University's schools and colleges. Examples include:

- Center for Energy and Environmental Resources;
- Energy Management and Innovation Center;
- Frontiers of Subsurface Energy Security;
- Gulf Coast Carbon Center;
- Center for Nano- and Molecular Science and Technology (houses the Energy Frontier Research Center);
- Center for Nanomanufacturing Systems for Mobile Computing and Mobile Energy Technologies;
- Center for Energy Economics;
- Center for International Energy and Environmental Policy;
- Center for Energy Security;
- Center for Electromechanics;
- Center for Electrochemistry;
- Center for Petroleum & Geosystems Engineering;
- Center for Sustainable Development; and
- Consortia such as the Pecan Street Project and the Advanced Energy Consortium.

Similarly, **health-related** research priorities exist in several schools and colleges, including the Cockrell School of Engineering, the College of Natural Sciences, the College of Pharmacy, the McCombs School of Business, the LBJ School of Public Affairs, the School of Nursing, the College of Communication, the College of Education, and the School of Social Work. These schools and colleges are already well-positioned for research supporting or in collaboration with the medical school for which funding was recently approved by voters in

Central Texas. Other University units that will be supportive of health-related research include:

- Applied Research Laboratories;
- Texas Advanced Computing Center;
- Institute for Computational Engineering and Sciences;
- Harry Ransom Humanities Research Center;
- Institute for Cellular and Molecular Biology;
- Dell Pediatric Research Institute;
- Center for Nano and Molecular Science and Technology; and
- Institute for Neuroscience.

Creating hubs of knowledge that leverage campus-wide expertise should simultaneously lead to major research advances as well as increased research funding. The Board of Regents has authorized $290 million over the next decade to fund medical education, and the University is bringing substantial assets to the project on the academic side. The Seton Healthcare Family has committed $250 million to build a teaching hospital and is funding and supporting the 213 medical residents in 13 specialties that are currently in Austin. The medical school (with a new Doctor of Medicine program) will be a tremendous asset to the University, bringing more top faculty and students, creating synergies with and enhancing the research capabilities of current faculty, and attracting grants through new research opportunities. In addition, the medical school will expand access to excellent primary and specialty care in Austin and Central Texas, and it will expand the health care workforce. It also will stimulate the economy on an ongoing basis, and the ripple effect of the medical school will be transformational for the region.

One measure of the quality and relevance of university-based research is the extent to which the research can be successfully commercialized to benefit society. The University's Office of Technology Commercialization (OTC) has the dual mission of protecting University intellectual property emanating from research conducted by its faculty and staff and the commercialization of that research when appropriate. The following metrics attest to the accomplishment of this mission. In the past five years OTC has:

- facilitated the spinout of 37 startup companies from the University;
- generated $82.7 million in licensing and royalty revenue for the University (in FY2012 it generated $20.3 million in revenue);
- managed the issuance of 326 patents; and
- executed 191 license and option agreements based on the research.

Two examples that illustrate the social and economic benefits of commercializing the research conducted at the University involve lithium-ion batteries and novel processes that enhance the delivery of the drug Oxycontin. One invention consists of materials technology for creating lithium-ion batteries. Lithium-ion batteries are a key ingredient in cell phones, tablets and laptop computers, and even hybrid engine vehicles. This invention was licensed to a large utility company. The other invention is a novel process for embedding the drug Oxycontin into a polymer so that it can only be released slowly as it goes through the stomach and the intestine. This makes Oxycontin tamper-resistant and has allowed pain sufferers to obtain an effective drug that had been taken off the market. It also has been licensed, with the University receiving royalties.

Allocation of Resources

In major research-oriented higher education institutions, the quality of the faculty, the specialized knowledge they teach, and the new knowledge they create determine the value or prestige of the institution. This value is measured in terms of the quality of the graduates it produces through its educational programs (some of whom become new faculty members in higher education) and the quality of the research conducted, results generated, and the value of that research to the health and welfare of the region, state, country, and indeed the world. For this value to be fully realized, the faculty must be supported by a highly committed and qualified staff, modern facilities, very talented

undergraduate and graduate students, and a highly efficient and functional administrative organization. Thus, the allocation of resources needs to focus heavily on the faculty, staff, and students, on administrative support, and on facilities.

President Powers noted in his September 16, 2009 State of the University address that it is a priority for the University "to be competitive with our peer institutions in the way we support our faculty and graduate students … overall salary and research support for our faculty and support for our graduate students [is] lagging far behind our competitors." He continued, "In the long run, we need to continue to focus on faculty salaries, but we need to do more than that. We need to have a fully funded sabbatical research leave program. We need to continue to add money to stipends for graduate students until we catch up with our competitors. We need to continue to add faculty to reduce our student-faculty ratio. And we need competitive salary raises for the staff so that we can recruit and retain the best talent." These concerns and needs are still challenges for the University, and President Powers in his 2012 State of the University Address spoke to the larger issues of defining the right mission, increasing quality, and increasing productivity in the face of a challenging funding environment.

During the next few years the University will likely continue to experience budget shortfalls, and the funding that will enable the University to continue to move ahead must come from existing resources. Annually the deans engage in the process of reviewing budgets and priorities within the colleges, schools, and departments and making decisions about which programs can be deemphasized to free-up funds needed for programs that need to be enhanced. Allocation of resources at the college and school level will eventually reflect those priorities. The same is happening in the administration at the vice president portfolio level.

Based on the historical relationships between research funds awarded, research expenditures, ancillary research-support funding required, and faculty productivity, the University will need to invest in additional research facilities, faculty, and infrastructure in order to meet its target of $873.1 million in research expenditures in 2025. In addition, the University will need to hire both experienced grant-getting senior faculty members and resourceful junior faculty members and recruit outstanding graduate students to achieve its targeted goals. Toward this end, the University is currently conserving resources to be able to aggressively attract and retain the most productive researchers. Increases in the number of research staff members and research-support resources will need to occur commensurately with the increases in the targeted goals.

Until recent years, funds had been invested in hiring new faculty over and above replacement faculty. For eight years starting in AY2000-01, some 30 new faculty positions had been funded each year. This initiative has been suspended because funding for it has become limited. Funds had also been targeted for salary increases, faculty travel, salary compression, and other inequities as the University had sought to hire and retain faculty in a competitive environment, but this funding too is limited. Without significant budget increases, the number of faculty estimated to be needed for 2025 cannot be reached nor can the targeted research expenditures.

For any new faculty member to be accommodated on campus, additional support services and infrastructure are needed. Later in this Plan a description of the facilities under construction or about to be under construction is given. These facilities will provide space for current needs as well as those anticipated for some time in the future. Nine buildings completed in the last three years cost $710.4 million whereas five buildings currently under construction or about to be built have an estimated cost of $642 million. In addition to these buildings, $35 million was committed to construction of the Hobby-Eberly Telescope at the University's astronomy facility at Ft. Davis, TX.

In addition to new construction, renovation of existing facilities is ongoing. Recently

completed, underway, or planned renovations total $55 million. It will be shown later that renovation costs for new Science, Technology, Engineering, and Mathematics (STEM) faculty hires alone will be approximately $5.5 million per year for the foreseeable future.

Campus-wide, interdisciplinary research centers of excellence like those cited in the previous section should offer a mechanism for reducing research-related expenses (by, for instance, sharing overhead) while coordinating fund-raising and fostering joint programmatic research. To the extent that such centers can utilize the same laboratories or share other physical facilities and centralized administrative support is available, resources may be conserved. Likewise, changes in the research infrastructure should support efforts to achieve targeted goals.

Despite the diversity of the schools and colleges, there are several recurring research-related themes across the University. Virtually all schools and colleges:

- Cite the need for their faculty members to broaden their research by collaborating more frequently and especially working across disciplines, not only within their schools and colleges, but with colleagues across the University as well as outside of the University;
- Seek ways to have their faculty members become more research-entrepreneurial (in both an academic and nonacademic sense);
- Have a desire to internationalize research efforts at the University;
- Are concerned with budgetary constraints as they attempt to hire new faculty members who are research-active and who will strive to obtain research support from beyond the University;
- Utilize different strategies regarding the level (i.e., assistant professor, associate professor, or full professor) of faculty members being recruited given different needs to replace retiring faculty members or provide leadership and fund-raising capabilities of new hires;
- Have similar concerns regarding sufficient laboratory space available to conduct high-quality research at the University;
- Are studying ways to focus the research interests of faculty members to fewer domains wherein stronger competencies can be effectively and efficiently leveraged with some developing specific strategies and tactics to reduce the number of domain areas in which faculty members conduct research;
- Have mechanisms for integrating graduate and undergraduate students into the process of research such as pairing students and faculty member researchers either formally through advising programs or informally through mentoring programs or through pairing undergraduate and graduate students in ways that are beneficial to both parties;
- Possess programs to reward faculty members and students for research accomplishments, acknowledging that the magnitude and nature of the rewards differ substantially across schools and colleges, with some schools and colleges offering fellowships whereas others use monetary awards or release time;
- Are committed to recruiting students and faculty members who are likely to have successful research careers, taking into account the need for diversity in both cohorts;
- Have or are developing plans to actively promote and increase the amount of high quality and impactful research conducted by faculty members and especially improve the research productivity of senior faculty members;
- Increasingly recognize the need to establish entities such as centers or institutes of excellence wherein researchers with similar interests can create research synergies and the entities can serve as funding loci; and

- Use external information (e.g., citation reports, media rankings) consistently in self-evaluations, determining research strategies, and allocating resources.

Student Participation

Student participation in research activities is imperative if the University is to achieve its targeted goals for research. Virtually every school and college in the University has devised programs to involve graduate students in research. Indeed, many schools and colleges require that graduate students actively participate in research projects related to their discipline or course of study, and many require that graduate students enroll in prescribed research courses. These requirements are hallmarks of a tier-one research university. Moreover, there are numerous research fellowships for graduate students as well as employment opportunities that allow graduate students to serve as research assistants or research interns. A majority of the research grants obtained by University researchers include opportunities for graduate student involvement, often on a paid basis.

Several schools and colleges in the University have created formal research opportunities for undergraduate students as well. The McCombs School of Business introduced its Undergraduate Research Assistant Program to encourage undergraduate students to become involved in research; students in the program are supported financially for 10 hours a week to engage in faculty-initiated research projects. The College of Natural Sciences offers its Freshman Research Initiative Program, whereby undergraduate students become involved in research during their first semester on campus. Students participating in this program are subsequently eligible for Undergraduate Research Fellowships. The College of Communication recently created a Student Enrichment Fund to support graduate and undergraduate students who conduct research in conjunction with faculty members, whereas the Jackson School of Geosciences is designing the Jackson School Scholars Program to encourage undergraduate students to participate in research activities. The College of Liberal Arts developed the Undergraduate Research Apprenticeship Program to offer a structured approach for undergraduate students to become engaged in research being conducted by faculty members. The College also offers a summer internship program - the Summer Undergraduate Research Experience in Psychology - that provides hands-on training in research.

The School of Undergraduate Studies (UGS) houses the Office of Undergraduate Research (OUR), which aims to foster undergraduate participation in research in all the disciplines. The primary objectives of the OUR are to:

- Raise visibility of undergraduate research and creative activity efforts across campus so that an increased number of students and faculty can collaborate on research projects;
- Connect undergraduates with research resources and opportunities available in the colleges and schools in order to enhance their academic experience;
- Coordinate outreach to first-generation and minority students to increase participation in research and creative activity; and
- Offer two course numbers students may use to receive credit for research experiences with University faculty: UGS 310 Undergraduate Research Experience (lower division course) and UGS 320 Undergraduate Research Experience (upper division course).

UGS is also helping all undergraduate schools and colleges implement the Independent Inquiry Flag into the undergraduate curriculum, which will require undergraduate students in every major to take at least one research-related course. This requirement is expected to be included in all degree plans in the 2014-16 Undergraduate Catalog.

Additionally, the Vice President for Research Office coordinates the University's Undergraduate Research Fellowship program. This program awards up to $1,000 for independent research projects conducted by undergraduate students. The program is

competitive, with one competition held in the fall semester and one in the spring semester. Undergraduate students also have the opportunity to publish the results of their research (whether or not funded or supervised) in the *Undergraduate Research Journal*, a student-edited, multidisciplinary journal at the University.

III. PLAN TO IMPROVE UNDERGRADUATE EDUCATION

Strengthening and Improving Undergraduate Education Quality

The University has excellent undergraduate programs that are in great demand by high school graduates who rank in the top percentages of their classes, and the number of students who want to attend the University is far greater than the University can accommodate. The University is attempting to keep its undergraduate enrollment at about 37,000 students, a level that it can just accommodate with the financial, human, and facilities resources available. Student success in the programs as measured by graduation rates, passage of nationally normed exams, and accommodation rates of employment, and early measures of student learning clearly indicate that students are receiving an excellent education at the undergraduate level. A high level of excellence in the academic and research programs in which these students are involved is indicated by the rankings of the University as an institution as well as those of individual schools, colleges, and departments. However the student-faculty ratio of about 18:1 for Fall 2010 (most recent IPEDS data available) is higher than desired and places us 13th out of 20 in our expanded comparison peer group (see Appendix for list of institutions in group), which is composed of premier public and private institutions. Therefore, the University desires to hire additional faculty members to reduce this ratio to 16:1, thereby increasing the quality of undergraduate instruction, but budget limitations may delay this indefinitely. In addition, the University has established a goal of raising its undergraduate four-year graduation rate to at least 70% by 2017.

The undergraduate curriculum serves as the best single indicator of the quality of undergraduate education. The University recently updated its Basic Education Requirements to strengthen the core curriculum and align it with the requirements of the Texas Higher Education Coordinating Board. Final implementation of the revised core curriculum appeared in the 2010-12 Undergraduate Catalog. In addition, based on recommendations from the University's 2005 Task Force on Curricular Reform for updating and strengthening undergraduate education, additional requirements for coursework in writing, quantitative reasoning, independent inquiry, ethics and leadership, cultural diversity, and global cultures are being added in every degree program. These requirements were partially implemented in the 2010-12 Undergraduate Catalog with further implementation in the 2012-14 Undergraduate Catalog. These requirements are expected to be fully implemented in the 2014-16 Undergraduate Catalog. Within the next eight years all graduating students will be expected to fulfill these requirements.

An enhancement to the quality of undergraduate education is the development and expansion of interdisciplinary majors and "minors." These offerings provide students with opportunities to obtain coursework and experiences within a standard baccalaureate degree program in cutting-edge topics and emerging disciplines that cross traditional academic boundaries. For example, the University recently approved interdisciplinary bachelor's degrees in Environmental Science, International Relations and Global Studies, and Public Health and has eleven interdisciplinary Bridging Discipline certificate programs. Since the inception of the Bridging Disciplines program in 2002, some 530 students have completed one of the programs. Over the next 10 years, this total is expected to more than double.

In addition to efforts to improve the Basic Education Requirements through curricular changes, the University is seeking to enhance the quality of its Basic Education Requirements

and undergraduate programs through outcomes-based assessment activities that are also required for accreditation by the Southern Association of Colleges and Schools Commission on Colleges. To accomplish this, the faculty first identified Program Educational Objectives, what graduates of the University are expected to be able to do several years after graduation with a particular degree (e.g., be educated, responsible citizens, be employed in professional fields, etc.). The faculty then identified Program Outcomes, that is, the knowledge, skills, and abilities, behaviors, and attitudes that students are expected to have at the time of graduation that enable them to achieve the Program Educational Objectives. Following this, the faculty design the curricula that enable students to acquire the Program Outcomes. Assessment activities document how well students have achieved the Program Outcomes at the time of graduation or before and how well graduates of the program have achieved the Program Educational Objectives several years after graduation. Where students have not achieved Outcomes or Objectives and deficiencies in a curriculum or teaching effectiveness can be shown to be a cause, improvements in either or both are made. Because this is a continuous improvement process, it is expected that improvements in program curricula as well as teaching effectiveness will continue over time.

Several specific efforts are also underway to increase the quality of teaching in undergraduate courses. The Academy of Distinguished Teachers has created a new organization, the Society for Teaching Excellence, to recognize and support new faculty by assisting them in acquiring effective teaching practices as they adjust to their positions at the University. The College of Natural Sciences is engaged in promoting student-centered active learning and project-based instruction through a monthly series of Discovery Learning workshops and seminars. Many departments, colleges, and schools, as well as centralized University units including the Provost's Office and the Center for Teaching and Learning, support increasing and innovative use of instructional technology. These efforts include workshops, innovation grants, award programs, and the services of support staff. In the next ten years the use of appropriate instructional technology will continue to increase substantially. The recently announced decision that the University will join the EdX Consortium to develop massive open online courses (MOOCs) will also stimulate growth of enhanced technology-based teaching and learning.

The 81st Texas Legislature (Senate Bill 175) modified the "Top 10 Percent Law," and that change helped the University make additional progress on diversity. The bill has had the effect of limiting automatic admission and at the same time enabled the University to consider factors other than class rank, including ethnicity, for a larger number of applicants. Furthermore, the proportion of tuition increases set aside for financial aid has been used to increase the size of the Longhorn Scholars Program, which provides scholarships to students from historically underrepresented high schools. These scholarships are an excellent tool for enhancing diversity at the University.

The University has established targets for increasing diversity of the undergraduate program in its "Closing the Gaps" projections for bachelor's degrees awarded. Increases in degrees awarded by ethnic group anticipated over the 2010 to 2020 period are presented in Table 4; expected increases in baccalaureate degrees awarded to African American and Hispanic graduates reflect the change in the demographics of the state and the desire for a more diverse student population on campus.

In addition to planning to admit a more diverse group of undergraduate students, the University is increasing support for entering students from traditionally underrepresented high schools in order to improve retention, academic success, and graduation. These efforts include increased tutoring, counseling and mentoring, formation of small learning communities, and guidance toward involvement with student organizations and other campus activities that enhance student engagement and success.

Table 4. Baccalaureate Degrees Awarded by Ethnic Group: Awarded and "Closing the Gaps" Target.

	Actual FY 2010	Actual FY 2011	Actual FY2012	Target FY 2015	Target FY 2020	Target FY 2025
White Only	5,128	4,999	4,753	4,870	4,824	TBD
Hispanic (any combination)	1,483	1,543	1,616	1,654	1,638	TBD
Black Total (excl. Hispanic)	380	377	392	400	396	TBD
Asian only	1593	1,640	1,646			
American Indian only	37	55	40			
Hawaiian/Pac. Islander only	0	1	0			
2 or more (excl. Hisp./Black)	2	27	36			
Foreign	313	365	334			
Unknown	16	20	43			
Total	8,952	9,027	8,860	9,086*	8,781*	8,948*

Source: UT Austin's Office of Information Management and Analysis and UT Austin's 2012 Closing the Gaps targets.
Note: *Based on UT Austin's 2012 Goal Setting report to UT System.

These efforts take time to develop, to be fully appreciated by various constituencies, and to manifest their outcomes. Over the next ten years this Plan is intended to have the entering undergraduate student body demographics more closely resemble those of the general population of that age group, to reduce by nearly half the attrition among at risk students, and to increase the percentage of at risk students who graduate within 6 years of first enrolling.

Increasing the Number of Baccalaureate Degrees

The University has established a goal of enrollment management that sustains a fairly constant enrollment, based upon the capacity of facilities, faculty, staff, and instructional resources, in large part to maintain the current high quality of undergraduate education. Therefore, little increase in the number of baccalaureate degrees awarded is anticipated over the next ten years. However some increases are projected based on efforts to reduce attrition and improve graduation rates and to reduce the average time to graduation. Numerous support systems, including creating small learning communities, improved first-year experiences, and intensive counseling, are being created and strengthened to reduce attrition, which has been higher than desired, particularly after the second year. The University has targeted an increase in total number of bachelor's degrees awarded. As shown in Table 5, however, there are fluctuations in degrees awarded projected for 2015, 2020, and 2025 which are due to increases primarily anticipated to result from increased retention and a temporary increase due to the higher than expected number of undergraduate students admitted (about 9,000 as a result of recent efforts to improve undergraduate enrollment management) in FY2013.

Table 5. Baccalaureate Degrees Awarded Total: Awarded and "Closing the Gaps" Targets.

	Actual FY2010	Actual FY2011	Actual FY2012	Target FY2015	Target FY2020	Target FY2025
UT Austin	8,952	9,027	8,860	9,086	8,781	8,948

Source: UT Austin's Office of Information Management and Analysis and UT Austin's 2012 Goal Setting reports to UT System.

The School of Undergraduate Studies houses the Center for Strategic Advising and Career Counseling, which features programs, activities, and trained academic advisers who help undecided students, as well as students not admitted into their program of choice, explore career and major options efficiently and effectively. These efforts are designed to reduce the time required (in academic years and semesters) for such students to select and complete a degree program that will allow them

to pursue a career path they desire. Actual and target graduation rates are given in Table 6.

Table 6. Four-, Five-, and Six-year Graduation Rates (as %): Actual and Targets

	Actual FY2000	Actual FY2005	Actual FY2010	Target FY2015	Target FY2020	Target FY2025
Four-Year	38.5	46.9	50.6	55.0*	70.0*	70.0*
Five-Year	63.4	70.8	76.5	75.1**	75.1**	77.0**
Six-Year	68.7	75.1	80.1	83.0*	85.0*	88.0*

Source: UT Austin's Office of Information Management and Analysis and UT Austin's 2012 Closing the Gaps targets.
Note: * Based on UT Austin's 2012 Goal Setting report to UT System (October 2012)
** Based on statistical model developed by UT Austin's Office of Information Management and Analysis's research group; First-time-in-college enrollment held constant at 7,100 after Fall 2012.

Within these numbers, the University intends to increase the number of students who graduate with degrees in STEM areas. The Task Force on Enrollment Strategy has provided recommendations for ways to increase graduation rates. It is anticipated that most of the increase could result from efforts to reduce the greater than 50% attrition for students first enrolled in the College of Natural Sciences. The majority of students who presently enter this college but do not complete degrees in one of its programs transfer to other colleges and schools in the University. The College of Natural Sciences is embarking on a plan to improve the quality of the first two years for its students, including offering more active and engaging courses, expanding first year research opportunities, and developing increased student support structures such as small learning communities, First Year Interest Groups, and strategic faculty teaching assignments. In addition, the Department of Physics has committed to an aggressive recruitment and support effort to increase the number of students earning a degree in physics. A major goal of these efforts is to reduce attrition and thereby increase the percentage (and number) of baccalaureate degrees completed in STEM areas. The University has established targets for increases in degree production in STEM areas for 2010, 2015, and 2020 in the most recent "Closing the Gaps" report (see Table 7).

Table 7. Bachelor's Degrees in STEM Fields: Awarded and Targets

	Actual 2010	Actual 2011	Actual 2012	Target 2015	Target 2020	Target 2025
Engineering	974	1,040	1,074	1,101	1,091	TBD
Computer Science	162	186	191	200	198	TBD
Mathematics	163	196	190	191	189	TBD
Physical Science	174	212	226	232	230	TBD
Total	1,473	1,634	1681	1,724	1,708	TBD

Source: UT Austin's Office of Information Management and Analysis and UT Austin's 2012 Closing the Gaps targets.
Note: TBD = To Be Determined

IV. PLAN FOR DOCTORAL PROGRAMS

The plan for doctoral programs includes a discussion of existing programs and new programs.

Existing Doctoral Programs

Summary of Existing Programs

The Graduate School administers almost 230 master's, doctoral, and professional degree programs in fourteen colleges and schools, namely Liberal Arts, Natural Sciences,

Communication, Business, Education, Fine Arts, Engineering, Geosciences, Architecture, Nursing, Pharmacy, Social Work, Information, and Public Affairs. A general assessment of the University's graduate programs is addressed in various points throughout this document, and although there is room for improvement, the University's graduate programs rank highly compared to peer institutions. All doctoral and master's degree programs undergo review every seven years. These reviews begin with a rigorous self-study and include review committees composed of both internal and external faculty members. The strengths and weaknesses of programs are evaluated with the goal of improving quality to meet near- and long-term goals of the programs and the University.

The University, through the schools and colleges with the support of the Graduate School, strives to recruit and retain outstanding faculty members and graduate students as the primary way to maintain and achieve excellence in doctoral programs. President Powers set as a major goal for the University to become the best public university in the nation, and an outstanding Graduate School is central to that goal. A university's overall ranking is largely based on the strength of its doctoral programs and research programs. Maintaining and developing top-ranked graduate programs require that the University attract and retain not only the best faculty, but also the best students. A major goal of the Graduate School is to enhance the quality of graduate education at the University by developing and strengthening its faculty and student body.

Quality Control

Low producing programs A small number of doctoral programs at the University have been classified as low-producing by the Texas Higher Education Coordinating Board in recent years. These include the PhD degree programs in Portuguese, Latin American Studies, Communication Sciences and Disorders, and Community and Regional Planning. All of these programs have been granted temporary exemptions by the Coordinating Board. While these doctoral programs traditionally do not attract large numbers of students, there is minimal cost to the institution to retain them, and they do address a need in their respective areas. These programs of study are closely aligned with other degree programs, and faculty members involved in these programs typically serve on multiple Graduate Studies Committees. Following the identification of the PhD program in Portuguese as a low producing program in 2012, the University initiated the consolidation of the Master's and PhD degree programs in Spanish and in Portuguese. Effective fall of 2013, the Department of Spanish and Portuguese will offer a Master of Arts and a Doctor of Philosophy with a major in "Iberian and Latin American Languages and Cultures."

Other measures In recent years, the College of Liberal Arts and the School of Architecture have taken measures to be more restrictive in admitting students to certain doctoral programs in an effort to improve the respective quality of the graduate programs in these colleges. Programs that are more selective in the admissions process will improve the overall caliber of students and create an educational environment in which faculty and students will excel. Concurrent with enrollment restrictions, the College of Education has instituted a policy restricting the number of dissertations that a faculty member is allowed to supervise simultaneously. The College of Liberal Arts has limited enrollment in order to admit only students who can be fully supported with multi-year financial packages.

Quality Enhancement

The University has targeted resources to enhance certain graduate programs such as History (which received $1.3 million), English ($1.0 million over four years), and the Center for Mexican American Studies ($0.8 million over four years) to raise their national profile and ranking. Available resources are being used to hire top-tier faculty members and provide higher levels of financial support to graduate students by raising stipends and fellowships. There is much competition with the University's national peers to recruit top-tier faculty members and

graduate students, but by concentrating on selected graduate programs, the University is actively working to move programs currently ranked in the top 10-15 to national prominence in the top 10.

The University seeks to enhance the quality of its graduate programs through outcomes-based assessment activities similar to those for undergraduate programs. This approach is also required for accreditation by the Southern Association of Colleges and Schools Commission on Colleges and many of the professional schools on campus. Just as for undergraduate programs, the faculty identified Program Educational Objectives, Program Outcomes that enable the Program Educational Objectives to be achieved, curricula that enable students to acquire the Program Outcomes, an assessment plan to document how well students have achieved the Program Outcomes at the time of graduation or before and how well graduates of the program have achieved the Program Educational Objectives several years after graduation. Where students have not achieved Outcomes or Objectives and deficiencies in the curriculum or teaching effectiveness can be shown to be a cause, improvements in either or both are made.

The University is also engaged in the mandatory external review of all its graduate programs on the seven-year cycle required by the Texas Higher Education Coordinating Board. In addition, the UT System has mandated that each academic component improve its advising of PhD students in their graduate programs by implementing a "Milestones Agreement" form. UT-Austin is developing an online advising tool to identify the specific degree requirements for all its PhD programs, grouped into sections marked by milestones along with a timeline estimate as to when each milestone should be met. This information should help students understand what is required for completing the degree and the timeline for making satisfactory progress to do so. In addition, the University is launching a new career services center to help provide information on career options to students, and has participated in the "Versatile PhD" program to assist students.

Because this is a continuous improvement process, it is expected that improvements in program curricula as well as teaching effectiveness will continue over time.

Comparisons with National Peers

The Graduate School is constantly benchmarking the University's graduate programs with its national peers. Table 8 provides data for the University and several peer institutions, as ranked by *U.S. News and World Report* in the 2013 Report. The numbers in the table indicate the number of programs that are ranked in the category indicated. For example, UT Austin has three programs ranked #1 and 40 programs ranked in the top 10 programs nationally. Berkeley, on the other hand, has 20 programs ranked #1, 19 ranked #2, and 118 ranked in the top 10. These rankings are for all graduate programs – master's and doctoral combined – and the word "program" is used by *U.S. News and World Report* to refer to specific areas of study that may, in some cases, be subareas or concentrations of a graduate program at the University.

Table 8. Rankings of Graduate Programs

Institution	#1 Progr	#2 Progr	Top 10 Progr	Top 11-25 Progr	Top 25 Progr
Univ. of Texas at Austin	3	0	40	51	91
Univ. of California - Berkeley	20	19	118	10	128
Univ. of Michigan at Ann Arbor	10	5	96	35	131
Univ. of Wisconsin - Madison	5	11	56	52	108
Univ. of Illinois - Champaign/Urbana	3	3	40	23	63
Univ. of North Carolina - Chapel Hill	3	6	38	43	81

Source: U.S. News and World Report, 2013 Report

With 40 programs in the top 10 nationally, the University is among the premier public universities in the United States. However, there is still much work to be done to compete with the number of top-ranked programs at peer institutions such as Berkeley (118), Michigan (96), and Wisconsin (56). The University's rankings are particularly impressive, given that only 13% of the University's operating budget is funded by the state. State appropriations per student are significantly higher at peer institutions such as Berkeley and North Carolina than at the University, all of which receive at least 62% more state funding per student than does the University.

The University's Graduate School has established a goal to increase the number of graduate programs in the top 10 nationally by providing additional graduate student support to programs ranked just beyond the top 10. Programs currently ranked 11 through 15 include Business, Education, Biomedical Engineering, Electrical Engineering, Mechanical Engineering, Law, Chemistry, Psychology, Studio Art, History, Information Studies, Mathematics, Physics, Public Affairs, and Sociology. Increased student support will be used to enhance the recruitment and retention of the best students in these areas. In addition to targeting these areas to bring them into the top 10, programs already in the top 10 will continue to require significant resources to ensure that they retain their top 10 ranking.

The University also participates in the National Research Council's (NRC) assessment of research doctoral programs in the United States. The NRC survey collects and assesses data regarding the quality and characteristics of the nation's research-doctoral programs. In late 2010 the NRC released its third assessment of research doctorate programs based on data collected in 2006 for 20 variables that reflect key characteristics of research doctoral programs in more than 5,000 doctoral programs at 212 universities, including the University of Texas at Austin, in the United States.

Unlike previously published rankings, "Data-Based Assessment of Research-Doctorate Programs in the United States" is a data-intensive and complex approach to assessing research doctoral programs resulting in "ranges of rankings" for each program rather than a single number. More than half of the University's research doctoral programs were included in the study, but the study did not include any professional programs or programs that were not represented by at least 25 similar programs across the country. The last report of the NRC was released in 1995, but it was largely a reputational study and did not include the quantitative and qualitative measures used in the latest appraisal.

A total of 57 of the University's 93 doctoral programs are included in the more recent study. While questions have been raised about the validity of the methods used in the new study, the data provide benchmarking information to the University and give prospective graduate students another source of information when selecting the program to best meet their individual needs.

New Doctoral Programs

Areas of Emphasis

As a comprehensive Tier 1 research university, The University of Texas at Austin has a full array of graduate programs offering 133 master's degrees, 93 doctoral degrees, and 3 professional degrees. This array of graduate programs reflects the development over time of well-established fields of study and also the creation of new interdisciplinary programs through which some of the most exciting research, scholarly activity, and learning is taking place. Proposals for new areas of study come from the faculty in the colleges and schools to the Graduate School for consideration. In recent years, new doctoral programs have been developed in areas that already had existing courses and faculty and that were natural extensions of existing programmatic activity. These areas include Religious Studies, African and African Diaspora Studies, and Statistics. A new PhD program in Translational Science represents the first multi-institutional joint program of its kind within the

UT System. (Note that proposals for new areas of study are initiated by the faculty, not the Graduate School or the central administration of the University.)

Assessment

In compliance with Coordinating Board rules, annual progress reports will be filed for each of the new doctoral programs listed above for the first five years of implementation. The University is also engaged in the mandatory external review of all its graduate programs on the seven-year cycle required by the Texas Higher Education Coordinating Board. The first of these reviews was conducted during the Fall 2012 semester. Each program review includes an internal self-study and an external review conducted by outside experts. Many programs undergo additional external reviews for continuous quality improvement, and some programs undergo reviews in compliance with external accrediting agencies.

Regional Impact

As noted above, the University is a comprehensive Tier I research university and already offers a full array of graduate programs.

V. PLAN FOR FACULTY AND STUDENT DEVELOPMENT

Faculty research

In general, high-quality faculty and graduate students, reasonable teaching loads, excellent research facilities, and research-oriented colleagues are necessary ingredients for producing research of the first class. Consequently, numerous programs, activities, and policies have been enacted to obtain these ingredients at the University, including the recruiting of outstanding graduate students and faculty members and the formal recognition of innovative research.

This first-class research conducted at UT Austin is also beneficial to the economy of the State and significantly so. In FY2012 UT Austin spent just over $2 billion on faculty and staff salaries, benefits, operations, and construction. Student spending was another $0.8 billion, for a total of about $2.8 billion. Including the indirect spending throughout the state's economy that occurred as a result of that direct spending, a total of $6.4 billion in statewide economic impact is attributable to the economic activity on the Austin campus. With FY2012 State appropriations for the University at $297 million, it was estimated that for every State appropriated dollar invested, the University generated more than $21 in total spending for the State's economy – a 21:1 ratio.

Furthermore, the University is a magnet attracting out-of-state research funding, primarily federal funding, as well as non-Texas-resident students. It is estimated that for every State appropriated dollar to UT Austin, some $6 in economic activity is created – a 6:1 ratio. For the out-of-state research funds that the University attracted in FY2012, it is estimated that an additional 11,000 new jobs were created, directly or indirectly, on campus and across the state.

Research and scholarly activities of the first class are inextricably linked to teaching of the first class. Faculty who conduct research and scholarly activities take their findings into the classroom where their students learn about topics that are more up-to-date than what they read in the textbook for the class and they take away from the classroom the excitement the faculty convey. Many faculty use teaching/ learning methods developed and shared here at the University, methods used in the Signature Courses and developed by faculty in the Course Transformation Project which is designed to improve student success in large, lower division gateway courses by incorporating innovative approaches to instruction and learning.

In addition to the University's Marine Science Institute in Port Aransas, the McDonald Observatory in West Texas, the Pickle Research Campus in north Austin, and the Bee Cave research facility in west Austin, there are more than 100 organized research units as well as dozens of school- or college-specific research centers. Organized research units range from

internationally acclaimed institutes such as the Institute for Computational Engineering and Sciences, the Long Institute for Latin American Studies, the IC^2 Institute, and the Drug Dynamics Institute, to the Bureau of Economic Geology and the Center for Systems and Synthetic Biology. Recently, the Nanomanufacturing Systems for Mobile Computing and Mobile Energy Technologies (to be known as NASCENT) was created, UT's first highly competitive National Science Foundation-funded Engineering Research Center (ERC). As of November 2011, there were only 17 active ERCs across the United States. The institutes, bureaus, and centers serve as catalysts to focus research on a particular topic or domain, facilitate interactions among researchers, and emphasize collaborative research to maximize research productivity and impact.

The University supports limited research leaves for T/TT faculty through its Faculty Research Assignment and Summer Research Assignment programs, and a Faculty Travel Grant program to enable faculty to attend conferences to present their scholarly work and learn of the most recent findings of others.

Moreover, besides research institutes, bureaus, and centers, each school and college in the University has its own, sometimes unique, plan to assist faculty in becoming more productive, more innovative, and more effective in conducting research. Most have research or development funds that faculty members can draw upon to support data collection and analysis, travel to conferences to present research, or hire research assistants. Accessing these funds only requires completing a request form. Many schools and colleges also have competitive research funds that faculty members can apply for; these funds are sometimes large enough to support a non-teaching semester or a summer stipend (the Dean's Fellows Program or College Research Fellowship Program in many schools and colleges is an example of this type of funding to free-up faculty time for research through semester-long leaves).

Schools and colleges have programs to assist junior faculty members in obtaining external funding for their research. Grant-writing workshops are often held to help junior faculty members learn about sources of research funds and how to navigate grant and fellowship application processes. Formal mentoring programs wherein a senior faculty member mentors a particular junior faculty member for up to five years represent an attempt to improve research productivity. Several schools and colleges have specialized staff members dedicated to identifying grant opportunities and assisting junior faculty members when they develop research proposals and apply for research grants. A majority of the schools and colleges provide incentives for innovative and impactful research that include financial awards and public recognition.

At the University level several programs are designed to increase faculty research productivity and innovativeness. The Visiting Scholar Program, whereby scholars from other institutions can spend up to a year at the University conducting collaborative research, is an attempt to stimulate innovative research by bringing fresh ideas to the University. The Office of Sponsored Projects has implemented numerous protocols and policies to facilitate the application process for external funding and administration of grants received. The Vice President for Research Office coordinates several internal grant programs to cover unanticipated research costs or to "seed" initial research efforts that have not obtained external funding. This office also disseminates a weekly listing of research events, activities, seminars, and workshops to inform the research community of opportunities to interact with and learn from campus visitors and colleagues across campus. Changes have been made, and are being made, to the basic infrastructure of the University to provide researchers with up-to-date technologies and reduce the amount of time and effort spent on nonproductive, non-research activities. Thus, improvements have been made in the library system (such as easier online access to millions of documents), information technologies (such as more and faster computer and Internet connectivity), and purchasing procedures (such as simplifying the manner in which research supplies are purchased, including

the construction of a 24-hour supply "store" for research supplies).

The University Development Office works closely with private donors and the university community to cultivate philanthropic support for the University. Gifts from individuals, corporations, foundations, and other entities help attract the best faculty and graduate students, improve campus facilities, enrich the educational experience for undergraduates, expand services to the community and state, and much more. Front-line fundraising staff in the Development Office work hand-in-hand with development personnel in colleges and schools to identify prospects, cultivate relationships, and solicit gifts. Other staff in this central office work in teams to provide centralized services for campus-wide fundraising efforts, including such functions as gift processing, prospect research and clearance, endowment creation and compliance, creative services (brochures, invitations, etc.), special events management, annual fund operations, and estate planning.

The Development Office helps advance the research mission of the University in various ways. Foundation relations staff work with faculty and program leaders to develop and submit proposals for funding of research, facilities, curriculum development, and related priorities, providing assistance with writing, editing, and supporting materials. Using the Foundation Directory Online and other tools, they search for prospective corporate and foundation funding partners for a myriad of projects. In cases where proposals are "by invitation only," development staff may write to funders to make the case that the University should be on their invitation list.

To encourage corporate funding for research, the Development Office facilitates the processing of "gifts to research" in cases where companies prefer to provide unrestricted support for a particular area of study, rather than funding a scope-of-work project. The Office also plays an important role in stewarding corporate relationships by hosting executive visits, which sometimes lay the groundwork for pursuit of research partnerships. Toward the goal of developing new corporate partners, the Development Office is currently hiring a development researcher who will focus specifically on understanding corporate research, corporate giving, and emerging trends in industry.

Staff in the Development Office (particularly the corporate and foundation relations team) interacts continuously with personnel in research administration areas of the University – primarily, the Office of Sponsored Projects and the Office of Industry Engagement. These Development/Research relationships have been cultivated and strengthened in recent years and form the basis for efficient handling of proposals and awards supporting research and other priorities at the University. Development shares the cost (with the Office of Industry Engagement) of the university's membership in the University-Industry Demonstration Partnership (UIDP), and a development representative serves on the university's research-focused Objectivity in Research Committee.

Improving access to information is another way in which the Development Office is working with campus offices to better support the research development efforts within colleges and schools. Looking to the future, the Development Office is creating a new data management resource for corporate and foundation relations to facilitate sharing of information campus-wide and provide a broad view of the complex interrelationships among individuals, foundations, and corporations. A long-term goal is to connect this tool with other data resources across campus, including the Research Management System in OSP, to identify broad areas of research activity at the University. Being able to highlight the University's research strengths based on collective data will be helpful in leveraging increased funding from public and private sources.

Faculty recognition

Faculty members are recognized for their teaching and research accomplishments by various means both within the University and

outside. Within the University recognition takes the form of teaching awards such as the Academy of Distinguished Teachers, the Donald D. Harrington Faculty Fellow Program, and a number of University-wide teaching awards as well as an even larger number of school/college awards. Faculty members also receive awards external to the University such as the University Co-op's Hamilton Awards and professional society awards. Descriptions of some of these awards are given below.

Recognition for research accomplishments also takes place within and outside the University. Within the University school/college awards, endowments that provide salary, supplements to salary, and discretionary funds, and other recognitions are available (809 as of fall 2009). For example, the McCombs School of Business recognizes outstanding research through such awards as the CBA Foundation Research Excellence Award for Assistant Professors and the Career Award for Outstanding Research Contributions (the latter carrying a $10,000 honorarium).

Outside the University the most prestigious recognitions are from international sources such as the Nobel Prize and the Japan Prize, an international award similar to the Nobel Prize. Faculty have also received awards from national sources such as the National Medal of Science, the national academies such as the National Academy of Sciences and the National Academy of Engineering, American Academy of Arts and Sciences, American Academy of Nursing, and the American Law Institute. Other awards include the Fulbright American Scholars, Guggenheim Fellows, National Institutes of Health, NSF Career Awards, NEH Fellowships, American Association for Advancement of Science Fellows, Sloan Research Fellows, the Wolf Prize, Steele Prize, and Birkhoff Prize, all in Mathematics, and American Council of Learned Societies Fellows. Faculty at the University receive a number of awards from these entities each year. For example, in AY2011-12 alone, University faculty received 46 of these awards.

There are numerous other ways that faculty receive national and international recognition. Among these are leadership positions held in professional societies, journal editorships, performances and showings in national and international venues, public service activities in municipal, state, national, and international settings, and so forth.

All of these awards add to the prestige of the faculty and the University. The faculty are literally the "face" of the University to many, and their prestige translates into the prestige of academic and research programs that influences rankings of programs and institutions. The University encourages activities by the faculty that lead to these awards and to the enhancement of the University's prestige.

Academy of Distinguished Teachers

The Academy of Distinguished Teachers is emblematic of the University's commitment to excellence in teaching. Comprising approximately 5% of the tenured faculty in the University, the Academy provides leadership in improving the quality and depth of the undergraduate experience. Members of the Academy advise the president and provost on matters related to the University's instructional mission; participate in seminars, colloquia, and workshops on teaching effectiveness; and serve as mentors to new faculty.

Established in February 1995, the Academy of Distinguished Teachers was one of the first associations of its kind in the nation. Each year, new members of the Academy are selected through a rigorous evaluation process. Deans of colleges and schools annually nominate faculty for membership, and a committee that includes members of the Academy, students, and other faculty review the nominations and recommend a slate of honorees to the provost, who makes the final selections. Honorees are awarded the title University Distinguished Teaching Professor and serve for the duration of their tenure at the University.

The Academy of Distinguished Teachers and the School of Undergraduate Studies have created

the Society for Teaching Excellence, which supports promising young faculty members. Thirty of these young faculty members were chosen in 2012 to become the inaugural class. Academy members meet with junior professors to exchange ideas about instruction and provide general support in the difficult but rewarding process of becoming outstanding teachers.

Teaching Awards

More than 150 teaching awards are offered annually at the University. University-wide teaching awards (administered by the Office of the Executive Vice President and Provost) alone, which total over $1 million, are:

- Academy of Distinguished Teachers Award
- William David Blunk Memorial Professorship
- Chancellor's Council Outstanding Teaching Award
- Dad's Association Centennial Teaching Fellowships
- Friar Centennial Teaching Fellowship
- Jean Holloway Award for Excellence in Teaching
- Minnie Stevens PIPER Foundation Teaching Award
- President's Associates Teaching Excellence Award
- Regents' Outstanding Teaching Awards
- Joe and Bettie Branson Ward Excellence Award

Other teaching awards are given by individual schools and colleges, and lists of these awards are maintained on the Provost's Office web page.

Donald D. Harrington Faculty Fellows Program

The Donald D. Harrington Fellows Program was created by Sybil Harrington as a tribute to her late husband. She envisioned a program that would support gifted and ambitious scholars who would, in turn, share their knowledge and success with future generations, perpetuating the legacy and memory of Don Harrington for all time. The University is privileged to be the home of the Harrington Faculty Fellows Program. This preeminent research program is designed to attract outstanding faculty that are in the initial stages of their professional careers. Fellowships are awarded annually to the most highly qualified applicants from universities throughout the United States and around the world.

The Harrington Faculty Fellows Program supports approximately five Fellows each academic year. These Fellows visit the University to pursue their research and collaborate with colleagues. The normal period of appointment is the academic year, although some Fellows choose to stay for the summer as well. A Harrington Faculty Fellow is on leave from her or his home university and is appointed as a visiting member of the University faculty, with a stipend representing a substantial increase over the salary at the home university, relocation expenses for external Fellows, full medical benefits, etc. Office space and limited administrative support are provided by the host department or organized research unit (ORU).

Since the primary purpose of the Harrington Faculty Fellowship is to pursue research, the Fellows have no teaching obligations. Fellows are, of course, free to conduct seminars if they wish. In addition, each Fellow will be provided with funding to support a symposium during the period of his or her stay.

To ensure the diversity of backgrounds among the recipients and sustain the international prestige of the Program, at least 75% of the Fellows are recruited from institutions outside the University; no more than 25% come from the University.

All Harrington Faculty and Graduate Fellows become lifetime members of the Harrington Society. This organization is designed to build a sense of community among the scholars through special programs and events that include seminars, dinners, and monthly informal luncheons. Members are encouraged to continue their involvement in the Society after their fellowships have ended.

University Co-op's Hamilton Awards

The Hamilton Awards recognize leading University authors. The grand prize award is $10,000 with four additional $3,000 prizes. Finalists are selected by a committee of scholars appointed by the Vice President for Research. All University faculty members with books published during the previous academic year are eligible for the award. These awards are named in honor of Professor Robert W. Hamilton, past Chairperson of the University Co-op Board.

Collaborations and Partnerships

The primary formal mechanisms for encouraging and enhancing cooperative research efforts among faculty members and fostering collaborative research within the University are the interdisciplinary research institutes and centers. Other mechanisms include school-wide, college-wide, and university-wide seminars and workshops, special interest groups (such as faculty members conducting research on various aspects of nanotechnology) created to bring faculty members from different disciplines together, and joint faculty appointments in different departments. A strategy of "cluster hires," wherein a group of faculty members is hired in a particular area to maximize research synergies, is also being employed to foster research cooperation. Collaborations and partnerships involving University and non-University faculty members derive from the Visiting Scholar Program, inter-institutional cooperative research grants, initiatives emanating from the University of Texas System, and the efforts of individual University institutes and centers to involve faculty members from other universities in research-related activities. A cooperative arrangement between The University of Texas System and The Texas A&M University System allows graduate students at one institution to use unique facilities or take courses at the other institution with a minimum of paperwork.

Inter-institutional dual-degree programs allow students in biomedical engineering, chemistry, biochemistry, cell and molecular biology, and neuroscience to pursue both a PhD degree from UT Austin and a Doctor of Medicine degree from the University of Texas Medical Branch at Galveston. A similar joint MD/PhD program between the Department of Biomedical Engineering at UT-Austin and Southwestern Medical School in Dallas is pending final approval. Other University research collaborations include those with Scott and White Medical Clinic, Seton Hospital, and the UT System health component campuses in Galveston, San Antonio, and Houston. By capitalizing on faculty strengths at each location and combing resources, research efficiency and effectiveness are increased dramatically.

In 2012, the University's College of Pharmacy added a PhD in Translational Science. In line with a field of science that emphasizes multi-disciplinary, collaborative research, the doctoral degree program in Translational Science is offered as a multi-institutional joint degree program. This inter-institutional PhD degree program was developed in conjunction with the UT Health Science Center at San Antonio, the University of Texas at San Antonio, and the UT School of Public Health (San Antonio Regional Campus). This collaboration of four universities to offer a single joint doctoral degree is unique in the UT System. The program is designed to use the existing resources and expertise in specific key areas of each university to offer a strong, diverse, and competitive Translational Science PhD.

New Faculty

Under former President Larry Faulkner, the University initiated a plan in AY2000-01 to hire additional faculty members in areas that would benefit the University strategically. The original goal was to hire 300 additional faculty members in 10 years, or 30 new faculty members per year. To date, some 268 positions have been allocated to schools and colleges on campus and 232 of those positions have been filled. A significant portion of these positions have been filled by assistant professors who are the future of the institution while the balance typically consists of full professors who bring substantial research experience with them and the ability to develop and lead large research programs. Because of

funding limitations, this initiative is suspended, however.

In addition to these new faculty members, schools and colleges replace faculty who have retired or left the University for various reasons, and these replacements are most often junior faculty. In some instances, they may be senior faculty if the program into which they are being hired needs a better balance of senior vs. junior faculty. Again, the faculty members hired are those that can contribute effectively to the teaching and research activities of the various University programs.

The University has taken advantage of the UT System Science and Technology Acquisition and Retention (STARS) program, which consists of both competitive and non-competitive grants that are available for component campuses to recruit outstanding senior research-oriented faculty. In order of priority, members of national academies, senior faculty with national reputations likely to be members of national academies, senior faculty members with national reputations pioneering fields of discovery, and emerging junior faculty members with high potential have been the target hires. STARS funding received to date by the University totals over $74.0 million, and these funds have been used to recruit or retain approximately 180 faculty members.

In AY2009-10, AY2010-11, and AY2011-12, some 33 new faculty hires received STARS funding. The hiring focus during those years was at the entry level, as 24 of these faculty were assistant professors. Eight of these new hires were professors and one was an associate professor.

These new faculty were hired into five schools/ colleges, namely the College of Natural Sciences with 16, the Cockrell School of Engineering with 13, the College of Pharmacy with 2, and the remaining two in the Jackson School of Geosciences and the College of Liberal Arts.

Student Awards

Numerous competitive research awards currently exist at the school and college level to encourage student research. This research can reflect independent efforts by students as well as thesis and dissertation work. Students receiving these awards are recognized publicly through a variety of campus media. The ongoing capital campaign contains commitments by the various schools and colleges to raise the amount of funding available to generate new, more prestigious, and more remunerative awards and fellowships to recognize and reward outstanding student research. Several schools and colleges provide administrative support to students who apply for external research awards. In recent years several students have been named Marshall Scholars or Rhodes Scholars or have received Truman Scholarships. Additionally, for the past decade the University Co-op has sponsored the George H. Mitchell Student Awards for Academic Excellence. Last year, seven students received awards that ranged in value from $2,000 to $20,000.

The Undergraduate Research Fellowship Program administered by the Vice President for Research Office consists of two annual funding competitions for independent research conducted by undergraduate students. To date more than $2.2 million in grants has been awarded to undergraduate students under this program.

Student Diversity

The University and Graduate School are committed to recruiting and retaining underrepresented students. The Graduate School has an active and vigorous partnership with the University's Office of the Vice President for Diversity and Community Engagement, which was created to advance learning and working environments that foster a culture of excellence through diverse people, ideas, and perspectives.

While there is still much work to do, the University has made much progress in recent years reaching out to under-represented groups. It is noteworthy, for instance, that the University

is one of the largest producers of doctorates earned by Hispanics and African Americans in the nation. Table 9 presents the profile of graduate students at the University as of the Fall 2012 semester.

The "Closing the Gaps" initiative sets goals for the number of doctoral degrees awarded statewide and the number of degrees awarded to African Americans and Hispanics (see Table 10). The number of doctoral degrees awarded by the University is projected to stay relatively constant overall through FY2025.

As of FY2012, the state's institutions have met and exceeded the FY2015 target for number of doctoral degrees awarded. Targets established for the number of doctoral degrees to be awarded to African Americans and Hispanics at the University have not yet been reached, but are attainable by continuing to concentrate on increasing the diversity of the graduate student body and encouraging qualified students to continue beyond the master's degree. The Graduate School has a number of initiatives in place to work with the graduate programs to recruit and retain students, including targeted student support and recruitment events.

VI. OTHER RESOURCES

Research Facilities

The availability of modern research facilities is one of the critical keys to attracting and retaining the very best faculty and students. At the University, this represents a significant challenge for all disciplines, especially the STEM areas, as the campus physical plant is aging and there are limited footprints available for new construction. To provide the facilities necessary for the University to continue its quest to become the best public research university in the nation, the institution has adopted a comprehensive facilities strategy that includes a systematic maintenance plan for existing facilities that continue to support its research mission, and a strategic program of modernization, repurposing, and replacement of those facilities no longer able to support this mission.

Changes in research infrastructure are realized through constructing, renting/leasing, or renovating research space (see Tables 11 and 12).
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Table 9.Graduate Student Profile (Fall 2012)

Total Graduate Enrollment		10,622*
Gender	Men	5,610
	Women	5,012
Level	Master's	5,562
	Doctoral	5,060
Residence	Texas	40.5%
	Out-of-State	33.9%
	International	25.6%
Ethnicity	White only	52.6%
	Hispanic (any combination)	9.1%
	Black only	2.8%
	Black (2 or more, excl. Hisp.)	0.2%
	Asian only	6.2%
	American Indian only	0.2%
	Hawaiian/Pac. Islander only	0.0%
	2 or more (excl. Hisp./Black)	1.2%
	Foreign	25.6%
	Unknown	2.0%

Source: UT Austin's Office of Information Management and Analysis

* Master's and Doctoral only. Numbers do not include Law or Pharm.D. students. In Fall 2012 1,108 students were enrolled in the Law School and 501 in the Pharm.D. professional program.

Table 10. "Closing the Gaps" Doctoral Degree Targets

	Actual FY2000	Actual FY2010	Actual FY2011	Actual FY2012	Target FY2015	Target FY2020	Target FY2025
Statewide Degrees	2,621	3,813	3,945	N/A	3,900	N/A	
Institution Degrees	703	841	844	843	840	840	840
African American	21	15	28	34	34	34	
Hispanic	48	54	57	62	62	62	
White	373	404	380	396	395	395	
Other	261	368	379	351	349	349	

Source: THECB's Closing the Gaps progress report, UT Austin's Office of Information Management and Analysis, UT Austin's Closing the Gaps targets, and UT Austin's 2012 Goal Setting report to UT System.

Table 11. Examples of Recent ResearchSpace Construction

Building Name	Cost ($Millions)	Gross Square Feet	Occupancy Date
Norman Hackerman Building	199.3	343,768	December 2011
Biomedical Engineering Building	83.0	180,591	November 2010
Data Center at Central Receiving Bldg.	32.0	28,544	June 2010
Belo Center for New Media	65.1	122,194	August 2012
Liberal Arts Bldg (Phase I)	69.4	149,200	February 2011
Liberal Arts Bldg (Phase II)	95.7	204,000	November 2012
Dell Pediatric Research Institute	88.5	149,653	January 2010
TACC High Performance Computing Facility	56.0	19,672	August 2012
Mission-Aransas Nat'l Estuarine Res. Pres.	21.4	36,720	April 2011
Total	**$710.4**	**1,234,342**	

Source: Office of Facilities Planning and Construction, The University of Texas System

Table 12. Facilities Being Planned or Under Development

Building Name	Cost ($Millions)	Gross Square Feet	Occupancy Date
Geology Building Addition	0.5	20,900	June 2017
Dell Computer Science Hall – Bill and Melinda Gates Computer Science	121.5	232,503	February 2013
Hobby-Eberly Telescope at Ft. Davis	35.0		Summer 2013
Engineering Education and Research Center	310.0	471,887	January 2017
U.T. Academy of Music	20.0	60,000	
Graduate School of Business	155.0	458,125	March 2017
Total	**$642.0**	**1,243,415**	

Source: Office of Facilities Planning and Construction, The University of Texas System

Renovation of space is a continuing activity on campus as new types of research demand new configurations of space and new facilities, new laboratory features and equipment, new utilities, and furniture. While renovation does not necessarily create new space, it does provide new usable space that enhances the faculty's ability to conduct research. For each new faculty hire in the STEM disciplines, renovation costs range from $400,000 to $600,000. With an estimated 10 to 12 new hires in STEM fields each year, the renovation costs for these new faculty alone are approximately $5.5 million per year. Several schools/colleges are planning for renovations throughout their complexes (see Table 13). For example, the Cockrell School of Engineering has completed a facilities master plan for its aging physical plant, and it is estimated that total renovation costs will be approximately $1.1 billion in capital costs. The College of Natural Sciences and the College of Pharmacy are likewise considering major renovation projects that may cost between $300 million to $500 million total over the next ten years.

Table 13. Examples of Recently Completed and Planned Renovations

Building Name	Cost (Millions)	Gross Square Feet	Occupancy Date
School of Nursing building renovations	6.6	111,562	Summer 2009
Art Building and Museum Renovation	7.4	32,979	January 2010
Administration Building	36.3	253,087	April 2010
CMA-CMB Renovations	9.6	52,500	August 2013
Battle Hall Complex-West Mall Office Building	2.0	48,074	June 2018
Geography Building Renovations & Expansion	11.5	36,718	June 2014

Source: Office of Facilities Planning and Construction, The University of Texas System

The University has used rental/leased space extensively over the years to house such research centers as the Center for Transportation Research, the Center for Space Research, Social Work, the Institute for Advanced Technology, and others.

A major resource for researchers at the University as well as researchers world-wide is the Texas Advanced Computing Center (TACC). TACC is the home of the University's unparalleled supercomputers, including Lonestar, Ranger, and the recently christened world-class Stampede (for which TACC won a $51.5 million award from the National Science Foundation), and the leading-edge Visualization Laboratory. These computing systems are dedicated to open science research and allow scientists and engineers to address complex and large-scale issues. Scientists employ TACC systems to look at the origins of the universe, investigate the genetics of plants and animals, research minute details of earthquakes, test options for treating diseases, and create new visions in the arts and humanities. With a staff of nearly 100 individuals, TACC provides both software and hardware support for nearly a thousand scientists and engineers globally as well as offering basic and advanced courses and training in high performance computing.

Another University-wide research resource is the Animal Resources Center (ARC). The ARC provides animal husbandry and veterinary consultation services, and training for all University research involving 10,000 - 15,000 laboratory animals yearly. It permits the most efficient and up-to-date environmental control for sanitation and animal health monitoring. It also has access to a diagnostic laboratory, two complete animal surgery suites, several darkrooms, controlled environment rooms, and a necropsy room. Facility users include the Departments of Anthropology, Chemical Engineering, Electrical and Computer Engineering, Bio-Engineering, Biochemistry, Kinesiology, Nutrition, Microbiology, Molecular Biology, and Psychology as well as the College of Pharmacy.

Library Resources

Containing more than 10 million volumes, the library of the University is the fourth largest public academic library in the nation and is consistently ranked among the country's top 10 research libraries. The University's holdings in Latin American materials are recognized as among the most significant in the world. Also world-renowned is the Harry Ransom Humanities Research Center (HRC) that houses 30 million literary manuscripts, one million rare books, five million photographs, and more than 100,000 artworks. The Jack S. Blanton Museum of Art contains 17,000 works of art from Europe, the United States, and Latin America. The L. B. J. Library and Museum contains more than 40 million documents relating to President Lyndon Baines Johnson. And the Texas Memorial Museum houses the Texas Natural History Collections, including the non-vertebrate paleontology collections and the Vertebrate Paleontology Laboratory.

Peer comparisons provide one of the best measures of resource adequacy. For large research universities, the Association of Research Libraries (ARL) provides the longitudinal statistical data that enable peer comparisons. The 2010 list of holdings of member institutions of ARL ranks the University of Texas Libraries as the 8th largest among its 123 members. These collections are housed in fourteen separate library and archival collections administered collectively by the University of Texas Libraries, and in three outstanding research centers with separate administrative lines: the Center for American History; the Jamail Center for Legal Research; and the Harry Ransom Humanities Research Center (HRC). In 2010, the investment by the University of Texas in library materials was well over $17 million, earning a ranking of 15th among the ARL membership.

The library collections are managed through close consultation between the University faculty and Libraries subject specialists to ensure that library resources meet the teaching and research needs of the University's academic programs. The collection program is managed by the Libraries Research Services Division and includes both formal collecting policies and statistical overviews of the collection.

Information Technology Services (ITS) twice a year plans a series of hands-on sessions for instructors that cover the fundamentals of computer security, electronic reserves and digital library resources, Web publishing, and graphics and multimedia applications.

The Libraries provide access to hundreds of online databases supporting every academic program at the University, as well as in excess of 800,000 e-books and access to more than 85,000 e-journals. The Libraries use the latest web scale discovery technology and Open URL linking technology to provide powerful and seamless access to licensed electronic resources from around the world. Robust off-campus access to licensed resources is provided through the campus secure electronic ID and the implementation of EZProxy. Enhanced access to digital information is assured through licensing arrangements, often in concert with other members of the University of Texas System, that deliver millions of pages of electronic full text directly to the desktops of the University community.

The University of Texas Libraries are part of consortia that greatly expand the purchasing power, and number of resources available to University students and faculty members. The University of Texas System digital library contracts allow the Libraries to avoid millions of dollars for online content. The Libraries are a member of TexShare, the State Library Program, which allow the Libraries to avoid over a hundred thousand dollars for online content. The Libraries are a member of the Greater Western Library Alliance consortium that allow the Libraries to avoid tens of thousands of interlibrary loan fees. The Libraries participate in the Research Library Cooperative Program with the University of California at Berkeley and Stanford University. This program is an agreement to share the resources of these libraries' circulating collections. The Libraries are one of the five patent and trademark depository libraries in Texas, part of the Federal Depository Library Program. All of these consortia greatly increase the resources available to University researchers.

The University of Texas Libraries provides digital stewardship services to University faculty and campus units by providing repository services (UT Digital Repository), data management planning services (Data Management @ UT), and alternative publishing platforms (through the Texas Digital Library open journals service).

The UT Digital Repository (UTDR) service provides open, online access to the University's research and scholarship in order to preserve these works for future generations, promote new models of scholarly communication, and help deepen community understanding of the value of higher education. To date, the largest collection in the UTDR contains over 10,700 theses and dissertations from University of Texas graduate students. The remaining 7,100 works in the repository are works from units and faculty

across the University campus, including: the Center for Research in Water Resources; Thomas Jefferson Center; Department of Government; IC² Institute; LBJ School of Public Affairs; The Mesoamerica Center; Radionavigation Laboratory; and the School of Law, among many others.

To address the growing need for data management plans, in December 2011 the Libraries launched a new service for researchers called "Data Management @ UT." The Libraries partnered with TACC and Information Technology Services (ITS) to develop the service, which includes an informational website and a coordinated strategy for helping address researchers' unique data needs. As part of the coordinated strategy, each organization of the partnership offers distinct resources and capabilities. University of Texas Libraries acts as a repository for datasets up to one gigabyte, including publications and papers. TACC houses larger (terabyte and petabyte-sized) datasets and collections that require complex systems. ITS provides hardware, co-location, network access, web services, and technical assistance.

The University was a founding member of the Texas Digital Library (TDL), a statewide consortium managed by four Texas members of the Association of Research Libraries: The University, Texas A&M University, the University of Houston, and Texas Tech University. They have come together to provide a shared digital infrastructure for supporting the scholarly activities of these four schools plus affiliate member institutions throughout Texas. The TDL serves as an open access repository for research output as well as instructional materials, all of which will be available to both scholars and the general public. The TDL infrastructure currently consists of several DSpace repositories, an Open Journal Systems publishing platform, an Open Conference Proceedings and Conference Management System, a Terabyte scale storage system, faculty research wiki tools, website creation software, and an informational Web site. The repository, which came online on February 3, 2006, currently contains dissertations in a combined collection from TDL member institutions as well as some from outside the consortium.

To better manage the collection of student research, the TDL has also developed an electronic thesis and dissertation management system employed by the University and a wide body of universities across the country. The TDL is also involved in the nationwide development of a Digital Preservation Network that will provide multiple formats for storing research data, papers, reports, and other products across a number of geographic locations in the US. Hosted by the University, it is the goal of TDL to become a center of excellence in the creation, curation, and preservation of digital scholarly output of Texas universities. This is a resource that will benefit not only the faculty and students of higher education, but due to the sheer depth and breadth of resources available at the participating institutions, is likely to be of interest to many researchers.

The University of Texas Libraries strives to create Web sites that are 100% accessible. The Libraries go beyond the minimums set by the University's Web accessibility policy and the requirements of Section 508 of the Rehabilitation Act by using style sheets to control layout and conducting accessibility evaluations with users who require assistive technologies such as the JAWS screen reader. The Libraries offer assistive technology in several locations and wheelchair accessible workstations in the Perry-Castañeda Library and several of the branches. There is information available online detailing library services for users with disabilities.

The Libraries also employ a series of assessment tools to listen to the University community and respond to the diverse needs of its students, faculty, research staff, and others. Among the tools that have been employed by the University of Texas Libraries is the LibQUAL+ protocol administered by Applied Research Laboratory. The LibQUAL+ survey collects qualitative data in the form of comments. Through content analysis, the Libraries are able to incorporate suggestions for improvements in areas of service into the annual strategic plan.

Graduate Student Support

The Graduate School administers a fellowship program that distributes over $12 million annually to graduate students through various graduate programs. The majority of the funds are awarded on a decentralized award decision basis whereby the colleges and schools have an award allocation and it is then left to the unit to decide how best to strategically use the funds. For example, some units may choose to focus on recruitment awards while another unit may opt to focus on supporting continuing students. In this way the award size can also be tailored to meet the different needs across the colleges and schools. In addition to these funds, each college/school/department administers additional funds for teaching assistantships, research assistantships, and fellowships, and the Executive Vice President and Provost provides resources for tuition benefits for graduate students. While more than half of all graduate students receive some kind of financial support, the percentage of doctoral students receiving support is much higher. Financial support includes employment as a teaching assistant or assistant instructor (which entails a tuition assistance benefit), employment as a graduate research assistant, graduate school fellowships (recruiting fellowships and continuing fellowships), and external fellowships.

In recent years the University has emphasized making multi-year awards up front to be more competitive to recruit the very best students to the University. For example, Graduate School fellowships have been restructured to provide more five-year financial packages than in the past. The William C. Powers Fellowships awarded by the Graduate School provide funding for years 1, 4, and 5, while years 2 and 3 are funded at the departmental level through teaching assistantships and graduate research assistantships.

Access to health insurance benefits is an important consideration for graduate students and their families. In the last legislative session, the State Legislature passed SB-29. This bill provides access to the group employee health benefits for graduate students with fellowships of more than $10,000 who elect to pay the premium.

VII. NATIONAL VISIBILILTY

In addition to the resources identified above, there are additional resources available to support research activity on campus directly and indirectly and thereby support the national visibility of the University and the research conducted therein. These sources include endowments, funds for research program development, and funds for faculty recruiting.

Endowments

Significant funding to support research activities is available from the Available University Fund (AUF) which draws interest from the Permanent University Fund (PUF). Funds are allocated by UT System for various programs that support research. For example, the STARS program has the overall goal of increasing the research capacity of academic institutions by funding start-up packages for outstanding faculty in STEM and areas of distinctive strength in academic institutions. The Regents put this program in place in FY2005, and more than $150 million has been allocated to component campuses for research activity. The University has received almost $74.0 million in STARS Program funding and approximately 180 faculty have been recruited or retained using these funds.

In addition to this endowment funding, there are hundreds of endowments from a multitude of donors who have given funds for specific purposes, specific research centers and laboratories, and/or to specific disciplines. Typically the yield of these endowments is used for faculty salaries or salary supplements, fringe benefits, and discretionary funds. The latter funds are typically used to support research activities and in some cases the salary funds support faculty during summer months. It is estimated that about $85 million annually from endowments and gifts go to research in the form of salary supplements, operating costs, and so forth.

Provost's Office Funding

The Provost's Office also has funding designated by the University's Budget Council (which provides oversight of the University's budget and advises the president on strategic planning as it relates to the budget) to be used for faculty recruiting, research enhancement, and innovation. Some of these funds are recurring and thus may be used for faculty salaries or other purposes that requires continuous funding, whereas other funds are non-recurring and are used for one-time purposes. All of these funds are allocated at the discretion of the Provost.

News Media

Research from the University of Texas at Austin is promoted by University Communications in a number of ways, including personal contacts with the media, university-issued press releases, use of journalists' resources such as Newswise and EurekAlert, and, increasingly, through social media. In 2012, the University distributed 110 research-related news releases. Of those 52 were posted on EurekAlert (a service used specifically by science writers) with more than 104,000 views. Eighteen were posted on Newswise (used by a broader spectrum of journalists) and received more than 46,000 views. The University is a member of Futurity.org, a website that posts research news from AAU universities in the U.S. and AAU-level universities in Canada, the United Kingdom and Australia. Futurity.org has had more than two million visitors in 2012. In October, it had more than 406,000 visits and 553,000 page views.

In 2012 University faculty and others were included in stories in the *New York Times* an average of three times a week (in first three quarters of calendar year 2012) and weekly in the *Washington Post* and *USAToday*. Other national publications that included news about University faculty numerous times during the year were *Businessweek Bloomberg* (three per week); *CNN* (twice a week) and *U.S. World & News Report* (1.5 times per week). The University also received dozens of research mentions each in influential media including the *Economist*, *Scientific American*, *Wired*, *Nature*, and *National Geographic*. An engineering professor's work on drones was picked up widely in print and broadcast media around the world. A computer science professor's research into automated intersections broke out of technology media into numerous general news outlets.

The University also posts news and features stories (including videos and slide shows) about research activities on its main web page at www.utexas.edu. Current stories as well as those archived from past years are available. News media contacts and experts in the disciplines represented on campus are accessible. University Communications regularly issues experts lists on subjects of topical interest. In addition to University-wide means of distributing news stories on research, all schools and colleges have their own web pages through which research activities are publicized. Some also have a public relations staff that prepares news stories and press releases about research in their schools/colleges.

Social media play a big role in communicating University research. At this time, the main University Facebook page has over 410,000 fans (one of the largest followings in the country) and over 40,000 Twitter followers. An example of the reach of social media was a university-produced story about research at the Applied Research Laboratories on reducing the noise of underwater construction and drilling. The post about the Bubble Curtain in July was seen by more than 90,000 people on Facebook and had over 280 likes. Other University units have well-followed Facebook and Twitter accounts, including the UTexas Research Facebook page and Twitter accounts. Schools, colleges, units, departments and programs also use social media to spread the word about University research news.

Other means of publicizing research activities are through many newsletters and brochures distributed by deans and department chairs to alumni, friends, peer institutions, and government agencies.

The Office of the Vice President for Research publishes the Research Alert, a weekly email newsletter sent to more than 1,100 researchers and staff at the University and posted on the Office of Research web site. It has information about upcoming research grant opportunities as well as news about research honors, media appearances, and research projects.

APPENDIX

NATIONAL AND EXPANDED COMPARISON GROUPS

National Comparison Group
Indiana University–Bloomington
Michigan State University
Ohio State University–Main Campus
University of California–Berkeley
University of California–Los Angeles
University of Illinois at Urbana-Champaign
University of Michigan–Ann Arbor
University of Minnesota–Twin Cities
University of North Carolina at Chapel Hill
University of Washington-Seattle Campus
University of Wisconsin–Madison

Expanded Comparison Group
Columbia University in the City of New York
Duke University
Indiana University–Bloomington
Michigan State University
Northwestern University
Ohio State University–Main Campus
Rice University
Stanford University
Texas A&M University-College Station
University of California–Berkeley
University of California–Los Angeles
University of Florida
University of Illinois at Urbana-Champaign
University of Michigan–Ann Arbor
University of Minnesota–Twin Cities
University of North Carolina at Chapel Hill
University of Pennsylvania
University of Washington-Seattle Campus
University of Wisconsin–Madison

STRATEGIC PLAN

FOR

THE UNIVERSITY OF TEXAS AT DALLAS

Submitted to:

The Texas Higher Education Coordinating Board

Austin, Texas

Updated March 2013

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EXECUTIVE SUMMARY

The main challenge for The University of Texas at Dallas is to increase scale. UT Dallas is not yet large enough in key areas of research and scholarship to compete with the nation's top research universities.

The University, which started just over 40 years ago as a graduate research institute, has maintained rigorous admission standards for undergraduates and has established a research culture consistent with a major research university. UT Dallas possesses an excellent foundation for ascendency to top-tier status and enjoys strong support from the Dallas-Fort Worth Metroplex, which is the largest and most economically productive metropolitan area in the U.S. without a top-tier academic research university.

UT Dallas plans to continue doing what it has been doing: steadily increase the scale and impact of the University while continuing to improve quality and efficiency. Enrollment growth will provide the funds necessary to pay for additional faculty and associated support staff and operational costs.

Specific goals for the next 7 years, determined based on past growth and expected continued growth, are summarized on the next page and include the following:

- Increase the number of tenured and tenure-track faculty to 600-700
- Increase enrollment to 20,000 full-time equivalent students
- Increase annual research expenditures to $130M (total research), $70M (restricted research), and $50M (federal research)
- Increase the doctorates awarded from 179 per year (current) to 240 per year
- Increase new National Merit Scholars enrolled each fall from 63 to 75 scholars
- Raise needed private funds to increase endowment
- Meet the objectives of the Chancellor's Framework for Advancing Excellence

UT Dallas is already growing at or beyond the necessary rate of enrollment expansion assumed in this plan. The faculty is currently expanding at the desired rate. Over 487,000 gross square feet of new academic space, which is sufficient to accommodate 4,870 new students and 162 new faculty members, is in construction or design. Start-up funds are available, aided by the UT System STARS program. UT Dallas is currently raising funds at the pace planned for the next several years. Finally, UT Dallas is assertively implementing actions to support the Framework for Advancing Excellence.

In summary, this plan represents a straight-forward extrapolation of UT Dallas's current growth and actions. UT Dallas can readily achieve its goals provided there are no major changes in business fundamentals. Key metrics recommended for monitoring UT Dallas's progress are rate of enrollment growth, rate of increase in the size and quality of the faculty, and rate of growth of federally sponsored research.

AREA	PARAMETER	FALL 2012	IN 7 YEARS
Students	Total Enrollment	19,700	25,000
	FTE Enrollment	15,800	20,000
	Freshman SAT (1600 max.)	1270	1270
	Top 10% Students (Freshmen)	42%	55%
	National Merit Scholars	63	75
	4-year Graduation Rate	51%	55
	6-year Graduation Rate	64%	72%
Faculty	Tenured and Tenure-Track	493	600-700
	Faculty w/ Externally Funded Research	201	300
	Percent of Tenure, Tenure-Track Faculty w/ Externally Funded Research	41%	50%
Research	Total R&D	$ 91M	$130M
	Restricted R&D	$ 45M	$ 70M
	Federal R&D	$ 36M	$ 50M
Doctoral Programs	Number of Doctoral Programs	30	44
	Annual Graduates	179	240
Other	National Academy Members	4	10
	Annual Giving	$40M	$50M
	Endowment	$275M + PUF	$400M + PUF
	Academic and Research Space	1.8M sq ft	2.5 M sq ft

INTRODUCTION

In accordance with Chapter 5, Subchapter G of Coordinating Board rules, as mandated by House Bill 51, an emerging research university must develop a long-term strategic plan for achieving recognition as a national research university. This document presents the updated UT Dallas strategic plan and provides the information requested in the Coordinating Board guidelines (see Appendix A for those guidelines).

The University of Texas at Dallas can systematically build scale to become a top-tier research university. Success involves increasing student enrollment and number of faculty, increasing externally funded research, increasing PhD production, building the necessary infrastructure to support growth, meeting the needs of the Dallas-Fort Worth (DFW) community, and raising private funds. Faculty, students, and staff developed this strategic plan in a broadly collaborative process. The original plan was reviewed and approved by the Faculty Senate, Student Government, and Staff Council of UT Dallas. The updated plan provides the most recent data available.

SYNOPSIS OF UT DALLAS PROFILE

What is now UT Dallas started in 1961 as the Graduate Research Center of the Southwest and in 1967 was renamed the Southwest Center for Advanced Studies. These precursors to UT Dallas were primarily graduate education and research centers focusing on science, technology, and mathematics. The institution's founders gave the institution to the UT System in 1969, creating UT Dallas.

Forty years later, UT Dallas continues to reflect its graduate and research institute origins. Thirty-eight percent of the current enrollment is comprised of graduate students, an unusually high proportion for a public institution in Texas. Also unusual is the fact that 82% of all degrees awarded at UT Dallas are in science, engineering, mathematics, and business, a much greater proportion than at any other public university in Texas. The strong emphasis on science, engineering, and business is a distinct advantage as UT Dallas builds national competitiveness in research.

UT Dallas also has a high-quality undergraduate student body. Its average SAT score for incoming freshmen has typically been among the highest for public universities in Texas. The number of National Merit Scholars (63 in the fall 2012 freshman class) is competitive with many of the nation's top universities.

The University is located in one of the nation's largest and most economically vibrant metropolitan areas. Dallas-Fort Worth is the only metropolitan area among the nation's most productive without a top-tier academic research university. There is widespread recognition that this region needs and can support Tier One universities.

In 2004, the UT System retained the Washington Advisory Group and asked it to assess the status of UT Dallas and its potential. In its report, the Washington Advisory Group stated

that, “The main obstacle that UT Dallas faces in achieving its goals relates to scale – UT Dallas is simply too small in terms of the total number of faculty in each disciplinary or sub-disciplinary area.” The challenge for UT Dallas is to grow and to increase its scale.

PRIOR STRATEGIC PLAN

In 2007, UT Dallas adapted a strategic plan entitled *Creating the Future*. This current document represents an update of the 2007 plan and is essentially identical in strategy, although some specific numbers and goals have been updated. The 2007 plan contained six strategic initiatives:

1. ***Tomorrow's Inventions*** – Strengthen research, the engine that drives innovation

2. ***Preparing Students for Tomorrow's Challenges*** – Prepare students for a lifetime of contribution and leadership

3. ***Managing Change in a Changing Society*** – Lead adaptation to our changing world

4. ***Securing the Safety of the Future*** – Create innovative means of ensuring safety

5. ***Improving Health and Quality of Life*** – Contribute to the health and vitality of the people of the region

6. ***Making a Great City Even Greater*** – Interact with the Dallas-Fort Worth community to strengthen the University and the surrounding region.

The 2007 strategic plan also contained eight imperatives:

1. ***Build Faculty Size*** – Increase the number of faculty members

2. ***Add 5,000 More Students*** – Increase enrollment by at least 5,000 students

3. ***Increase Research*** – Increase research expenditures to at least $100 million

4. ***Tell Our Story Better*** – Create a top-quality communications program

5. ***Increase Private Giving*** – Emphasize and increase private giving and endowment

6. ***Increase PhD Graduates*** – Add new doctoral programs and increase PhD production

7. ***Enhance Graduation Rates*** – Improve student success, retention and graduation

8. ***Improve Operating Efficiency*** – Be more efficient and cost effective.

The essence of UT Dallas' strategic plan is to grow the University by adding new degree programs in critical areas of need for North Texas, recruiting and graduating more students and more diverse students, hiring more nationally competitive faculty, increasing the number of faculty securing and participating in externally funded research, building the necessary facilities and infrastructure, and attracting the required private support.

VISION STATEMENT

The UT Dallas vision statement, approved by the UT System Board of Regents in 2007, is:

> *To be one of the nation's best public research universities and one of the great universities of the world.*

The mission statement for UT Dallas, articulated in "Creating the Future," is:

> *The University of Texas at Dallas serves the Metroplex and the State of Texas as a global leader in innovative, high-quality science, engineering, and business education and research.*
>
> *The University is committed to (1) producing engaged graduates, prepared for life, work, and leadership in a constantly changing world, (2) advancing excellent educational and research programs in the natural and social sciences, engineering and technology, management, and the liberal, creative, and practical arts, and (3) transforming ideas into actions that directly benefit the personal, economic, social, and cultural lives of the citizens of Texas.*

UT Dallas aspires to be a nationally competitive public research university with an eventual enrollment at full maturity of 25,000 to 30,000 students. This target size was selected because it is big enough to enable UT Dallas to be competitive with leading public research universities but small enough to preserve the quality and focus of UT Dallas.

Table 1 summarizes the benchmark institutions we use to compare ourselves to. Some might say that UT Dallas is reaching too far by including several lofty institutions among aspirational peers, but UT Dallas has always had high goals. Some characteristics of UT Dallas, such as undergraduate student quality, currently exceed comparable metrics for several institutions in the Aspirational Peer Group. This peer group is made up of five members of the AAU and 5 highly ranked Universities that currently are not members of the AAU.

Table 1. Summary of Selected Characteristics of our Benchmark Universities

University	Reputation Ranking among Public Universities [1]	Medical School?	Member, Assoc. of American Univ. (AAU)?	Enrollment[2]	Number of Tenure-Line Faculty[3]	Total Research in 2011 ($M)	Federally Funded Research in 2011 ($M)	No. of National Academy Members[4]	No. of Doctorates Awarded per Year[5]	Annual Giving ($M)
Iowa State	68	No	Yes	29,611	1288	$224	$96	9	301	$57
Kansas	70	Yes	Yes	27,939	1476	$132	$83	6	281	$100
Oregon	68	No	Yes	24,396	680	$76	$61	8	161	$121
Stony Brook SUNY	67	No	Yes	23,920	939	$258	$107	12	283	$66
Washington State	63	No	Yes	27,329	1100	$286	$96	9	177	$59
Arizona State	66	No	No	72,254	1741	$282	$135	20	490	$104
Delaware	67	No	No	21,489	939	$124	$87	8	176	$32
Georgia	73	No	No	34,816	1646	$350	$107	7	417	$69
NC State	66	No	No	34,767	1487	$381	$135	18	422	$79
Virginia Tech	71	No	No	30,936	1417	$397	$148	13	403	$81
AVERAGE	**68**	**---**	**---**	**32,745**	**1271**	**$ 251**	**$ 105**	**11**	**311**	**$77**
UT Dallas in fall 2012		**No**	**No**	**(15800 FTE)**	**493**	**$95**	**$36**	**4**	**179**	**$40**

* Main Pittsburgh campus only

1. IPEDS enrollment, fall 2011
2. IPEDS Faculty Salaries 2007-08 for full-time assistant, associate and full professors
3. The Center for Measuring University Performance, Arizona State University

The average enrollment for the ten benchmark universities is 32,745 students, and average total research funding is $251M per year. Since total research funding is imprecisely defined, a valuable and consistent measure of external research funding support is federally funded research, which averages $105M for this group of ten universities. Note that the "entry level" of research funding for this group is federally funded research above $50M.

Table 2 presents a comparison between UT Dallas in fall 2012 and the average of the ten benchmark institutions. An important difference between UT Dallas and the group of comparative universities is not only the total number of students but also the number of full-time-equivalent (FTE) students. UT Dallas has a significant number of part-time master's students, especially in business. Part-time students represent an important asset for UT Dallas and its community; as UT Dallas grows, the number of part-time students is expected to increase, but growth in full-time students should be even faster. The number of FTE students at UT Dallas highlights the challenge of scale.

Table 2. Comparison of UT Dallas with the Average of the Five Benchmark Universities without Medical Schools from Table 1.

Parameter	UT Dallas	Average of 10 Benchmark Universities
Enrollment	(15,800 FTE)	(≈32,745 FTE)
Tenured and Tenure-Track Faculty	493	1271
Total Research	$91M	$251M
Total Research per Faculty Member	$185K	$197K
Federal Research	$36M	$105M
Federal Research per Faculty Member	$73K	$83K
Doctorates per Year	179	311
Doctorates per Year per Faculty Member	0.36	0.24
National Academy Members	4	11
Annual Giving	$40M	$77M

*Date from Center for Measuring University Performance

In terms of research productivity, UT Dallas is within reach of the group of benchmark universities on a per-faculty-member basis. Table 2 illustrates that while total annual production is significantly lower than the comparative group, the productivity is similar when measured on a per-faculty-member basis for total research and federal funding, and UT Dallas has better output in terms of Doctorates per year per faculty member.

Description of Targeted Status of UT Dallas

As indicated by the University's vision statement, UT Dallas aspires to be a major, nationally competitive public research university. The University plans to maintain its strong position in science, engineering, mathematics, and business, and to add appropriate degree

programs that have natural affinity with existing programs and represent high-need areas for the North Texas region. The University currently has a mix of 38% graduate students and 62% undergraduate students, and plans to maintain this general balance.

At full development, UT Dallas expects to have close to 30,000 students. The institution does not aspire to be larger than this. With 30,000 students, UT Dallas would be large enough to be able to compete with the best public research universities in America, but could maintain its focus and emphasis on quality, which are core values to be sustained.

The metrics listed in Table 3 quantify the targeted status for UT Dallas in 7 and 17 years. More information about how these numbers were developed is provided later.

Table 3. Summary of Key Goals for Growth and Research Expansion.

Parameter	**Current**	**Target: 7 years**	**Target: 17 years**
Student Enrollment	19,700 (15,800 FTE)	25,000 (20,000 FTE)	28,000 (23,000 FFE)
Tenure/TT Faculty	493	600-700	800
Staff	2,800	3,500	5,000
Total Research	$91M	$130M	$250M
Restricted Research	$45M	$70M	$140M
Federal Research	$36M	$50M	$100M
Endowment	$275M + PUF	$400M + PUF	$1B + PUF
Doctorates Awarded	179	240	300
National Academy Members	4	10	25
National Merit Scholars	63	75	100

Because growth is an essential element of this strategic plan, it is appropriate to examine whether growth plans are realistic. Figure 1 shows the enrollment trends for the past ten years along with projections for the next ten years.

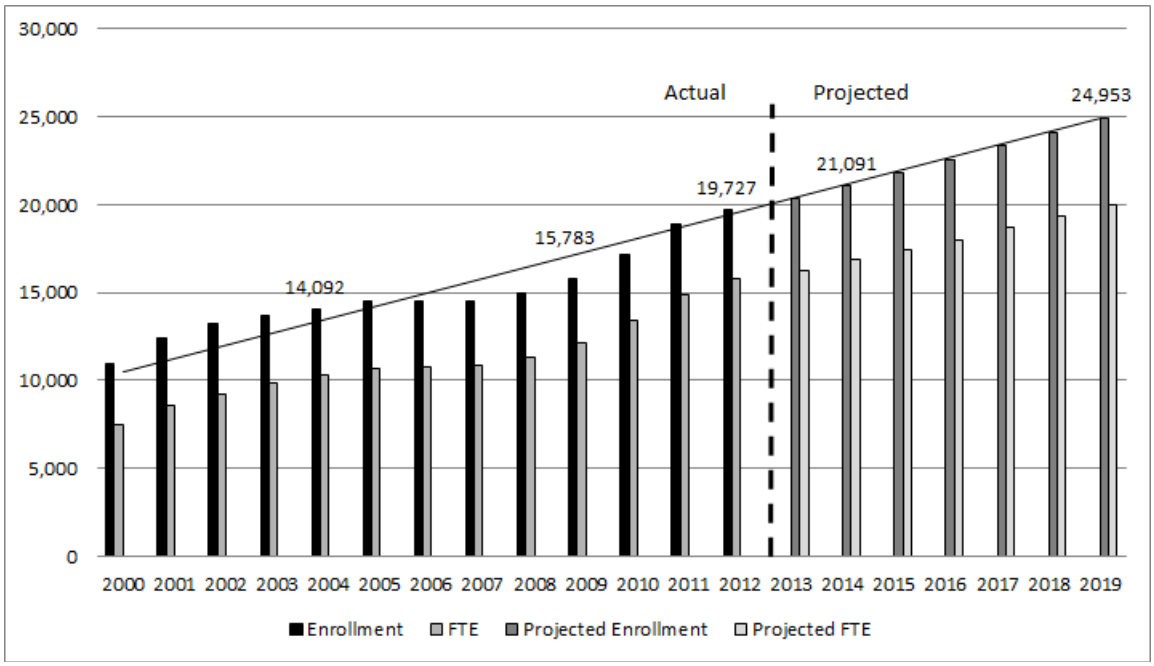

Figure 1. Enrollment Trends from 2000 to 2012, and Projections for 2013 to 2019.

The FTE student enrollment at UT Dallas has been increasing faster than total enrollment because UT Dallas has been adding proportionally more full-time students than part-time students. UT Dallas is assuming that enrollment will increase by an average of 3% to 4% per year over the next ten years. At that rate of growth, enrollment seven years hence will be approximately 20,000 FTE students and 25,000 total students.

Concurrent with growth in enrollment over the past years has been improvement in the quality of incoming undergraduate students. In the past several years, the mean SAT scores ranged from 1225 to 1275 (based on 1600 maximum) and often were the highest among public universities in Texas. Looking to 2019, the entering freshmen class is expected to have an average SAT (V+M) of 1250. Ten years hence, over 50% of entering freshmen are expected to graduate in the top 10% of their high school senior class. The University will also continue to recruit heavily the qualified transfer students from area community colleges.

The 2007 plan also focused on graduation rates for entering freshmen. The current four-year graduation rate for freshmen is 51% and the six-year rate is 64%; the ten-year plan is to raise these rates to ??% and 72%, respectively[1].

In keeping with this focus on excellence and expansion, UT Dallas has been successful in recruiting National Merit Scholars. Figure 2 shows trends from recent years and projections for the next ten years.

[1] Graduation rates quoted are for first-time-in-college (FTIC) freshmen who enter UT Dallas and graduate from UT Dallas. The rates would be higher for those who enter UT Dallas and transfer to and graduate from another Texas public university.

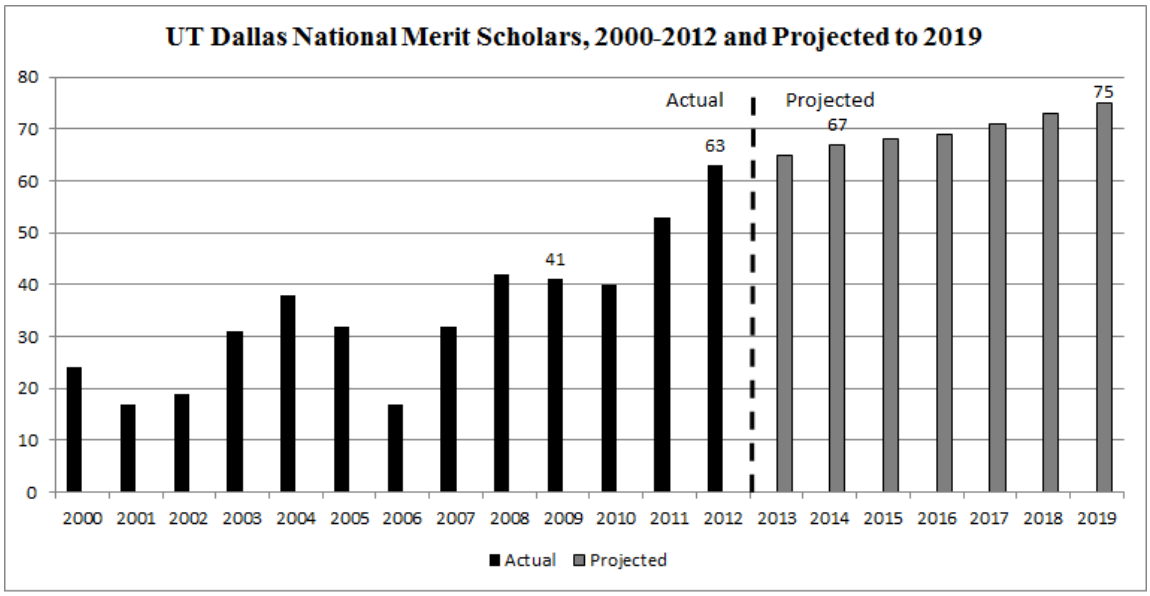

Figure 2. Summary of Past Trends and Future Projections for National Merit Scholars Enrolling at UT Dallas Each Fall.

Does the Plan Reflect a Change in Direction?

This plan reflects a continuation of long-standing efforts to build an outstanding research university. The main challenge for UT Dallas is not remaking the culture or changing direction; the main challenge is continuing to scale up the University in a focused, intelligent manner.

PLAN TO INCREASE RESEARCH FUNDING AND PRODUCTIVITY

Faculty Growth Plan

To compete successfully with leading, relatively small, nationally competitive public research universities, UT Dallas needs a faculty of at least 600 to 800 members. UT Dallas plans to increase the number of tenured and tenure-track faculty members from the current 493 faculty members to 600-700 faculty members within seven years.

Figure 3 provides information on the actual growth in the size of the tenured and tenure-track faculty over the past several years, and shows planned growth over the next seven years. To achieve these goals, UT Dallas plans to:

1. Hire 150 net new faculty members to increase the size of the faculty to 600-700 faculty members (i.e., “new faculty positions”); and

2. Replace faculty members who leave the University due to retirement, resignation, or termination ("replacement faculty positions").

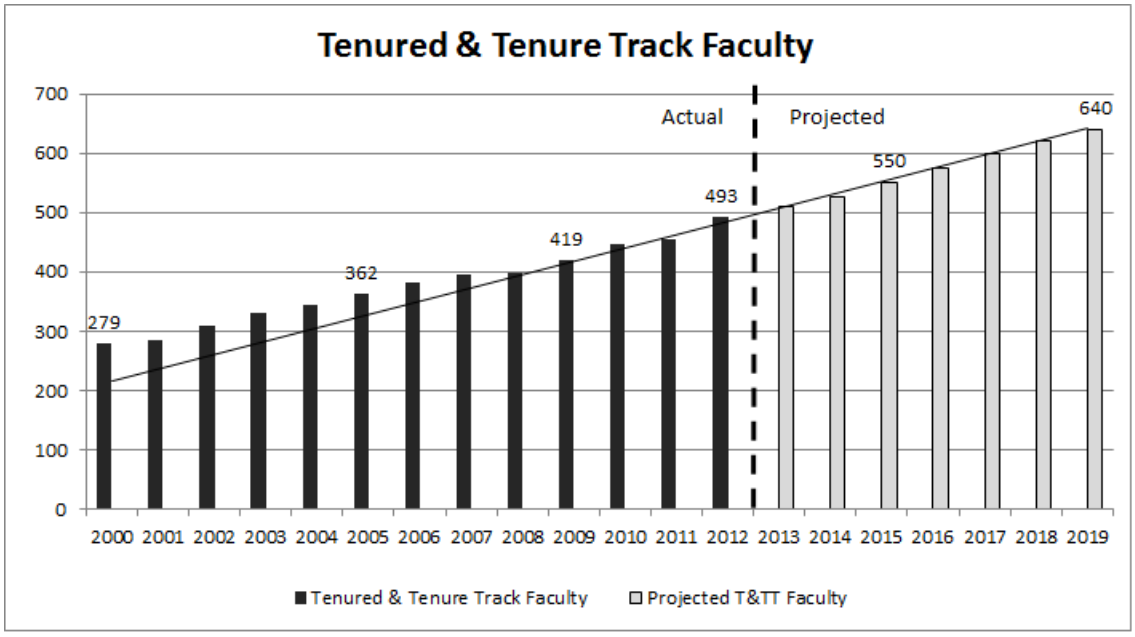

Figure 3. Past and Projected Trends in Number of Tenured and Tenure-Track Faculty.

In the past several years, UT Dallas has experienced a faculty turnover rate of about 3.5% each year due to attrition. In the next ten years, it is estimated that 150 faculty members will need to be replaced due to attrition. Thus, UT Dallas will be hiring approximately 300 new faculty members over the next ten years – 150 "new faculty positions" and 150 "replacement faculty positions" – for an average total hiring rate of 30 per year.

UT Dallas has hired 20 to 40 new faculty members per year during the past decade. The planned average hiring rate of 30 new faculty members per year is consistent with recent trends.

Growth is expected across the board, although proportionally higher growth is planned in the areas in which research, new degree programs, and enrollment are expanding the most. Table 4 summarizes the planned distribution of new tenured and tenure-track faculty members within the various schools of UT Dallas. This table also shows in the right-hand column the anticipated number of faculty members within each school who are expected to be active in securing and performing externally funded research as principal or co-principal investigators.

Table 4. Plan for Faculty Growth.

School	Current Faculty[1]	Faculty in 10 yrs	Change in No. of Faculty	Faculty Engaged in Externally Funded Research in 10 yrs
Arts and Humanities	57	70	+13	12
Behavioral and Brain Sciences	42	53	+11	40
Economic, Political, and Policy Sciences	61	80	+19	40
Engineering and Computer Science	97	170	+73	125
Interdisciplinary Studies[2]	3	3	-	1
Management	79	107	+28	10
Natural Sciences and Mathematics	80	127	+47	72
TOTAL	**419**	**610**	**191**	**300**

[1]Tenured and Tenure-Track Faculty, census day, fall 2009.
[2]Most of the courses in interdisciplinary studies degree programs are offered by other schools.

UT Dallas must not only increase its faculty size, but it must also increase the number of faculty members who are actively engaged in externally funded research. UT Dallas currently has 201 tenured and tenure-track faculty members who are principal or co-principal investigators on externally funded research grants and contracts. In seven years, the number of faculty members involved in externally funded research needs to increase to 300 faculty members (Table 4).

The productivity on a per-faculty-member basis for the 201 faculty members who are currently involved in externally funded research at UT Dallas is:

- $452,000 per faculty member in total research expenditures ($91M total)
- $224,000 per faculty member in restricted research expenditures ($45M total)
- $179,000 per faculty member in federal research expenditures ($36M total)

UT Dallas exhibits competitive research productivity for individuals involved in externally funded research. These data emphasize that the challenge is to support the current productivity of those who are involved in research and to increase the number of faculty members who are involved in externally funded research.

To increase the number of faculty members who are actively engaged in externally funded research from 201 (current) to 300 in seven years will require an increase of approximately 100 faculty members engaged in externally funded research. The University believes that hiring new faculty members committed to a line of scholarship that involves external funding is a more practical way to increase funded research than trying to retrain or reorient

faculty members whose established career paths do not involve such funding. To achieve the goal of adding 100 new faculty members who will be involved in externally funded research, at least 33% of the 300 faculty hires over the next ten years must be active in externally funded research, which is consistent with our recent hiring trends.

The University recognizes that not all faculty members can or should be engaged in externally funded research. Some fields do not require it, although they are still important to a robust center of learning. The intellectual merit of research is measured by the quality and significance of the work done, which can include the education and training of students, publications, discoveries, intellectual property, new forms of artistic expression, and new products and services. External research support is most significant in fields of science, engineering, and medicine where it is impossible to conduct competitive research without resources to pay for equipment, materials, and personnel such as graduate students and post-doctoral scholars. UT Dallas will use research dollars as a measure of individual and institutional vitality in areas for which external resources are necessary to compete effectively with national research universities and not as a sole measure of excellence.

The Opportunities that Growth Presents for Each School within the University

Each of UT Dallas' schools will contribute to the realization of the University's goals. The rationale and opportunity for growth in each school are summarized as follows:

- Arts and Humanities: The Arts and Technology Program has experienced strong growth in enrollment and external research funding. In addition, the new degree program, emerging media and communications, offers major potential for growth and research.

- Behavioral and Brain Sciences: Opportunities exist to expand research in neuroscience, hearing science, language and speech, psychology, and human development. Current projects range from earlier diagnosis of autism, learning about the aging brain, how neuroplasticity changes brain trauma outcomes, and training families to maximize healthy child development.

- Economic, Political, and Policy Sciences: Significant research opportunities include experimental/behavioral and public/urban economics, geospatial science, criminology, and public policy. Education of scholars and leaders for governmental and nonprofit organizations is a key element of the research strategy.

- Jonsson School of Engineering and Computer Science: This young school has yet to implement several of the programs typically found at leading engineering schools. Recently implemented programs include materials science and engineering, biomedical engineering, mechanical engineering, and systems engineering. New opportunities of importance to engineering and North Texas include chemical and biomolecular engineering, and environmental engineering, among others.

- Interdisciplinary Studies: This popular degree program will continue to play a significant role in undergraduate education, interdisciplinary master's programs, and teacher preparation.

- Management: The School of Management is the University's largest school and one of the most research-intensive business schools in the nation. Strengths in quantitative aspects of business systems, such as supply chain logistics, create opportunity for externally funded research and collaboration with other schools. Growth will emphasize research, technology, and the needs of DFW-area businesses.

- Natural Sciences and Mathematics: Large growth potential exists at the interface among physics, chemistry, mathematics and biology in areas such as nanomedicine, biostatistics, and human genome analysis. The School is also actively pursuing collaborative opportunities in biomedical imaging with UT Southwestern Medical Center - Dallas.

Goals for External Funding

The University monitors three types of research expenditures: total research expenditures (all resources committed to research), restricted research expenditures (direct expenditures from external funds dedicated to research), and federal research expenditures (non-agricultural, federally supported research from agencies such as the National Science Foundation and National Institutes of Health). In establishing goals, UT Dallas assumes that past trends of growth will continue.

Federal research funding is a critical measure of success for a national research university. Federal research expenditures for UT Dallas were $21M in 2007-08 and $36M in 2011-12. UT Dallas plans to double federal research expenditures over the next ten years. The longer-term goal is to increase federal research expenditures to more than $100M, which would be fully competitive with top-tier national research universities.

Restricted research expenditures stood at $45M in 2011-12 Restricted research includes federal research funding as well as corporate funding and research supported by individuals and foundations, e.g., in health fields. UT Dallas has historically attracted support from numerous technology companies in the DFW area, as well as significant private and foundation support for research organizations such as the Center for BrainHealth. The ten-year goal for restricted research funding is $70M, and the longer-term goal is more than $140M.

Total research expenditures, not including research equipment, were $91M in 2011-12. The goal in 7 years is total research expenditures of at least $130M and eventually more than $250M.

Figure 4 shows trends over the past few years in federal and restricted research expenditures as well as plans for growth for the next ten years.

To summarize, the UT Dallas plan for meeting its research goals includes:

- Increase the size of the UT Dallas faculty from 493 (fall 2012) to 600-700 in 7 years, and eventually to 800 in 20 years.

- Increase the number of faculty who are actively engaged in externally funded research from the current 201 to 300 in seven years.

- Hire established “star” faculty members in new areas and in areas of growth to rapidly establish programs and help in recruiting high-quality junior faculty members.

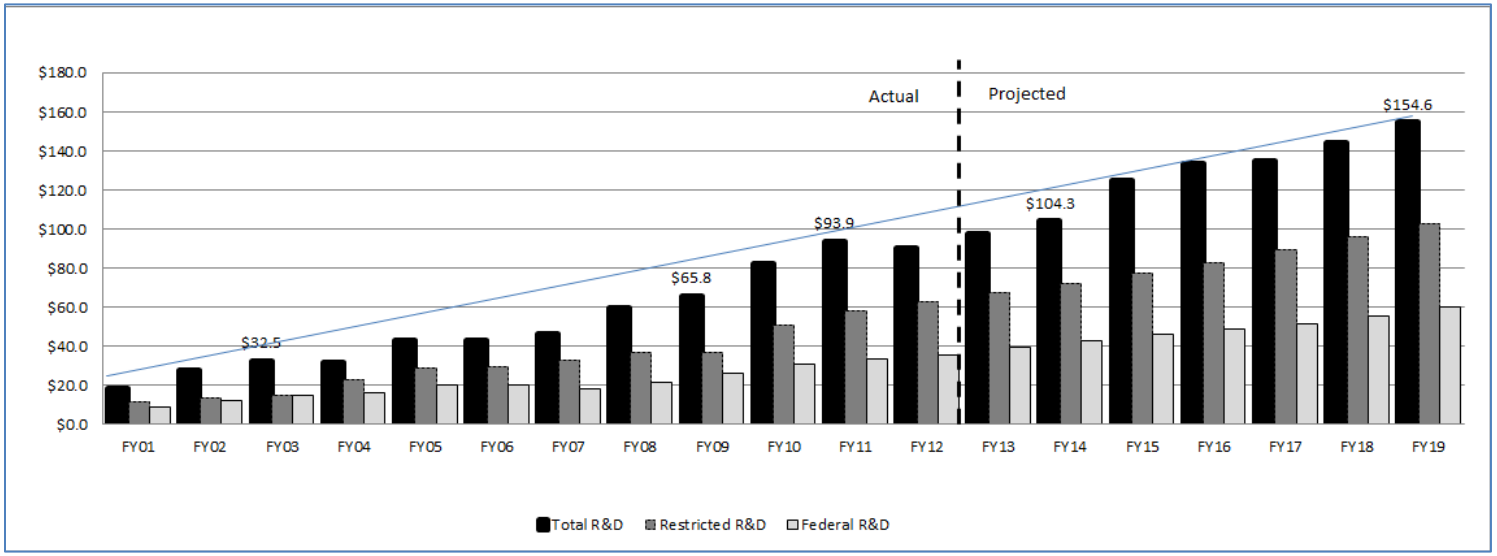

Figure 4. Past and Projected Trends in Federal and Restricted Research Expenditures.

Progress will be monitored each year in terms of faculty hires (number and percent hired in fields where externally funded research is expected), research grant submissions, research awards, research expenditures, major research centers, publications, publication citations, invention disclosures, patents filed, company start-ups or spin outs, undergraduate students engaged in research, and doctoral degrees awarded.

Research Priorities

The 2007 strategic plan goes into significant detail about specific research areas for investment. These include investments in existing strengths as well as new areas. In terms of existing research priorities, UT Dallas has established significant levels of research and expertise in several areas that warrant increased support, including:

- Analog technology – analog circuit design and simulation from DC to TeraHz.
- Behavioral economics – study of how social, cognitive, and emotional factors influence consumers, investors, and the overall economy.
- Control theory – control theory enables technologies ranging from robotics to energy efficiency.
- Cyber security – data mining, data protection, semantic web.
- Education research – the Texas Education Research Center and Texas Schools Project support independent, high-quality academic research and program evaluations through the use of individual level administrative data from Texas state education agencies as well as other sources of Texas education data.
- Geosciences – techniques to monitor the displacement of oil by water in reservoirs and tracking of carbon dioxide sequestered in depleted oil fields.
- Geospatial information science – study of geographic information systems, global positioning systems, and satellite-based remote sensing related to social, economic, and public health issues.
- Human language interface – speech synthesis, speech recognition and real-time data extraction.
- Nanoelectronics – electronic materials and devices for beyond-silicon CMOS technology.
- Nanotechnology –use of carbon nanotubes in structural and chemical applications, nanoparticles for targeted drug delivery, direct destruction of tumors, and improved contrast for magnetic resonance imaging (MRI).
- Neuroscience and cognition – development of tools and techniques to diagnose and treat brain-related conditions ranging from traumatic brain injuries to memory loss related to aging.
- Serious game technology – first-person cultural training for both defense and civilian applications based on techniques developed in the Arts and Technology program.
- Space science – design and fabrication of instrumentation, microsatellite systems, and data analysis tools for remote sensing of environmental changes.

The University has several well-established and successful research centers with strong potential for growth in external research funding:

- Alan G. MacDiarmid Institute for Nanotechnology
- Callier Center for Communication Disorders
- Center for Behavioral and Experimental Economics
- Center for BrainHealth
- Center for Vital Longevity
- Center for Global Collective Action
- Center for Lithospheric Studies
- CyberSecurity Research Center
- Sickle Cell Disease Research Center
- Texas Analog Center of Excellence (TxACE)
- Texas Schools Project
- William B. Hanson Center for Space Sciences

As UT Dallas adds new programs such as mechanical engineering, bioengineering, systems engineering, and emerging media and communications, the University will develop new areas of research expertise. Recent new hires have already started providing the foundation for these new research thrusts in:

- Bioinformatics – combining expertise in computer science and biology to develop core technologies for areas such as individualized health care and systems biology.
- Cognitive neuroscience – using the new technologies of fMRI and PET to understand how the developing and aging brain functions and how disorders of the brain might be treated make this one of the most exiting areas of discovery for the next decade.
- Energy harvesting and energy storage – expanding activities in control theory and nanotechnology to advance the capture of wind energy and the storage of electrical energy.
- Medical devices – bringing together analog technology, microfluidics, silicon devices and biology to create new classes of medical devices for diagnosis and therapy, ranging from cancer to neuroscience.
- Mobile media – combining activities in arts, technology, and emerging media to develop mobile internet advances that drive electronic social networking.
- Neuro-engineering – developing new technologies based upon advanced understanding of the nervous system hold the promise of treating such diverse problems as Parkinson's disease, chronic pain, and Post Traumatic Stress Syndrome.
- Polymer chemistry – organic polymers used for innovative applications such as flexible computer displays, structural materials, consumer products, and biomedical devices.
- Systems engineering – adding to expertise in supply chain management, logistics and computer science to develop analytical models and tools for engineering and managing large projects.

Allocation of Resources

UT Dallas has calculated the cost of expansion and compared this cost with projections for new revenue. Current funding levels from general revenue appropriations and current tuition and required fees for students are assumed to scale with inflation over time.

The projected new annual income and expenses ten years hence, expressed in 2009 dollars, are summarized in Tables 6 and 7. Projected new annual revenue in ten years is $115M, which exceeds the projected new annual expenses of $105M. Projected income and expenses are in balance. The business model is solid – growth in enrollment and research will produce proportional growth in faculty and provide the financial means to pay for the overall growth plan.

Table 6. Projected Additional Annual Income from New Revenue Sources in Ten Years.

Source of Additional Income	Projected New Annual Income	Comments
Increased Enrollment	$69M	New income from general revenue appropriations and tuition/required fees resulting from growth; does not include tuition set-aside for financial aid or fees dedicated to student services, athletics, housing, dining, and other non-academic or research related functions
Technology Commercialization	$3M	Licensing fees and income from ownership stake in start-up companies
Additional indirect cost income from increased research	$12M	Based on planned growth of federal and industry-sponsored research
National Research University Fund	$10M	An estimate of potential income from this new fund
Research University Development Fund	$7M	Assumes that total research will increase by $70M over ten years and continuation of the RUDF program
Research Development Fund	$4M	Estimated based upon research growth
Income from Increased Endowment	$7M	Based on planned growth of $150M in endowment, at 4.75% return
Start-up (STARS) funds from UT System	$3M	Assumes that this program will continue
TOTAL	**$115M**	

Table 7. Projected New Annual Expenses in Ten Years.

New Expense	Projected New Annual Expenses	Comments
New faculty members, support staff, and operating costs (staff, instructional resources, labs, equipment, IT, security, utilities, and building maintenance)	$67M	Assumes growth to 610 tenured and tenure-track faculty members and an increase in enrollment to 22,000 total students – cost determined by scaling current expenses to reflect growth
Research support staff	$3M	25 new individuals such as instrument technicians, computer support staff, and research scientists
Student support (merit based scholarships for undergraduate students and fellowships for graduate students)	$10M	Increased enrollment will require additional student support and increased engagement of undergraduates in research; growth in need-based aid is separately budgeted from financial-aid set-aside
Start-up costs for new faculty	$8M	Assumes $500,000 per faculty member for an estimated 16 new faculty members per year engaged in externally funded research
Increased library staff support (does not include increases for library acquisitions, which are paid from a separate fee)	$3M	Assumes additional 30 staff members to support enhanced library research capacity
Debt service for new buildings	$14M	Assumes that debt service for two-thirds of all new academic and research space required (400,000 sq ft) would be paid by UT Dallas.
TOTAL	**$105M**	

The principal source of new revenue is derived from enrollment growth. In fact, enrollment growth drives the business plan. If enrollment growth is faster or slower than projected, the need and ability to hire faculty, start new programs, construct new buildings, etc., is increased or decreased. The planned growth over the next 10 years is similar to growth over the past 10 years.

As noted in Table 6, $69M of new income from enrollment growth does not include student service fees, athletic fees, room and board, and other auxiliaries. UT Dallas assumes that all these services will scale up as more students enroll, that new residence halls will be constructed, etc. Students will benefit from a larger university because they will have a broader array of facilities, many more student organizations and services, and more "college life" opportunities from which to choose.

In terms of expenses, UT Dallas currently spends about $160M per year to operate the University. This includes not only salary and fringe benefits for faculty members, but also support staff (teaching assistants, graders, instructors, administrative support staff, information technology support staff, maintenance personnel, police force, etc.), operating expenses (computers, printers, supplies, postage, phone, utilities, etc.), and building operating and maintenance costs. As UT Dallas grows, it will enjoy the associated economies of scale – it will still need just one president, one provost, one engineering dean, etc. The aggregate of new annual operating costs (salaries, benefits, operational expenses, and building maintenance costs) is estimated to be $67M, determined from scaling the $160M of current costs for increases in faculty, students, staff, and space.

Cost containment is very important at UT Dallas and will become even more important in the future. Emphasis has been given to promoting a culture of improved efficiency under the "Lean University" program. This program finds efficiencies by examining processes that require multiple steps and/or people and eliminating unnecessary or wasteful steps. Implementation allows improved productivity and reduced unit costs.

New Buildings

As of May 2012, UT Dallas had a 3.3 million gross square feet of space, including academic space, residential housing, recreational facilities, and other space. Of this, 1.33 million square feet is academic and research space, including the library. The current academic space works out to be 90 square feet per FTE student and about 3,000 square feet per T/TT faculty member.

UT Dallas and nearly all other Texas higher education institutions are currently suffering from a deficit in academic and research space, according to The Texas Higher Education Coordinating Board (THECB). The THECH reports that UT Dallas has a shortage of 830,000 square feet of academic space, with the total state deficit exceeding 15 million square feet. It will take many years to address this deficit. In its planning, UT Dallas has used the following, typical of current status, for calculating space goals:

- 100 gross square feet of academic space per FTE student, and

- 3,000 gross square feet of academic space per T/TT faculty member.

The University of Texas at Dallas currently has four academic buildings either under construction or in early design:

- Art and Technology Building, 155,000 ft^2, completion in 2013,
- Addition to School of Management, 110,000 ft^2, completion in 2014,
- Bioengineering and Sciences Building, 220,000 ft^2, completion in 2015, and
- Engineering Research Center, 50,000 ft^2, completion in 2015.

The four buildings total 535,000 ft^2. At the current square-foot requirements per student and faculty, 535,000 square feet of new space will accommodate 5350 new FTE students and 178 new T/TT faculty members, which should be sufficient space to meet growth needs for students and faculty until Fall 2018.

For the next several years, the academic and research space needed to accommodate growth should be constructed, although the space deficit remains unaddressed. To address the near-term deficit in academic and research space, UT Dallas is considering temporary buildings and leasing or purchasing vacant space near campus.

Beyond Fall 2018, additional space will be needed, probably no later than 2018 to 2019, which means that the space will have to be authorized by 2014 or 2015 at the latest. It is reasonable to expect that the State of Texas will have a capital program before the end of the decade. It is also reasonable to assume that the PUF will occasionally fund new buildings for UT Dallas, that internal funding through the Revenue Financing System can occasionally bear the cost of new buildings (likely funded from increased indirect cost recovery from externally funded research), and that private giving will play a role for some future buildings.

Student Participation

UT Dallas currently offers a number of programs that enhance student opportunities to participate in research at the undergraduate level. These include:

- **Undergraduate Research Scholar Award Program** - UT Dallas strongly encourages student engagement in the research work of the University by awarding undergraduate students research scholarships. Awards are made on a competitive basis and consist of a cash stipend of $500 paid to the student, as well as an award of $300 to support the research project (e.g., laboratory equipment, poster printing, project travel, etc.). For 2012, 70 undergraduate students received awards. UT Dallas expects to continue to expand the program over time.

- **Collegium V Honors Program** - The University offers a four-year comprehensive program of enrichment and recognition, known as Collegium V, for outstanding students. Students graduating from Collegium V must complete a senior project or senior thesis based upon research in a laboratory or under the supervision of a faculty member. A number of students have participated in research through internship opportunities on and off campus, including undergraduate programs sponsored by Los Alamos National Laboratories, Sandia Labs in Albuquerque, NASA in Houston, and UT Southwestern Medical School. Students have also engaged in research for think tanks in Washington, D.C., such as the American Enterprise Institute, the Heritage Foundation, the Middle Eastern Institute, and Justice at Stake through the Bill Archer Washington Internship Program.

- **Green Fellows Program -** Offered jointly by UT Southwestern Graduate School of Biomedical Sciences (http://www.utsouthwestern.edu/graduateschool/index.html) and UT Dallas, the Green Fellows Program provides a semester-long intensive research training experience that leads to an understanding of the planning, discipline, and teamwork involved in addressing basic research problems in the biological sciences. Green Fellows pursue individual research projects under the direction of the graduate school faculty at UT Southwestern.

- **The Clark Summer Research Program** - First-time freshman who receive an Academic Excellence Honors Scholarship or National Merit Scholarship may apply for one of twenty Anson L. Clark Summer Research Program positions awarded annually. This program provides the opportunity to work with members of UT Dallas' science and engineering faculty for a period of ten weeks for $2,000. At the conclusion of the program, each scholar summarizes his or her research and presents it at a University-sponsored research conference.

- **Disciplinary Academic Honors** - Each school offers qualified students the opportunity to participate in an honors program within their discipline. All students must have completed a minimum of 30 graded semester credit hours to qualify for major honors. Most programs require students graduating with honors to complete an undergraduate thesis under the supervision of a faculty committee. This includes chemistry, biochemistry, mechanical engineering, software engineering, computer engineering, mechanical engineering, and computer science.

Technology Commercialization

The University of Texas at Dallas believes that research should benefit society and that technology commercialization is integral to maximizing this positive impact. To that end, the University reorganized its technology transfer operations in 2008, creating the Office of Technology Commercialization (OTC) to begin establishing UT Dallas as a leader in technology licensing, start-up creation, and industrial collaboration. Under the leadership of a new Associate Vice President for Technology Commercialization, the office has

established a customer service-oriented culture focused on educating faculty and facilitating the movement of technology from the lab to the marketplace.

In collaboration with the UT Dallas Institute for Innovation and Entrepreneurship, OTC hosts quarterly Research and New Venture Showcases to highlight the synergies between faculty research and local high-tech companies and conducts Entrepreneurship Boot Camps to educate faculty members and graduate students in the basics of developing a new business. In addition, OTC has developed relationships with entrepreneurs, investors, and legal counsel forming a network of experts who assist in the evaluation and commercialization of University technologies.

The developing commercialization culture at UT Dallas has already produced tangible benefits to the University. The visible focus on technology commercialization has enhanced the attractiveness of the University to entrepreneurial faculty recruits, with several recent hires citing UT Dallas' commercialization philosophy as a key reason for joining the faculty. In addition, the University's growing reputation as a capable and uncomplicated collaborator with industry has allowed UT Dallas to enhance its research funding from sources including SBIR and STTR grants and the State's Emerging Technology Fund, which would otherwise be inaccessible to a university. As the University grows, it will continue to enhance its technology commercialization infrastructure with the goal of commercialization becoming an integral and seamless component of the UT Dallas research enterprise. In 2011 UT Dallas opened the Venture Development Center (VDC) to provide start-up space for UT Dallas spin-out companies. There are currently 13 companies in the VDC. Spin-out companies from UT Dallas over the past 4 years have created 50 jobs in the area, and have contributed over $3M in funded research back to the University.

Over time, UT Dallas anticipates that a research and commercialization park will likely emerge on or near campus, funded either by the University or private interests. Given the focus of UT Dallas on research, and the intense concentration of technology companies in North Dallas, the opportunity for commercialization of technologies and the creation of new companies from UT Dallas' work and people is very high.

PLAN TO IMPROVE UNDERGRADUATE EDUCATION

Institution's Plan to Improve the Quality of Undergraduate Education

UT Dallas plans to expand and enhance its programs designed to provide high-quality undergraduate education to an increasing number of Texas' best high school graduates. These students arrive at UT Dallas both as first-time-in-college freshmen and as highly qualified community college transfer students. The strategies that underpin this plan range from merit-based scholarships designed for academically stellar freshmen to programs for students of potential who were not adequately prepared in high school to programs for community college transfer students. Through these varied programs, UT Dallas is committed to providing an atmosphere that encourages diversity. In all cases, this plan focuses on recruiting and retaining able and ambitious students who are attracted to the challenges of our rigorous and innovative curricula and instruction.

The profile of undergraduate students at UT Dallas includes successive freshmen classes that rate among the best in Texas. UT Dallas also places a specific priority on the recruitment and successful graduation of transfer students. This plan continues the 2007 goal of improving four and six-year graduation rates for freshmen. Today, the four-year graduation rate for freshmen is 51% and the six-year rate is 64%; the ten-year plan is to raise these rates to 55% and 72%, respectively.

Merit-based scholarships are a major component of the UT Dallas recruitment strategy. The University's Academic Excellence Scholarship Program awards financial aid based on high-school records of rigorous curriculum, grades and class rank, and SAT/ACT scores. Awards range from $2000 offsets for tuition and fee charges to full coverage of tuition and fees, housing, and living expenses. The highest level of these scholarships is designated for National Merit Scholars. The National Merit Scholarship Corporation (NMSC) recognizes UT Dallas as a collegiate sponsor, and National Merit Finalists who list UT Dallas as their first choice with NMSC receive eight semesters of full conventional scholarship support plus support for international study. The Academic Excellence Scholarship fund contains specific allocations for students recognized by the National Achievement Scholarship Program, conducted by the NMSC. Similarly, UT Dallas recognizes students identified by the National Hispanic Honor Awards Program through The College Board. A similar, separately funded, merit-based scholarship program is reserved for transferring community college students with excellent academic records.

Two other scholarship programs, funded with endowment and foundation support, operate in concert with the Academic Excellence Scholarship Program: the Eugene McDermott Scholars Program and the UT Dallas Terry Scholars Program. Students eligible for these programs are subject to extremely extensive evaluation criteria including evaluations of service and leadership attributes.

Comet Connection, an innovative program designed to help transfer students by allowing them to lock in UT Dallas tuition at today's rates, now has partnerships with all 50 Texas public community colleges, as well as with the two private community colleges in the state. Created to help students and their families budget for college, Comet Connection guarantees four years of fixed tuition and fees and other enrollment benefits at UT Dallas. University recruiters actively promote this program with recruitment publications, direct mail and placement staff at community colleges.

The Academic Bridge Program, started in 2000, recruits urban high school students with high class rankings who may nonetheless be lacking exposure to the full college preparation curriculum. SAT scores for these students are typically in the 1000 range. In a typical entering class of Academic Bridge students, 65% are Hispanic or African-American; most are first-generation college students. These students graduate from UT Dallas at a rate higher than state or national averages. Students are eligible for scholarship and other assistance.

STARRS (Supporting the Transition to Achieve Recruiting and Retention Success), a new program for students in the Erik Jonsson School of Engineering and Computer Science, aims to help underrepresented students navigate and succeed in traditionally challenging engineering and computer science courses at the University. The program's components include scholarships, mentoring by established students and industry partners, and a head start summer program that allows students to complete six to seven hours of coursework that applies toward their degree requirements or prerequisite classes in the summer after their high school graduation.

The Multicultural Center under the direction of the Office of Diversity and Community Engagement has also been involved in meeting the "*Closing the Gaps"* goals. The Comet S.T.A.R.S. (Success through Academic Resources and Support) program was created in 2006 for first-year students and especially targets students who are members of underrepresented groups. This program is designed to increase academic success and encourage campus involvement through peer-to-peer mentorship. Each year, students are paired with qualified upperclassmen to provide them with academic support and positive role models of successful college life. Although the formal mentorship lasts one year, the bond formed is often maintained throughout the protégés' academic career.

As these programs evidence, UT Dallas is committed to providing leadership in the "*Closing the Gaps"* effort particularly in many of the science, technology, engineering, and mathematics (STEM) disciplines, which are core strengths of the University. Among the programs and opportunities described here, Academic Bridge, the Comet Connection, STARRS and the Terry program address gaps in access and means to college attendance, and provide focused, concentrated mentoring to students who are at greater risk of failing to graduate. The Office of Diversity and Community Engagement has also developed pre-college initiatives targeting underrepresented student populations from area high schools. The goal is to maintain the caliber of undergraduate students whose academic performance, persistence, graduation rates, professional and graduate school placements, and vocational success are among the best of all Texas institutions of higher education.

Further Improvements

The Office of Distinguished Scholarship is a resource available to all UT Dallas students. The Office is committed to helping students realize their fullest intellectual potential and compete at the highest levels for academic grants and scholarships. It publicizes scholarship opportunities, recruits potential candidates, and works closely with candidates as they complete the often-arduous application process. In addition, the office is committed to communicating with students, beginning in their freshman year, about their personal academic and career goals, and aiding them in the development of their intellectual *persona* over the course of their undergraduate years. In recent years, UT Dallas undergraduates have received distinguished awards including the Harry S. Truman Scholarship, the Barry Goldwater Scholarship, the Fulbright Fellowship, the Marshall Scholarship, the Critical Language Scholarship, the Boren Scholarship, and the National Institutes of Health – Oxford Cambridge Scholarship.

The Office of Student Success and Assessment (OSSA) promotes continual improvement of education and research by providing students with a diverse array of academic strategies and by collaborating with other UT Dallas schools and departments toward enhancing program and unit assessments. OSSA offices, classrooms, and a multi-purpose computer lab are centrally located within the UT Dallas Conference Center and include the GEMS Lab, Math Lab, and Writing Center.

Gateways to Excellence in Math and Science (GEMS) is UT Dallas' comprehensive plan to enhance the quality of student learning in mathematics and science by providing students with innovative, intensive, and active learning experiences both inside and outside the classroom. The project targets success, retention, and persistence in gateway math and science courses that play a critical role in influencing student decisions to continue studies in degree programs heavily grounded in mathematics and the sciences as well as to continue their college careers. GEMS involves a series of interventions, including curriculum alignment and realignment, course redesign, new course design, the introduction of new modes of curriculum delivery, and faculty development. The overall objectives of GEMS are to provide a foundation and locus for sustainable faculty and administrative activities that will (a) increase the retention of students in science, technology, engineering, and mathematics (STEM) fields; (b) decrease the number of 'D' grades, 'F' grades, and withdrawals in STEM classes; and (c) create supportive, engaging learning opportunities.

The Office of Educational Enhancement leads, coordinates, and supports the University initiatives related to assessment, faculty development, instructional technology, and distance education campus-wide in key areas of UT Dallas' mission and strategic plan for students, faculty, and staff through policy, processes, and professional development in collaboration with the campus community for continuous evaluation and improvement.

Plan to Increase the Numbers of Baccalaureate Degrees

As noted in the preceding discussions, UT Dallas continues to have a dominant institutional profile in science, engineering, and business. Current and planned efforts to further increase the numbers of graduates in critical fields are based on still more intensive recruitment of students for the existing degree programs and, concurrently, the development of new degree programs in the science and technology areas.

Some new undergraduate degrees that have been initiated or are in preparation include:

- Actuarial Science (Active)
- Arts and Technology (Active)
- Biochemistry (Active)
- Biomedical Engineering (Active)
- Biophysics (In Preparation)
- Geospatial Information Sciences (Active)
- Mechanical Engineering (Active)
- Neuroscience (Active)

The University has placed major emphasis on providing the additional math and science teachers that Texas schools urgently need. This is occurring through partnership with the UTeach program. UTeach Dallas is devoted to recruiting, developing, and retaining a new generation of math, science, and computer science teachers. The UTeach program affords students the opportunity to explore the profession of teaching math, science or computer science with little time and financial commitment beginning their freshman year.

PLAN FOR DOCTORAL PROGRAMS

Existing Doctoral Programs

Table 8 lists UT Dallas' existing doctoral programs, their implementation date, and the average annual graduation number based on a three-year average. At present, UT Dallas offers 30 doctoral programs, including 29 PhD programs and one Doctor of Audiology degree.

UT Dallas has breadth in strong doctoral programs; the top five graduate-producing programs span three schools. The two most productive programs in terms of degrees awarded are computer science and management science. Electrical engineering boasts high graduate output as well, averaging 10.7 graduates annually the last three years.

The Coordinating Board's responses to three-year and annual progress reports of UT Dallas' doctoral programs regularly commend persistence rates, student performance, overall faculty productivity, and financial support. However, a common weakness that has been identified across many doctoral programs is ethnic diversity. UT Dallas has made an institution-wide commitment to increase student and faculty diversity with the recent establishment of the Office of Diversity and Community Engagement. Programs at all levels are expanding recruitment efforts of underrepresented students and are also engaging in post-enrollment retention support programs with the Vice President of Diversity and Community Engagement.

Quality Control. UT Dallas has ten doctoral programs that average fewer than two graduates per year for FY 2006, 2007, and 2008; however, four of those ten programs have not yet been in existence for six full years. As noted by the Coordinating Board staff in letters regarding UT Dallas' third-year or annual progress reports, the newer programs are

exceeding initial enrollment projections and have quality faculty productivity. In addition, a recent policy change to the graduate catalog that reduced the minimum number of hours to graduate with a doctoral degree (from 90 to 75) will assist graduate output for all doctoral programs. UT Dallas will consider issues of cost, need, and current enrollment to develop action plans to increase productivity for programs the University wishes to retain.

Table 8. Existing Doctoral Programs at UT Dallas.

Program Name	Date Implemented	Annual average of graduates FY10-12*	Projected Graduates in 2019
Geosciences	1969	2.7	4
Physics	1969	5.0	7
International Management Studies	1974	2.0	3
Management Science	1974	12.7	19
Mathematical Sciences - Applied Mathematics	1974	2.3	4
Mathematical Sciences - Statistics	1974	3.3	4
Humanities	1975	1.0	5
Public Policy and Political Economy	1975	9.0	12
Chemistry	1983	5.7	11
Computer Science	1983	24.0	20
Humanities - Aesthetic Studies	1983	6.0	10
Humanities - History of Ideas	1983	3.0	4
Humanities - Studies in Literature	1983	7.3	7
Electrical Engineering	1990	23.0	24
Electrical Engineering - Microelectronics	1990	6.0	3
Biology - Molecular and Cell Biology	1991	4.3	8
Audiology (Au.D.)	2001	8.3	11
Computer Engineering	2002	3.0	3
Software Engineering	2002	2.3	3
Telecommunications Engineering	2002	2.3	4
Economics	2003	5.0	5
Political Science	2003	5.0	6
Cognition and Neuroscience	2004	5.3	9
Communication Sciences and Disorders	2004	2.0	7
Psychological Sciences	2004	4.3	5
Public Affairs	2004	17.3	19
Geospatial Information Sciences	2005	3.0	4
Materials Science and Engineering	2006	5.7	8
Criminology	2007	3.0	8
Biomedical Engineering	2010	new	5
Arts and Technology	2010	new	4
Mechanical Engineering	2011	new	4
TOTAL		**183.9**	**250**

* Three-year trailing average.

Quality Enhancement. In order to sustain a program with the potential of national prominence, faculty members supporting the program must be engaged in research, actively publishing, or contributing other creative or scholarly works. Scale also is a major factor in building stronger programs, and as UT Dallas hires more faculty who, in turn, perform more and better research, the overall strength of doctoral programs will improve.

Faculty members submit annual reports to the Office of the Executive Vice President and Provost detailing, among other achievements, their research productivity and publications. The reports are used by department heads, deans, and the provost to identify faculty whose performance level does not match that of the program's general performance level, and any such faculty members are offered mentoring and other support services. In addition, the Office of Research offers faculty assistance in writing grant proposals.

In addition to faculty productivity that promotes student involvement in research projects, UT Dallas will also benchmark its programs against national peers as discussed later. Finally, as discussed below, UT Dallas will regularly evaluate the overall effectiveness of each doctoral program using both a formalized external review process and an internal dynamic assessment process.

Comparison with National Peers. See Appendix B.

New Doctoral Programs

Areas of Emphasis. Table 9 identifies the future doctoral degrees UT Dallas plans to request for implementation over the next ten years. These new degree programs are expected to lead to 29 new doctorate degrees per year in ten years and far more in the succeeding ten years as the programs grow and mature.

When determining which degree programs to develop, UT Dallas considers local, regional, state, and national student and job market demand. The Bureau of Labor Statistics' job outlook projections for 2008 are reviewed as is student enrollment at the state and national levels. Although the national job market demand is not especially strong for mechanical and chemical engineering, a shortfall in doctoral graduates exists in DFW and in Texas. As illustrated by Table 9, UT Dallas plans to increase its doctoral programs predominantly in its School of Natural Science and Mathematics, home to many of the University's founding programs, and the Erik Jonsson School of Engineering and Computer Science, the fourth-ranked graduate engineering school in Texas according to *U.S. News & World Report* rankings of graduate programs. Many of the planned doctoral programs are supported by existing strong undergraduate and master's programs.

When considering new doctoral programs, UT Dallas gives heavy emphasis to programs that are natural extensions of existing programs. Chemical engineering, for example, is relatively easy to add given current strengths in chemistry and rapidly expanding capabilities in materials science and engineering as well as developing expertise in biomedical engineering.

All of the programs in Table 9 have these types of natural connections to existing faculty members and programs.

Table 9. Planned Future Doctoral Programs at UT Dallas.

Program Name	Year	National employment base and 10-yr trend, Bur. Labor Statistics	Projected Graduates in 2019
Science/Math Education	2010	Data unavailable	4
Educational Administration	2012	445,400; +8%	5
Speech Pathology	2013	119,300; +19%	3
Biostatistics	2013	22,600; +~13%	2
Systems Engineering and Management	2014	Data unavailable	2
Urban and Regional Planning	2015	38,400; +19%	2
Communications	2015	Data unavailable	3
Chemical Engineering	2016	31,700; (-2%)	NA
Biophysics	2017	15,600; +~21%	NA
Environmental and Civil Engineering	2018	ENV: 54,300; +31% CIV: 278,400; +24%	NA
Atmospheric Science	2019	9,400; +15%	NA
Actuarial Sciences	2019	19,700; +21%	NA
TOTAL			**21**

As illustrated by Figure 5, UT Dallas has seen considerable growth in the number of doctoral graduates in the past ten years. The University's plan to add 14 more programs by 2019 is consistent with the past growth rate. The combined projected graduates for 2019 total 240 doctoral degrees awarded (211 from existing programs and 29 from new programs).

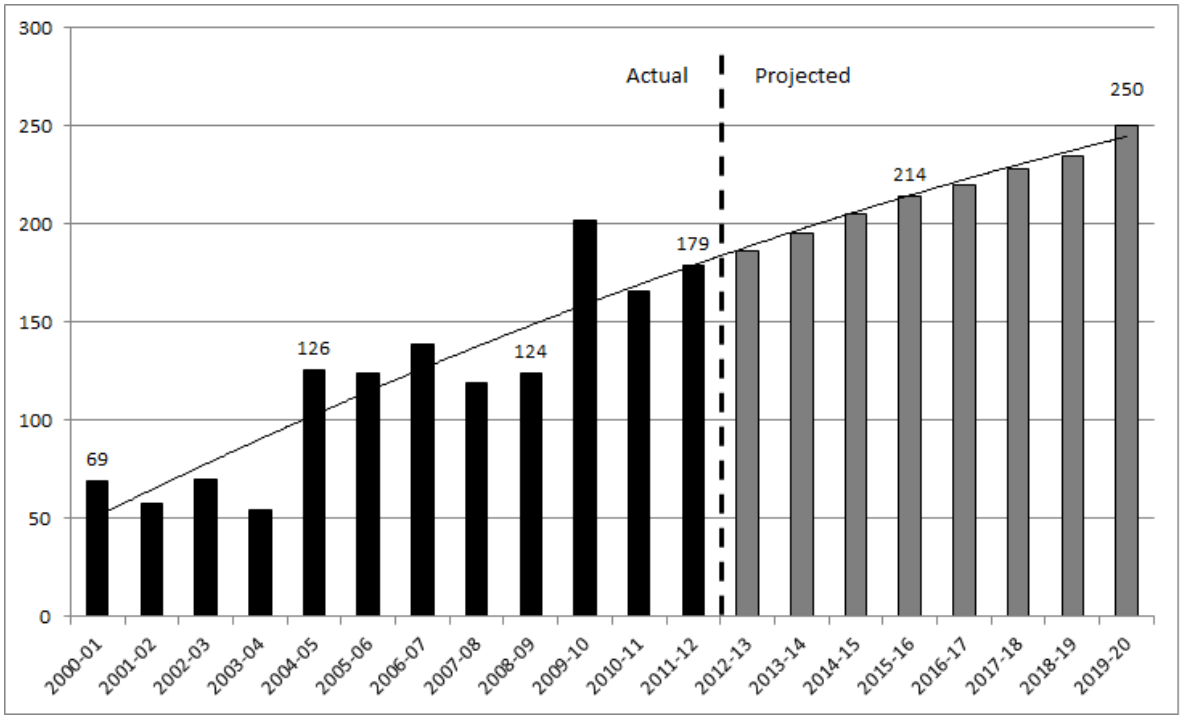

Figure 5. Numbers of Doctorates Awarded 2000-2001 to 2011-2012 and Projected to 2019-2020.

Assessment. Internal and external reviewers assess all UT Dallas academic programs approximately every five years. UT Dallas' Policy Memorandum 94-III.24-63, Academic Program Review (http://provost.utdallas.edu/policy/utdpp1013), governs this periodic review of academic programs and charges the review team to provide an "assessment of the goals, plans, staffing, resources, existing and potential strengths…and those areas needing improvement" to determine the program's viability. The process includes a review team that typically is composed of at least three individuals from other institutions that have programs similar to those of the unit under review, at least two members from the UT Dallas faculty, and a member of the program review committee who is not affiliated with the program being reviewed. The review team evaluates the unit as requested by a written charge that instructs them to "[e]valuate the quality, the effectiveness, and the efficiency of the undergraduate and graduate curricula and the delivery of instruction," as well as to evaluate the appropriateness of its assessment plans and student learning outcomes.

In accordance with the guidelines and instructions issued by the provost, the unit undergoing review prepares a comprehensive self-study document and sends it to the review team prior to its on-campus visit. Before leaving the campus, the team holds exit interviews with the unit's faculty and administration, the provost, the president, and other appropriate senior administrators. The review team summarizes its immediate impressions and provides a forecast of its eventual written report. After the chair provides the provost with the final report, the unit under review provides its written response to the review team's recommendations and conclusions. The provost then prepares final recommendations to the

president to complete the review. In the years between reviews of the unit, the results of the program review are used when making decisions on budget, staffing, curricular and degree changes, and allocation of special resources.

In addition to the rigorous external periodic review of all doctoral programs, UT Dallas regularly assesses each doctoral program using an institutional-wide online assessment tool. This assessment report includes program mission statements, program-specific student learning objectives, measures to achieve those objectives, findings that evaluate the criteria of success, and future action plans to improve upon the findings. Faculty, program heads, and deans use the assessment report to identify areas that need improvement and to make necessary adjustments. Finally, UT Dallas uses the Coordinating Board's *18 Characteristics of Texas Public Doctoral Programs* as a guide to assess the quality of its doctoral programs.

Regional Impact. UT Dallas' strategic plan includes initiatives that reflect a substantial responsibility to interface with the DFW Metroplex. To attain this goal, UT Dallas is committed to establishing collaborative programs with UT Southwestern and UT Arlington. The recently approved biomedical engineering degree is an example in such collaborative efforts of the schools to transform the Metroplex into a global leader in biomedical research. Likewise, the joint PhD program in Mechanical Engineering between UT Dallas and UT Arlington will provide significantly more opportunities for our students than either program could provide on its own.

Dallas-Fort Worth is one of the world's leaders in technology delivery businesses, including aerospace, defense systems, information technology, micro and nano electronics, telecommunications, and many others. There is a tremendous appetite for leading academic research to produce discoveries and to provide the human talent needed. This appetite extends across nearly all areas of physical sciences and engineering.

Additionally, the area is a fast-growing center for biotechnology, bioinformatics, medical devices, and the life sciences and has 38 basic chemical manufacturing facilities, 32 pharmaceutical and medical facilities, 215 medical equipment and supply facilities, and 170 scientific R&D firms. With the selection of its future doctoral degree programs and research, UT Dallas is well poised to meet the Metroplex's needs and to help the entire region to advance. The impact of this will be monitored internally by the Office of Research and the schools and externally through industrial advisory boards and other such local partnerships.

PLAN FOR FACULTY AND STUDENT DEVELOPMENT

Faculty Research

UT Dallas already does much to encourage faculty to be productive, innovative, and effective in their teaching and research. As the data presented earlier demonstrate, the research productivity of those faculty members who are engaged in externally funded research is already good. Strong research productivity is found elsewhere across the University even where opportunities for funding are limited. For example, the School of Management (SOM) is one of the nation's most productive business schools in terms of research. Recent rankings for SOM from 2009 include #1 professional part-time and #1 public executive MBA program in Texas (*Business Week*), #20 worldwide in faculty research productivity (*Financial Times*), and #7 in number of publications in the journals of *Management Science and Operations Research*. Also as indicated earlier in Table 2, the production of doctorate degrees on a per-faculty-member basis compares very favorably with the group of benchmark universities.

UT Dallas provides faculty members numerous opportunities to enhance their research, teaching, and service through participation in institutional programs that promote professional development. This support is expressed through a variety of programs and policies encouraging faculty members to add to their knowledge, to contribute to the expansion of understanding in their academic fields, to become more effective teachers, and to enhance their pedagogy by making use of advanced technology. Specific faculty development opportunities available at UT Dallas include special faculty development assignments (SFDA), faculty leaves of absence, the faculty-mentoring program, new faculty orientation, the University compliance programs, various programs sponsored by the Office of Research, faculty resources for distance learning, and opportunities facilitated by the Office of Educational Enhancement.

Faculty Recognition

The University has benefited from endowed professor and chair positions, many of which have existed for many years. Ninety UT Dallas faculty members hold such positions. This puts UT Dallas in a position to offer endowed faculty positions to approximately 20% of its 493 tenured and on-track faculty members, which is a reasonable percentage to be nationally competitive. The University must add approximately 40 to 50 new endowed positions over the next ten years to keep pace with the growth in faculty and to maintain or enhance its percentage of faculty with endowed positions.

Collaborations and Partnerships

Many UT Dallas faculty members have collaborations with leading academicians around the world that have been developed on an individual level. There are also several applications at the University level that are associated with research centers. Examples of collaborations are:

- Advanced Imaging Center (AIC) – One of the most advanced medical imaging centers in the world is located at UT Southwestern Medical Center. The AIC is built on the expertise of scientists from UT Southwestern Medical Center, UT Dallas and UT Arlington. Many of the Center for BrainHealth and Center for Vital Longevity faculty are associated with AIC.

- Biomedical Engineering PhD program – UT Dallas recently joined with UT Southwestern and UT Arlington in offering a joint PhD to further serve the growing need in biomedicine and bioengineering.
- Medical Technologies Consortium – Texas Instruments, Texas Health Resources, UT Dallas, UT Arlington and the UNT Health Science Center have combined resources to fund seven research projects to develop medical devices, where the projects are joint development programs between UT Dallas and UT Arlington faculty members.

- Texas Schools Project/Texas Education Research Center – UT Dallas joined with a group of 19 Texas school districts and educational research organizations in founding the Texas Consortium on School Research. This project aims to allow members from districts across the state to collaborate in building research capacity to address critical issues to support improvement efforts.

- TxACE (Texas Analog Center of Excellence) – >$20M collaboration funded by industry and State of Texas to design next generation analog and high frequency circuits. Universities involved in TxACE include UT Austin, Texas Tech, Texas A&M, SMU, Arizona State University, Stanford, and others.

New Faculty

The plan to hire new faculty is discussed earlier, under "Plan to Increase Research Funding and Productivity." However, it should also be mentioned that in addition to hiring faculty members into specific academic units, UT Dallas will also initiate a "cluster hiring" program in which faculty members are recruited for major research centers regardless of their academic discipline. For example, the Alan G. MacDiarmid Institute for Nanotechnology is a highly successful center consisting of faculty members from several departments. UT Dallas will recruit talent into interdisciplinary fields through an interdisciplinary process that compliments school-based recruiting.

Student Awards

The University of Texas at Dallas offers numerous student awards, with strong emphasis on merit-based scholarships, awards to support undergraduate research, and numerous others described earlier. These awards will expand in number and scope as UT Dallas grows.

Student Diversity in Doctoral Programs

The University of Texas at Dallas is fully committed to strong diversity programs aimed at ensuring diversity within student, staff, and faculty ranks. An Office of Diversity and Community Engagement was created in 2008, with a newly created vice president position for leadership, to provide the programs and investments needed to accomplish the goal. Newly created programs include a faculty-mentoring program and student-recruiting program.

Table 10 summarizes the ethnicity of doctoral recipients of the past five years. UT Dallas, like nearly all science- and engineering-focused institutions, has international doctoral students making up a large percentage of those graduating from the institution. The percentage of Hispanic and African-American students each stand at about 3% of the total. UT Dallas will launch new programs to increase the flow of students into these programs. This will principally be accomplished through more aggressive recruiting at local and national meetings, partnerships with institutions who might supply UT Dallas with more students who will strengthen diversity, fellowship programs, strong mentoring and engagement programs on campus and within the community, and stronger communication as part of the recruiting process.

Table 10. Summary of Diversity of Doctoral Recipients from FY05 – FY09.

Ethnicity	Number	Percent
Asian	33	5.2%
African-American	21	3.3 %
Hispanic	19	3%
International	330	52.2%
Native American	2	0.3%
White	227	35.9 %
TOTAL	**632**	**100 %**

OTHER RESOURCES

Research Facilities

Research infrastructure is an important ingredient for a successful research university in many ways. State-of-the-art infrastructure is an absolute necessity to carry out innovative research, but it is also required to recruit the very best faculty, post-docs and students. Because UT Dallas has a strong emphasis in the physical and life sciences and in experimental engineering, there is a corresponding need for extensive research facilities. There are the usual individual faculty research labs distributed across campus in their departmental homes. In addition, the University has several unique facilities that have been established to carry out research.

The Natural Science and Engineering Research Laboratory building is approximately 192,000 square feet and provides laboratory space for approximately 40 different research groups across many disciplines. The building is also home to many core facilities, including the 5000-square-foot clean room for micro and nano device fabrication, the animal care facility, and the nano-characterization facility, which includes two state-of-the-art transmission electron microscopes, a dual beam focused ion beam system, and a time-of-flight secondary ion mass spectrometer. The Alan G. MacDiarmid NanoTech Institute houses equipment for imaging, thermal and mechanical analysis, optical spectroscopy, and fuel cell testing and magnetic property measurement. The TxACE analog design and testing lab is being built in the Engineering North Building and will be home to the most complete analog testing facility in the country, with the ability to measure signals from DC to a THz. We are in the design phase of a new biosciences building which will add approximately 220,000 square feet, We should break ground for the new bioscience building in Jan. 2014, with a completion date of Aug. 2015.

Another important shared research facility for the University is the Advanced Imaging Center, which is physically located at UT Southwestern Medical Center. UT Dallas has significant computational resources with several multi-core clusters on campus. Faculty can access additional computational resources via the Texas Advanced Computer Center.

Library Resources

UT Dallas has made significant improvements in the quality of library services and collections over the past ten years. The size of the collections has been enhanced through consortial purchasing and shared access to resources across the UT System. In addition, the purchase of electronic collections of historic materials has increased the acquisition of older materials.

In 2009, the McDermott Library housed 2,643,393 volumes, 2,871,176 microform units, 14,411 videos and DVDs, 28,476 maps, and 213,695 government documents. Perhaps more importantly in this electronic age and given UT Dallas' emphasis on technology, the McDermott Library's collection of electronic journals has grown to over 66,393. The library also owns 1,094,541 electronic books and through the Web offers faculty and students access to many more. The McDermott Library is a partial federal repository for federal and state government documents. Although the collection totals at McDermott Library are still rising toward those at libraries that hold American Research Libraries (ARL) memberships, library staff and faculty work closely to ensure that collections are adequate to support research in existing and new programs.

The staff of the Eugene McDermott Library continually assesses the collection by benchmarking themselves by discipline with other collections at peer institutions. The library purchases books through direct selection by a team of liaison librarians in consultation with faculty members, by systematic acquisition from an established approval program, and from a variety of electronic book providers by means of collaborative purchasing, subscription, and direct selection. In addition, the library employs electronic means to license journal subscriptions and datasets. A University-wide library Committee comprised of faculty, students, and library staff participates in collection development. The

committee is charged to review library procedures and policies, to assist and to promote faculty and student participation in the selection of library resources, and to evaluate holdings and make recommendations for their improvement. A library staff member is assigned to each discipline and serves as a liaison to that program. The liaison works directly with program faculty to acquire necessary books or journal subscriptions.

To support new degree programs, the library staff work directly with faculty on the library materials and supported needed for new degree programs. The librarians use a number of established means to determine the comprehensiveness of the Library's resources including books, journals, and other forms of information. The collection is evaluated against materials owned by other university libraries that have strong programs comparable to the one being proposed. Specifically, the librarians review the journals collection using the Journal Citation Reports from the Institute of Scientific Information (ISI) and review the entire collection using OCLC's World Collection Analysis software, which allows for a direct comparison of UT Dallas' collections to other selected libraries.

As part of their departmental assessment, the library uses LibQUAL, the library services survey instrument developed by the Association of Research Libraries in partnership with Texas A&M University to study the service needs and expectations of academic and research library users. The library staff uses this feedback to improve the collections while also identifying necessary facility and equipment upgrades.

UT Dallas is currently assessing its library status relative to the Association of Research Libraries and the desirability of taking the steps necessary to qualify for ARL membership. The University is fully committed to developing the library resources necessary to have a leading library consistent with a national research university. The University is also exploring unique ways to partner with the powerful library of UT Austin and other UT System components to provide students with access to any material they might require but in a very cost efficient manner. UT Dallas is committed to a highly efficient library that focuses on making the maximum amount of material available to students and faculty anytime and anywhere via electronic means and research tools. Further study is required to define the criteria for ARL membership and relationships of those requirements to available of resources from other UT System institutions such as UT Austin and UT Southwestern Medical Center - Dallas.

Graduate Student Support

In 2006, UT System formed a Task Force on Doctoral Education and the Post-doctoral Experience with representatives from all UT System institutions. Commissioner Raymund Paredes also met with the group to provide feedback on the Task Force's report. Among the recommendations offered was the imperative to increase monetary support of doctoral and postdoctoral students. To this end, in 2008, UT System established the Graduate Programs Initiative, a competitive grant program to support innovations in the education of non-professional graduate students.

One of the issues that faces all Texas public universities is the challenge of providing benefits such as health insurance to graduate research assistants. UT Dallas is in the process

of addressing this issue. It is also assessing its stipend rates for graduate students to ensure competiveness, benchmarking against UT Austin and Texas A&M, as well as other institutions such as those listed in Table 1. As external research funding increases, pressure for internally funded support should subside, allowing UT Dallas to increase graduate student support packages to a more competitive position. At present, the amount of graduate student stipends ranges widely in dollar amount and competiveness, with the best position being in the engineering school and the weakest position in high-demand science areas such as biology.

NATIONAL VISIBILITY

UT Dallas' strategic plan of 2007 had as one of its imperatives to "Tell our story better."

Since then, the University has engaged in a carefully crafted, budget-efficient communication campaign to focus attention on the excellence that has characterized UT Dallas from its beginning and to draw attention to efforts to build upon that excellence.

Such excellence is already evidenced by the scholarship and research of UT Dallas faculty members and students, and their appearances in the appropriate scholarly journals, academic conferences and professional meetings, as well as their fine performances in national and international competitions of an academic or scholarly nature. The challenge is to bring this established and growing excellence to wider notice, and in so doing, elevate not only the University, but also the reputation of the State of Texas in the research and higher education community.

UT Dallas embarked on meeting this imperative by creating *News Center*, a daily digital news service that offers information about research and accomplishments of students and faculty. In its first year, News Center published 577 stories, and the site registered 398,635 total views of the top 200 pages. Subscriptions in the two-year service's life have grown to more than 40,000—far beyond the campus population.

Many of the stories offered in the service are picked up nationally and through the focused efforts of staff, others are placed. As a result, UT Dallas' national news coverage increased 116% in one year, with 645 positive national news stories, including 14 appearances in *The Chronicle of Higher Education* on subjects as diverse as Texas' raids on other public universities' star faculty and UT Dallas undergrads besting of Bill Gates in their more-efficient solution of "the pancake problem," a longtime mathematical conundrum Gates worked on in his college years. This campaign is ongoing, and some of its results can be viewed online at www.utdallas.edu/news. In addition to this service, specific schools have created or participated in programs, competitions for funding or events to spread news of their achievements and expertise, including the following:

- The School of Management designed its own survey, the Top 100 Business School Research Rankings, which typically nets national and international placement in publications including *Business Week, Forbes*, and *The Wall Street Journal.*

- The Callier Center for Communication Disorders created the Callier Prize, a biennially awarded recognition of the greatest achievement worldwide in the in research or treatment of communication disorders.

The University has also created an "Experts Guide" to UT Dallas faculty that markets individual faculty to journalists and others who seek informed comment on an array of subject areas. This is available at http://www.utdallas.edu/experts/.

The University has given equal attention to building up its recruitment marketing efforts. Using only the resources already devoted to these efforts, the University strategically revised its communication stream to reach a geographically broader group of prospective students across the nation and the state, expanding recruitment efforts into markets hitherto untapped, and in doing so, expanding the number of individuals across the nation who are aware of the University.

PERIODIC REVIEW

The University of Texas at Dallas reviews progress toward strategic goals on an annual basis. Each year, the president reports progress to students, faculty, and staff on progress toward goals, as well as to the UT System as part of the annual review of the president. Key benchmark parameters are emphasized, along with progress toward meeting strategic goals.

The University will continue this process and every three to five years conduct a comprehensive assessment of its strategic plan. Progress will be assessed, goals re-evaluated, and priorities re-established. As in the past, it is anticipated that the entire campus community will be engaged in this process and participate in creating any revisions to the strategic plan. The Faculty Senate, Student Government, and Staff Council are particularly important in providing input to the planning process.

NATIONAL RESEARCH UNIVERSITY FUND (NRUF) CRITERIA

The passage in November 2009 of an amendment to the Texas Constitution created the National Research University Fund (NRUF). This endowment will ultimately provide additional funding for qualifying institutions that are currently emerging research universities, including UT Dallas.

The Coordinating Board is in the process of specifying criteria, which are generally described in House Bill 51, for eligibility to receive funds from NRUF. This section briefly summarizes the context of this strategic plan with regard to these parameters.

The criteria to determine eligibility for the NRUF involve these seven areas:

1. Restricted research expenditures must be at least $45 million per year for the previous biennium. In FY2012, UT Dallas had $45 million in restricted research expenditures. The seven-year goal for restricted research expenditures, which is

consistent with recent growth in research, is annual expenditures for restricted research of $70 million per year.

2. The value of the institution's endowment must be at least $400 million. The current endowment for UT Dallas is approximately $275 million, not including funds in the Permanent University Fund (PUF), from which significant allocations are directed annually to UT Dallas.

   The Dallas-Fort Worth region has supported UT Dallas. As UT Dallas alumni increase in numbers and over time achieve greater success, alumni giving should grow exponentially. In response to these opportunities, UT Dallas has greatly expanded its development staff over the past three years and has practices in place to raise even more funds in the future. The goal of $400 million in endowment, plus PUF funds, in ten years, is believed to be very realistic given the University's situation and commitment to fund raising.

3. The institution must award at least 200 doctor of philosophy degrees per year. This strategic plan presents a detailed plan for increasing the number of doctor of philosophy degrees. The strategy involves continued growth of the University and its doctorate programs to produce at least 240 doctorates per year in 10 years. The goal of at least 200 doctor of philosophy degrees per year awarded for the previous biennium should be reached within 10 years.

4. The entering freshman class must have demonstrated high academic achievement. UT Dallas already enjoys a high quality freshmen class and one that compares very favorably with the best public universities in Texas and many of the best in the nation. The University has grown and will continue to grow while maintaining a high priority on the quality and diversity of its freshman class.

5. The institution must be designated as a member of the Association of Research Libraries, have a Phi Beta Kappa chapter, or have received similar recognition of research capabilities. The University recognizes the need to continue to grow its library and move toward meeting the criteria consistent with major research university libraries. However, efficiency is important for all universities, and UT Dallas intends to leverage the considerable assets of its sister institutions, such as UT Austin and UT Southwestern Medical Center of Dallas, to ensure top-of-class access to library materials in a very cost efficient manner. The leverage of UT System libraries is a major asset for UT Dallas and other component institutions of the System. The UT Dallas library budget for the next ten years includes plans not only to expand library volumes and journals, but also to expand staff that can assist students and researchers. UT Dallas was recognized with a chapter of Phi Kappa Phi in April of 2011.

6. The faculty must be of high quality, as determined by Coordinating Board standards based on achievement and recognition of faculty members. As UT Dallas continues to expand and recruit new faculty members, its faculty is getting even stronger. UT Dallas is one of only a few universities in Texas that has on its faculty at least one

Nobel Laureate as well as elected members of the National Academy of Sciences and National Academy of Engineering. As indicated in Table 2, UT Dallas already ranks favorably with major national research universities in terms of doctorates awarded per year per faculty member. UT Dallas already has many endowed faculty positions, and is rapidly increasing the number of endowed chairs and professorships, which will assist with recruiting. With expansion, the faculty will continue to get even better and to receive even greater recognition for quality.

7. The institution must have demonstrated a commitment to high-quality graduate education, including number of graduate-level programs at the institution, the institution's admission standards for graduate education, and the level of institutional support for graduate students. The University of Texas at Dallas, which began as a graduate institution, has emphasized graduate education from its inception. No change in culture or direction is needed to sustain high-quality graduate education, although offering competitive compensation and benefits remains a challenge for UT Dallas and other Texas public research universities.

A university need not meet all seven of the NRUF criteria listed above. However, it is UT Dallas' goal to meet all seven and to do so as quickly as possible. The University believes that it already meets some of them, and this plan describes actions that will lead to meeting all seven criteria in less than ten years.

SUMMARY

The University of Texas at Dallas has been on a path since its inception to become a major national research university. The institution began as a graduate research institution and gradually expanded to include juniors and seniors, and in 1990 began admitting freshmen. The institutional profile is one of a high-quality undergraduate student body, faculty who are engaged in research and who are highly productive, and an institutional commitment over a long period of time to become a major research university.

To achieve its goals, the University needs to continue to grow, adding more students, faculty, staff, degree programs, buildings, endowment, etc. This growth will not require a change in direction. The quantitative goals set for the next ten years reflect a continuation of trends from the past ten years. The institution needs and plans to retain its focus and make investments strategically, consistent with this plan, to achieve the stated goals.

The business model for growth is sound. As more students are added, more resources will become available to hire faculty and to expand the institution. The University is not relying heavily on the State of Texas or the UT System PUF to fund its building program. The conservative assumption is made for financial forecasting that only one new building each from the State of Texas and from the PUF will be realized over the next ten years.

Growth will create an even better institution for students, providing new degree programs, courses, instructors, student activities, guest lectures, and a myriad of opportunities both intellectual and social.

Table 11 summarizes the key quantitative goals for the next ten years for UT Dallas.

Not quantifiable, but very important, are several other essential priorities. These include:

- Contributing to "*Closing the Gaps"* goals for Texas.
- Diversifying the student body and faculty to better mirror the demographics of Texas.
- Better engaging alumni in supporting UT Dallas and its students.
- Ensuring access to qualified Texas students, regardless of financial abilities.
- Forming strategic partnerships and alliances with other institutions in DFW (especially UT Southwestern Medical Center of Dallas and UT Arlington) as well as with schools, foundations, and other organizations.
- Adding value to our community through activities such as teacher preparation, commercialization of technologies, continuing education, K-12 outreach programs to students, the arts, and others.

Table 11. Summary of UT Dallas'10-Year Strategic Goals.

AREA	PARAMETER	FALL 2009	IN 7 YEARS
Students	Total Enrollment	19,700	25,000
	FTE Enrollment	15,800	20,000
	Freshman SAT (1600 max.)	1270	1270
	Top 10% Students (Freshmen)	51%	55%
	National Merit Scholars	63	75
	4-year Graduation Rate	51%	55%
	6-year Graduation Rate	64%	72%
Faculty	Tenured and Tenure-Track	493	600-700
	Faculty w/ Externally Funded Research	201	300
	Percent of Tenure, Tenure-Track Faculty w/ Externally Funded Research	41%	50%
Research	Total R&D	$ 91M	$130M
	Restricted R&D	$ 45M	$ 70M
	Federal R&D	$ 36M	$ 50M
Doctoral Programs	Number of Doctoral Programs	30	44
	Annual Graduates	179	240
Other	National Academy Members	4	10
	Annual Giving	$40M	$50M
	Endowment	$275M + PUF	$400M + PUF
	Academic and Research Space	1.8M sq ft	2.5 M sq ft

APPENDIX A. COORDINATING BOARD GUIDELINES FOR STRATEGIC PLAN

Guidelines for the Strategic Plan for Research

In accordance with Chapter 5, Subchapter G of Coordinating Board rules, a research university or an emerging research university as designated in the Board's accountability system must develop a long-term strategic plan for achieving recognition as a research university or enhance the institution's reputation as a research university.

NOTE: Wherever possible and applicable, state the goals for each of the following items and identify the objectives in measurable terms. Describe how and when the institution will assess progress towards the goals and objectives.

I. Vision Statement

The institution's plan should address, at a minimum, the following elements:

A. A description of the targeted status of the institution. What kind of university will the institution be if it achieves its goals and objectives?
B. Is the plan for the future a natural expansion of the institution's existing mission, or does it reflect a substantial change in direction?

II. Plan to Increase Research Funding and Productivity

The institution's plan to enhance research activities should address, at a minimum, the following elements:

A. *External funding.* Identify the institution's targets and how progress will be monitored. Include comparisons with national peers.
B. *Research priorities.* Define and describe the institution's targeted research priorities. Describe where and how the institution will focus its efforts.
C. *Allocation of resources.* Estimate the budget necessary to achieve the targeted goals and describe how the institution will utilize funds, staff resources, facilities, and other assets to maximize its efforts.
D. *Student participation.* Describe how the institution will enhance student opportunities to participate in research activities at the graduate and undergraduate levels.

III. Plan to Improve Undergraduate Education

The institution's plan should address, at a minimum, the following elements:

A. Describe the institution's plan to strengthen and improve the quality of undergraduate education, including the student profile.
B. Describe what the institution is doing to increase the number of baccalaureate degrees awarded, particularly in the critical fields identified in *Closing the Gaps by 2015.*

IV. Plan for Doctoral Programs

1. Existing Doctoral Programs

The institution's plan for existing doctoral programs should address, at a minimum, the following elements:

A. *Summary of existing programs*. Using past reviews, provide an evaluation of the institution's existing doctoral programs and how they fit into the institution's near-term and long-range plans. Include an assessment of strengths and weaknesses.
B. *Quality control.* Describe plans to close, consolidate, and/or improve existing doctoral programs with low graduation rates (based on Coordinating Board standards for low-productivity) or that do not meet other standards of excellence.
C. *Quality enhancement.* Describe plans to raise the level of existing doctoral programs from the level of strength to the level of national prominence.
D. *Comparisons with national peers.* For programs the institution plans to retain, identify nationally-ranked programs against which each of the institution's existing doctoral programs will be benchmarked.

2. New Doctoral Programs

The institution's plan for new doctoral programs should address, at a minimum, the following elements:

A. *Areas of emphasis.* Identify the areas the institution plans to focus on in the development of new doctoral programs. Emphasis should be placed on high-need areas, such as STEM, with sufficient documentation to support selection decisions. The plan should also demonstrate how the institution will build upon existing strengths.
B. *Assessment.* Provide a plan for the rigorous, periodic review of proposed programs using external evaluators.

C. *Regional Impact.* If applicable, describe the ways in which the development of doctoral programs and enhancement of research will enable the institution to better meet the needs of the region it serves and explain how the institution will monitor and assess its impact.

V. Plan for Faculty and Student Development

The institution's plan for faculty and student development should address, at a minimum, the following elements:

A. *Faculty research.* Describe plans to assist faculty in becoming more productive, more innovative, and more effective in their work.
B. *Faculty recognition.* Describe plans to assist faculty in achieving recognition as leaders in their field.
C. *Collaborations and Partnerships.* Describe plans to foster cooperative efforts amongst faculty at the institution and with faculty of other institutions.
D. *New faculty.* Describe plans to recruit additional faculty who can contribute to the institution's goal of maintaining or achieving national recognition.
E. *Student awards.* Describe initiatives to increase the number and prestige of undergraduate and graduate student competitive research awards.
F. *Student Diversity*. Describe plans to recruit and graduate doctoral students who can contribute to the State's goal of diversity in *Closing the Gaps*. Indicate the institution's contributions to the development of a future professoriate that reflects the population of Texas.

VI. Other Resources

The institution's plan should address, at a minimum, the following elements:

A. *Research facilities.* Describe significant projected additions to the institution's facilities related specifically to research, including timelines for completion.
B. *Library resources.* Describe plans to enhance the libraries, including facilities, equipment, digital resources, and collections. Describe specifically how the plans to enhance library resources are related to improving existing doctoral programs and supporting new doctoral programs.

C. *Graduate student support.* Describe plans to provide competitive financial support to graduate students including teaching assistantships, research assistantships, and fellowships for the targeted doctoral programs identified in the strategic plan.

VII. National Visibility

Identify any existing or projected programs and resources, not already identified above, to increase the national visibility and research reputation of your institution.

Appendix B. Benchmark (Peer) Doctoral Programs.

Doctoral Program	Benchmark Institutions
Humanities	Univ of California - Irvine; Culture and Theory Univ of California – Santa Cruz; History of Consciousness Carnegie Mellon University; Literary and Cultural Studies
Humanities Aesthetics	Univ of California - Irvine; Culture and Theory Univ of California – Santa Cruz; History of Consciousness Carnegie Mellon University; Literary and Cultural Studies
Humanities Literary Studies	Univ of California - Irvine; Culture and Theory Univ of California – Santa Cruz; History of Consciousness Carnegie Mellon University; Literary and Cultural Studies
Humanities History of Ideas	Univ of California - Irvine; Culture and Theory Univ of California – Santa Cruz; History of Consciousness Carnegie Mellon University; Literary and Cultural Studies
Audiology	University of Iowa Univ of Florida Univ of Texas at Austin
Cognition & Neuroscience	University of California at Irvine University of Massachusetts University of North Carolina
Communication Sciences and Disorders	University of Florida Arizona State Univ Univ of Pittsburgh
Psychological Sciences	University of Oregon Univ of California at Santa Cruz University of California at Santa Barbara
Criminology	Univ of South Florida Arizona State Univ of South Carolina
Economics	Univ of Missouri - Columbia Univ of Wisconsin - Milwaukee Florida State
Geospatial Information Science	No comparable established programs Traditional Geography Programs with some GIS: Ohio State Penn State Univ of California - Santa Barbara

Political Science	Stony Brook Univ Univ of California - Davis Univ of Georgia
Public Policy	George Mason Georgia Tech Univ of Maryland - College Park
Public Affairs	Univ of Georgia Univ of Texas LBJ School Univ of Indiana
Biomedical Engineering	Duke Univ Johns Hopkins UC San Diego
Computer Engineering	Univ of Illinois UC Virginia Tech Arizona State Univ
Computer Science	Penn State Ohio State Arizona State
Electrical Engineering	Georgia Tech Univ of Maryland North Carolina State
Microelectronics	Georgia Tech Univ of Maryland North Carolina State
Materials Science & Engineering	Univ Illinois UC Stanford Rutgers
Software Engineering	Carnegie Mellon UT Austin
Telecommunications Engineering	Arizona Michigan State Oklahoma State
Management Science	Univ of Iowa Georgia Tech Univ Purdue Univ
International Management Studies	Univ of Iowa Georgia Tech Univ Purdue Univ
Molecular & Cell Biology	Arizona State Univ Colorado State Univ Univ of California - San Diego
Chemistry	Univ of Delaware Clemson Univ of Nebraska, Lincoln

Geosciences	Univ of Oregon (Eugene) Univ of North Carolina Chapel Hill Univ of Nevada Reno Univ at Buffalo
Applied Mathematics	Univ of Mass.- Amherst Georgia Institute of Technology Rutgers Univ Boston Univ
Statistics	Indiana Univ Texas A&M Univ Washington Univ in St Louis
Physics	Virginia Tech Northeastern Univ of New Mexico

Appendix C. Faculty Recognition: Endowed Professorships and Chairs

Title of Endowment	Appointee
Administrative	
Eugene McDermott Distinguished University Chair Of Leadership	Daniel, David
Cecil H. Green Distinguished Chair Of Academic Leadership	Wildenthal, Hobson
School of Arts and Humanities	
Margaret M. McDermott Distinguished Chair Of Art And Aesthetic Studies	Brettell, Richard
Arts And Humanities Distinguished Chair	Linehan, Thomas
Arts And Humanities Chair	Prieto, Rene
Chair Of Art And Aesthetic Studies	Rodriguez, Robert
Hillel A. Feinberg Chair Of Holocaust Studies	Patterson, David
Leah And Paul Lewis Chair Of Holocaust Studies	Ozsvath, Zsuzsanna
Anne Stark Watson And Chester Watson History Professorship Endowment	Edmunds, W. David
Ignacy And Celina Rockover Professorship	Kratz, Dennis
Katherine R. Cecil Professorship In Foreign Languages	Schulte, Rainer
Founders Professor	Turner, Frederick
Ashbel Smith Professor	Nadin, Mihai
Russell Cleveland Professor in Guitar Studies	Madriguera, Enric
Arts and Technology Distinguished Chair	Malina, Roger F.
Ashbel Smith Professor	Rabe, Stephen
Stan and Barbara Rabin Professor in Holocaust Studies	Roemer, Nils
School of Behavioral and Brain Sciences	
T. Boone Pickens Distinguished University Chair In Clinical Brain Science	Open
Distinguished University Chair in Behavioral and Brain Science	Park, Denise
Dee Wyly Distinguished University Chair For BrainHealth	Chapman, Sandra
Jane And Bud Smith Distinguished Chair, Dist. Chair in Neuroscience	Hart, John
Nelle C. Johnston Chair In Communication Disorders In Children	Tobey, Emily
Emilie And Phil Schepps Distinguished Professorship Of Hearing Science	Open
Aage And Margareta Moller Professor	O'Toole, Alice
Aage And Margareta Moller Distinguished Professor for Leadership	Moore, Bert
Howard B. And Lois C. Wolf Endowed Professorship For Pediatric Hearing	Roeser, Ross
Sara T. Martineau Endowed Professorship At The Callier Center For Communication Disorders UT Dallas	Campbell, Thomas

Margaret F. Jonsson Professor	Moller, Aage
Ashbel Smith Professor	Jerger, Susan
Ashbel Smith Professor	Underwood, Marion
Distinguished Chair in Behavioral and Brain Sciences	Rugg, Michael
Robinson Family Professor	Owen, Margaret
Jonsson School of Engineering and Computer Science	
Texas Instruments Distinguished University Chair In Nanoelectronics	Chabal, Yves
Texas Instruments Distinguished Chair	O, Kenneth
Distinguished Chair In Microelectronics	Gnade, Bruce
Distinguished Chair In Telecommunications	Hansen, John
Louis Beecherl, Jr., Endowed Distinguished Chair In Engineering	Lu, Hongbing
Excellence In Education Chair In The Erik Jonsson School Of Engineering And Computer Science #1	Spong, Mark
Excellence In Education Chair In The Erik Jonsson School Of Engineering And Computer Science #2	Bastani, Farokh
Lars Magnus Ericsson Chair In Electrical Engineering	Spong, Mark
Cecil H. And Ida Green Professor In Systems Biology Science #2	Prasad, Shalini
Founders Professor	Sudborough, Ivan
Ashbel Smith Professor	Chandrasekaran, R.
Erik Jonsson Distinguished Professor	Al-Dhahir, Naofal
Erik Jonsson Distinguished Professor	Chiu, Yun
Texas Instruments Distinguished Chair in Nanoelectronics	Fischetti, Massimo
Erik Jonsson Chair	Gupta, Gopal
Research Initiation Chair	Harabagiu, Sanda
Texas Instruments Distinguished Chair in Nanoelectronics	Hsu, Julia
Erik Jonsson Distinguished Chair	Ma, Dongsheng
Erik Jonsson Distinguished Professor	Nosratinia, Aria
Distinguished Chair of Engineering	Rajashekara, Kaushik
Erik Jonsson Chair	Rotea, Mario
Louis A. Beecherl Jr. Distinguished Professor	Thuraisingham, Bhavani
Erik Jonsson Distinguished Chair	Wallace, Robert
Cecil H. And Ida Green Professor In Systems Biology Science	Vidyasagar, Mathukumalli
Louis A. Beecherl Jr. Distinguished Chair	Yurkovich, Stephen
School of Economics, Political and Policy Sciences	
Lloyd V. Berkner Professor	Berry, Brian
John Kain Professorship Of Economics	Open
Vibhooti Shukla Professor Of Economics And Political Economy	Sandler, Todd
Ashbel Smith Professor	Clarke, Harold

Ashbel Smith Professor	Piquero, Alex
Ashbel Smith Professor	Griffith, Daniel
Mary McDermott Cook Distinguished Chair for Undergraduate Education and Research	Pineres, Sheila
School of Management	
Andrew R. Cecil Chair In Applied Ethics	Dess, Gregory
Caruth Chair	Pirkul, Hasan
Eugene McDermott Chair	Sethi, Suresh
Dallas World Salute Distinguished Professorship In Global Strategy	Tsang, Eric
Charles And Nancy Davidson Distinguished Chair In Accounting	Ali, Ashiq
Charles And Nancy Davidson Distinguished Chair In Information Systems	Mookerjee, Vijay
Charles And Nancy Davidson Distinguished Professorship In Operations Management	Sarkar, Sumit
Charles And Nancy Davidson Distinguished Chair In Marketing	Ratchford, Brian
Founders Professor	Rao, Ram
Ashbel Smith Professor	Cready, William
Lars Magnus Ericsson Distinguished Professor	Jacob, Varghese
Ashbel Smith Professor	Liebowitz, Stanley
Ashbel Smith Professor	Rebello, Michael
Ashbel Smith Professor	Stecke, Katherine
Ashbel Smith Professor	Bensoussan, Alain
O.P. Jindal Chair	Bolton, Gary
Ashbel Smith Professor	Dawande, Milind
Ashbel Smith Professor	Katok, Elana
O.P. Jindal Chair of Management	Peng, Mike
Ashbel Smith Professor	Radhakrishnan, Suresh
School of Natural Sciences and Mathematics	
C. L. And Amelia A. Lundell Professorship Of Life Sciences	Open
The Robert A. Welch Distinguished Chair In Chemistry #2	Smith, Dennis
The Robert A. Welch Distinguished Chair In Chemistry #1	Baughman, Ray
James Von Ehr Distinguished Chair In Science And Technology	Open
Cecil H. And Ida Green Distinguished Chair In Systems Biology Science #1	Sherry, A. Dean
Cecil H. And Ida Green Distinguished Chair In Systems Biology Science #2	Zhang, Michael
Cecil H. And Ida Green Distinguished Chair In Systems Biology Science #3	Zhang, Li
Distinguished Chair in Natural Sciences and Mathematics	Heelis, Roderick
Cecil H. And Ida Green Professor In Systems Biology Science #4	Open

Regental Professor	Hulse, Russell
Distinguished Chair in Sciences and Mathematics	Novak, Bruce
Ida M. Green Professor	McMechan, George

THE UNIVERSITY OF TEXAS AT EL PASO

STRATEGIC PLAN FOR RESEARCH – UPDATE

APRIL 2013

Strategic Plan for Research

Update

The University of Texas at El Paso

Submitted to

The Texas Higher Education Coordinating Board

April 1, 2013

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1. Signature page

April 1, 2013

Dr. Raymund A. Paredes
Commissioner of Higher Education
Texas Higher Education Coordinating Board
1200 E. Anderson Lane
Austin, TX 78752

Dear Dr. Paredes:

Enclosed is the updated Strategic Plan for Research for The University of Texas at El Paso (UTEP), being submitted in accordance to THECB Rule §5.122. This plan supports our aspirations to become a national research university, outlining UTEP's milestones for the next decade in the areas of performance, growth, quality assurance and efficiency.

The Plan describes a sustained effort by UTEP to build on our resources and strategic advantages as we move toward becoming a national research university with a 21st century student demographic. It reaffirms UTEP's commitment to combine progress toward our research university goals with a continued commitment to ensuring access to a quality higher education for the residents of the Paso del Norte region.

Should additional information be required, we will be pleased to respond.

Sincerely,

Diana Natalicio

Diana Natalicio
President

2. Executive summary

The University of Texas at El Paso submitted its initial Strategic Plan for Research[1] to the Texas Higher education Coordinating Board in March 2010, reaffirming UTEP's quest to become the first national research university in the United States that serves a 21st century student demographic. Our 21st century demographic is the predominantly Mexican-American population of West Texas along with the Hispanic populations of Texas as a whole and the United States. This document provides an update of the Strategic Plan for Research based on the most recent information and performance data available.

UTEP's vision is to be a national research university with robust, nationally recognized research conducted across the campus. Research funding will come from a variety of federal, state, and private sources. New and strengthened doctoral programs in strategic areas will provide advanced educational opportunities for the region's residents and attract outstanding students from across the country and the world. The University will attract and retain a nationally and internationally recognized faculty, who will share the University's commitment to quality education for both graduate and undergraduate students as well as to research. UTEP will exemplify all of the traditional qualities of a national research university, but will also serve a student population unlike that of any other current research university in the U.S. — a population that will be representative of the rapidly changing demographics of the 21st century. This vision does not represent a new direction for UTEP, but rather the continuation of what the University has been striving to achieve over the past 20 years.

Over the past eight years, UTEP has produced steady increases in undergraduate enrollment (up 26% from fall 2003 through fall 2011) and spectacular increases in undergraduate degrees awarded (up 79% over the same time period). Even more important for State and national policy priorities, UTEP increased the enrollment of Hispanic students at a higher rate than of its total population (Hispanics up 37% from fall 2003 through fall 2011 compared to 26% overall). Most importantly, the University experienced a similar increase in degrees awarded to Hispanics (up 94% compared to 79% overall).

Access to enrollment has been matched by excellence in teaching and learning, as shown by the degrees awarded. Excellence is also a function of the research, scholarship and creative activity produced by the faculty and students of the University. UTEP's research performance has been no less impressive. Research on the UTEP campus has increased steadily over the past 20 years, with growth in annual research expenditures from under $5 million in FY 1989 to almost $72 million in FY 2012.

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[1] *The University of Texas at El Paso Strategic Plan For Research, March 18, 2010. (http://www.utep.edu/aboutUTEP/strategic_plan_research.pdf)*

UTEP's progress during the past 20 years has clearly demonstrated its capacity to become a national research university. UTEP's $40 million in federally-funded research expenditures in FY 2012 rank second only to UT Austin among UT System universities and second only to the University of Houston among the other emerging Tier One institutions. UTEP also excels in private giving. The University has already raised more than $183 million toward the 2014 Centennial Campaign goal of $200 million for endowed faculty chairs and professorships, endowed graduate fellowships, undergraduate merit scholarships, and other investments to continue building the University's excellence.

The primary risks to UTEP's achieving its milestones relate to declines in state and federal funding, the slow pace of doctoral program review, and state policies that divert UTEP from its focus on addressing the unique needs of the El Paso region and the state, and on leveraging the comparative advantages of its academic and research programs. Since the establishment of original outcomes and milestones in 2009-2010, there have been unanticipated reductions in state formula funding. Although we have continued to make steady progress and expect to achieve the major outcomes we projected (e.g., to exceed $100 million in research expenditures within a decade), the reduction in state base funding and the more recent threats to federal funding will likely affect how quickly UTEP can achieve some of the targets.

The biggest challenge for all emerging research institutions is to maintain momentum toward Tier 1 goals in the context of limited or declining resources (e.g., federal research funds and state support). During this period of resource uncertainty, institutions will have to make short-term tactical adjustments based on their unique conditions and resources while awaiting clarification on the "new normal." UTEP's adjustments have focused primarily on increasing productivity. For example, since new T/TT faculty could not be hired at the pace projected two years ago, short-term strategies were implemented to increase the size of grants per faculty member; and research expenditures per T/TT faculty increased from $112,500 (in FY 2009) to $136,000 (in FY 2012). UTEP has modified its strategies to ensure that the Tier 1 targets can be achieved with expected resources generated through formula funding, tuition, research activity, auxiliary enterprises, gifts and endowment. However, we recognize that the higher education environment is changing rapidly, and success in achieving the goals will be based on our ability to quickly adjust strategies based on our resources and comparative advantages. Scenario models or benchmarking are of limited value in this dynamic context. In fact, these empirical models and targets may be a distraction if we narrowly focus on reaching milestones, or focus on achieving benchmarks related to other "peer" institutions that have different missions, resources, conditions, and comparative advantages. UTEP intends to continue to use its most effective long-term strategy – to shape institutional actions based on the educational, social, health, workforce, and economic needs of the El Paso region and the state.

3. National Research University goals and UTEP's current status

3.1. Specific goals

UTEP's specific primary goals are listed under the Performance Objectives. Other objectives that reflect characteristics of aspirational research institutions are listed under three dimensions: growth, quality control, and efficiency. The specific targets set for 2020 were based on a historical analysis that assumes stable and predictable conditions in the intervening years. However, the past two years have been unstable (in terms of both economics and policy); future conditions, even in the short-term, are hardly predictable. Although most of UTEP's targets established in 2009 remain, many of the short-term milestones are no longer viable. We continue to work toward achieving the long-term targets, and we will make adjustments to the short-term milestones when the environment becomes more predictable.

Performance: First, UTEP's strategic planning for research identified the following two key performance objectives:

- Annual expenditure of at least $100 million in externally funded research, according to commonly accepted national standards; and
- Annual production of approximately 100 doctoral degrees.

Growth: Second, to achieve those outcomes, UTEP will have to grow in a number of critical dimensions, four of which have been identified as growth objectives. UTEP will increase its number of research-active faculty who are nationally competitive in acquisition of external funding and who serve as the core faculty mentors and dissertation directors for doctoral students. UTEP is an emerging research university, and many of our doctoral programs are still within their first decade of operation. The University has yet to build out its full complement of PhD programs, and we have developed plans to grow current core faculty in strategically identified new areas of potential national distinction. New faculty and new doctoral programs will require significant increases in resources, including continuing growth at all programmatic levels as UTEP strives to meet the educational needs of a large and historically under-served population. More students, more research, and more academic programs will all demand facilities, both new and renovated. These considerations will drive the following four supporting growth objectives:

- Increase the number of tenured and tenure-track (T/TT) faculty from 568 to 617 by 2020;
- Increase the number of PhD programs to 28 by 2020;
- Increase student enrollment from 21,000 to 26,945 by 2020; and
- Increase the research space from 182,400 square feet in 2011 to 278, 600 by 2020.

Quality Assurance: Third, UTEP's strategic plan monitors the quality of the educational experience for UTEP students by tracking two critical quality assurance objectives that indicate the access of students to faculty and mentors:

- Maintain the overall University student/faculty ratio at approximately 22 to 1; and
- Maintain the number of doctoral students per T/TT faculty member at less than 3 to 1.

These ratios reflect those at our aspirational peer institutions and at leading national research universities in Texas.

Efficiency: Fourth, our analyses reveal that our past growth has been accomplished in part by efficiency gains over the past 5-10 years. Our models for increased performance in funded research and in graduation of doctoral students include continued incremental efficiency gains in the following measures and associated efficiency objectives:

- Increased annual dollar volume of sponsored research per T/TT faculty member at a rate higher than the rate of inflation; and
- Reduction in time to doctoral degree after completion of coursework.

3.2. UTEP aspirational peer institutions

Two years ago, UTEP identified two sets of aspirational peers – national emerging research institutions and national research institutions. The expectation was that UTEP would have the characteristics of a national emerging research university by 2020.

In May 2012, UTEP updated the aspirational peers using an approach prescribed by the UT System's Office of Strategic Initiatives. UTEP selected ten institutions that have some similar "input" characteristics (e.g., serve a reasonable number of non-traditional students, have a similar number of instructional faculty) from a larger list of 25 potential institutions (see Table 1). The overall characteristics of emerging research institutions are:

- public institutions;
- currently generate between $100-200 million in sponsored research expenditures;
- produce 125-250 doctoral degrees each year;
- have an overall headcount enrollment up to about 30,000; and
- have a T/TT faculty of 500-1,100.

All ten aspirational institutions exceed $100 million in annual research expenditures, and five of them produce more than 190 doctorates a year (Auburn University, Oklahoma State University, University of California – Riverside, University of New Mexico, and Virginia Commonwealth University).

Six of the emerging national research universities have substantially more T/TT faculty than the 617 that UTEP projects having by 2020: Auburn University with 1,133; Oklahoma State University with 1,035; University of New Mexico with 992; University of Louisville with 1,093; Virginia Commonwealth with 974; and Wayne State with 1,123. The same

pattern is evident in the emerging Texas Tier 1 institutions – both institutions that graduate more than 200 doctorates (Texas Tech University and the University of Houston) have high enrollments (31,637 and 38,752) and a large number of faculty (916 and 1,063). Of the emerging national research universities, only the University of California – Riverside has achieved the Tier 1 benchmarks with fewer than 700 faculty. The challenge for UTEP will be to achieve a higher yield on institutional investments, including highly strategic hiring and promotion of faculty, which will enable us to grow our research and doctoral production more efficiently than in other Texas and national peer settings.

A key element of differentiation between UTEP and other research institutions is the demographic profile of its student population: 77% of UTEP's students are Hispanic. There are very few research institutions with a minority enrollment greater than 50%; and fewer still that serve as large a percentage of "at risk" undergraduate students as UTEP--i.e., students who are low-income (54% Pell), minority (79%), part-time (37%). This difference in the composition of UTEP's student population has far-reaching implications. Since minority undergraduate students are underrepresented at most U.S. research universities, it is not surprising that only very small numbers of them are prepared to enroll in competitive graduate programs. UTEP ranks second among all universities nationally as a source of Mexican-American undergraduates who successfully enroll in U.S. medical schools, and is one of the top 10 institutions of origin for Hispanic doctoral degree recipients. Becoming the first national research university serving the 21st century student demographic is more than a rhetorical statement; with rapidly changing U.S. demographics, the UTEP approach will likely serve as a model for all research institutions in the years ahead.

3.3. Evaluation of the current status of the institution in terms of goals

UTEP's current metrics are listed below in Table 2. UTEP has made progress on almost all of the measures, including the two critical key metrics: research expenditures and doctoral degrees awarded (including professional doctorates). The critical metric of T/TT faculty grew by only 3%, while doctoral enrollment grew by 11% during this period. This slowdown in faculty hires because of recent budget cuts (15% from FY 2009 to FY 2012) increased the quality assurance ratios (FTE total enrollment to FTE faculty and Doctoral Enrollment to T/TT faculty). However, both efficiency ratios (research expenditures per T/TT faculty and doctoral degree completion efficiency) increased. UTEP has seen substantial increases in masters (37%) and doctoral degrees awarded (32%). Of particular significance is the increase in the number of doctoral degrees earned by Hispanics; although the number of additional graduates is small (19), it is significant because the number of Hispanic graduates nationwide is also extremely small. In FY2009, for example, only 79 engineering doctoral degrees and 69 physical science degrees were awarded to Hispanics in the U.S., and from 2006 to 2011, UTEP's ten doctoral graduates in Materials Science and Engineering represented more than 20% of all doctoral degrees in that discipline awarded to Hispanics across the entire nation.

Table 1: Texas Emerging Research Universities and UTEP Aspirational Peers

	Total Research Expenditures[2] 2011 (x$1000)	2011 Total Doctoral Degrees	2011 total FT T/TT Faculty	Total Enrollment Fall 2011	Percent Minority	Percent Hispanic
Emerging Texas Tier One Universities						
University of Houston	113,709	831	931	39,820	55%	24%
Texas State University-San Marcos	33,487	25	776	34,087	35%	27%
Texas Tech University	149,399	459	1,042	32,327	24%	16%
The University of Texas at Arlington	72,483	117	575	33,439	44%	19%
The University of Texas at Dallas	93,230	164	451	18,864	35%	11%
The University of Texas at El Paso	**74,069**	**84**	**510**	**22,640**	**82%**	**77%**
The University of Texas at San Antonio	58,667	69	588	30,968	59%	45%
University of North Texas	42,475	227	797	37,818	34%	15%
Aspirational Peers						
Auburn University	163,335	433	1,112	25,469	13%	3%
Mississippi State University	226,070	212	731	20,424	24%	2%
Oklahoma State University-Main Campus	162,786	270	1,012	24,390	16%	4%
University of Arkansas	120,007	288	762	23,199	14%	5%
University of California-Riverside	132,238	235	618	20,900	72%	31%
University of California-Santa Cruz	155,617	148	508	17,454	45%	22%
University of Louisville	197,438	527	1,058	21,152	17%	3%
University of New Mexico-Main Campus	220,565	468	987	28,977	49%	37%
Virginia Commonwealth University	207,756	730	991	31,627	33%	5%
Wayne State University	259,895	856	1,141	30,765	34%	3%

[2] *2011 NSF Survey of R&D Expenditures at Universities and Colleges*
http://www.thecb.state.tx.us/AAR/ResearchExpenditure/

Table 2: UTEP current data, milestones, and institutional targets

	2011-12	2014-15	2017-18	2019-20
Tier One Performance Benchmarks				
Research Expenditures	$71,956,741[3]	$84,628,201	$98,662,852	$109,461,467
Doctoral Degrees Awarded	66	94	116	138
Growth				
T/TT Faculty (Fall)	518	553	590	617
Number of Doctoral Programs	19	21	25	31
Total Headcount Enrollment (Fall)	22,749	24,167	25,798	26,945
Research, Instructional & Associated Support Space (Net Assignable Square Feet - NASF)	1.6M sq. ft.	1.8M sq. ft.	2.1M sq. ft.	2.3M sq. ft.
Quality Assurance				
FTE Enrollment/FTE Faculty Ratio (Fall)	22.2	22.6	22.6	22.6
Efficiency				
Research Expenditures per T/TT Faculty	$138,913	$153,035	$167,225	$177,409
Student Success – 21st Century Demographic				
Annual Baccalaureate Degrees – Total	3,132	3,377	3,690	3,857
Annual Baccalaureate Degrees – Hispanic	2,493	2,668	2,934	3,086
% Hispanic	80%	79%	80%	80%
Annual Doctoral Degrees – Total	66	94	116	138
Annual Doctoral Degrees – Hispanic	27	38	52	69
% Hispanic	41%	40%	45%	50%

[3] *FY 2102 Research Expenditures for Texas Institutions of Higher Education* http://www.thecb.state.tx.us/AAR/ResearchExpenditure/

3.4. Proposed additional degree programs and major research thrusts

In the 2010 Strategic Plan for Research, UTEP defined high priority research areas in health and biomedicine, defense and security, energy and the environment, education for the 21st century demographics, and global enterprise and border studies, along with interdisciplinary, cross-cutting themes in cyber infrastructure and collaborative environments, U.S.-Mexico and Latin America and emerging technologies. These areas of research and themes provide UTEP a comparative advantage in shaping a competitive research agenda. These advantages include UTEP's location, proximity to the U.S.-Mexico border and major binational manufacturing complexes; the arid environment with binational air space and watersheds in the region; access to major national defense and border security installations; and, more importantly, UTEP's status as the only research university in the U.S. with a Mexican-American majority student population.

By having pursued these strategic directions, UTEP has been able to establish new research centers leveraging institutional investments with external funding opportunities. For example, in the energy and the environment area, the Regional Cyber and Energy Security Center (RCES) was established this fiscal year with funding from the City of El Paso to address regional issues. In the Health and Biomedical area, the Center of Excellence in Diabetes is being created this year by augmenting institutional investments with funding from the Hogg Foundation and the Paso del Norte Health Foundation. Because of the uncertain funding at the State level, UTEP will continue to capitalize on external funding opportunities for the creation of new centers as opportunities arise, with efficient use of the RUDF to cover start-up costs and gap funding needs.

On the academic programs side, the comparative advantage of UTEP's student demographics has also enabled the establishment of new programs leveraging external grants. For example, the M.S. program in Intelligence and National Security Studies, which educates individuals who become professionals in areas related to border security, national security, and intelligence policy-making at local, state, and federal levels, was staged through a grant from the Office of the Director of National intelligence. Other academic programs currently in the planning or external submission stages (M.S. in Engineering Education, M.S. in Software Engineering, B.S. in Biomedical Engineering and B.S. in Leadership Engineering) are being developed for the most part with seed grants from the National Science Foundation and the U.S. Department of Education for curriculum development. UTEP will continue identifying such opportunities for the establishment of new academic programs.

3.5. Doctoral programs

UTEP's strategic plan is to increase the number of doctoral programs from 19 to 28 by 2020 (from the list of Table 3), with approval of the UT System and the Texas Higher Education Coordinating Board (THECB). Our analysis of the peer set of emerging national research universities outside of Texas shows that for an institution of about 30,000 students, which we will be approaching by the end of the decade, a complement of 28 doctoral programs is reasonable (e.g., the number of doctoral programs at our peers ranges

from 30 at the University of California – Santa Cruz to 60 at Wayne State University). UTEP will continue growing enrollment in the existing PhD programs to meet doctoral degree production targets.

The University has identified the next set of doctoral programs for which proposals will be developed for implementation between 2012 and 2017, as seen in Table 3. All of these programs will undergo the full rigor of curricular development and proposal review by faculty governance on campus, prior to submission to the UT System and the THECB. As with the three pending programs, the new programs planned and under consideration for the next decade will build on demonstrable faculty strength in high-need areas for the region and nation, particularly in fields that build on the University's strengths and strategic direction and/or provide recognition to the University based on the unique populations that it serves. Proposed programs will need to build on UTEP's research priorities and leverage the expertise of new hires and growing networks for interdisciplinary and transformative work. New programs are also expected to prepare a diverse and globally engaged workforce.

4. Economic analyses

4.1. Key assumptions regarding future levels of enrollment, tuition and fees, and general revenue appropriations

Over the past 20 years, UTEP has built its capacity to become a research institution through prudent use of limited resources and strategic investment in adding doctoral programs; recruiting students with exceptional promise and talent; recruiting and supporting faculty whose research, scholarship, and creative activity are of national caliber and distinction; and building the physical and technological infrastructure to support cutting-edge teaching, research, and service. In this period, the needs of the El Paso region have become the primary driver for growth in research activity. For example, the El Paso Collaborative for Academic Excellence generated more than $50 million in research funding over a decade to study and transform the K-12 educational system in the region. The Collaborative's work was initiated using UTEP's faculty, staff, students, and administrative resources; as research grants were secured, it covered its direct costs through grant funds and indirectly enhanced the institution's human and capital resources. This integrated approach to research activities is reflected in the quantitative scenario models we developed to identify costs related to the expected growth in research activity on the UTEP campus. These models identify the costs associated with growth that will allow UTEP to achieve its Tier 1 targets within a decade.

It is important to recognize that UTEP's targets were based on the institution's growth trajectory, with additional accommodation for modest efficiency gains (based on normative improvements in productivity) and investment (new faculty). UTEP's scenario model considers number of faculty, workload (number of students per faculty), enrollment, and costs. The major assumptions guiding the model are the following: (1) new faculty would

be added (and retiring faculty replaced) based on the enrollment needs of the institution; (2) the T/TT faculty to total faculty ratio would be held constant at 0.61; (3) faculty productivity (expenditures per faculty) would increase at a modest rate of 3%; (4) total faculty would grow at about 2% to keep up with expected growth in total enrollment; and (5) average salaries for new faculty would be based on an inflation factor of 3%. The addition of high yield faculty whose salaries would be supported by other funding sources, including gifts and endowments, was also considered in the model. The scenarios for research growth were first generated at the institutional level and then adjusted based on feedback from deans two years ago during the strategic planning exercise, and these models were further refined this year.

Table 3: UTEP doctoral programs: pending, planned, and under consideration (2012-2020). UTEP expects to add 9 programs from the list by 2020.

College/School	Doctoral Proposals 2012-2017	Doctoral Proposals for 2017-2020
Business Administration		• Information Systems • Accounting
Education		• Educational Research & Evaluation • Special Education
Engineering	• Engineering Education • Biomedical Engineering • Manufacturing Engineering	• Energy Science & Engineering
Health Sciences		• Human Nutrition
Liberal Arts	• Communication • Transnational and Global Society & Culture • Public Administration	• Linguistics
Science	• Bioinformatics • Cell & Molecular Biochemistry • Fundamental & Applied Physics	• Pure & Applied Mathematics • Forensic Science • Statistics • Science & Math Education

4.2. Projections of number of faculty, salaries, start-up costs and sources of funds

Projections of UTEP's total faculty and T/TT faculty needs were based on enrollment projections indicating that total enrollment will increase to 24,167 in FY 2015, to 25,798 in FY 2018, and to 26,945 in FY 2020. To keep pace with growth, while maintaining acceptable student faculty ratios, total FTE faculty is expected to increase to 904 in FY 2015 and to 1,008 in FY 2020; and T/TT faculty is expected to increase from 553 in FY 2015 to 617 in FY 2020 (Table 4). However, given the uncertainty in funding, we have established high (553 in FY 2015 and 617 in FY 2020) and low targets (537 in FY 2015 and 568 in FY 2020) for T/TT faculty (Appendix A).

Table 4: Scenarios related to enrollment, number of faculty, and student-to-faculty ratios

							Projected values		
Fall	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2015**	**2018**	**2020**
Total **Headcount Enrollment (Fall)**	20,154	20,458	21,011	22,106	22,640	22,749	23,511	24,340	24,939
Total **FTE** Enrollment **(Fall)** (12/9/9)	16,770	16,899	17,441	18,461	19,121	19,123	19,857	20,557	21,063
FTE/Headcount Ratio	0.83	0.83	0.83	0.84	0.84	0.84	0.84	0.84	0.84
*T/TT Faculty **(Fall)***	*483*	*498*	*508*	*511*	*518*	*518*	*535*	*554*	*568*
*N T/TT **(Fall)***	*674*	*679*	*720*	*764*	*760*	*791*	*817*	*846*	*867*
Total **Headcount Faculty (Fall)** *	1,157	1,177	1,228	1,275	1,278	1,309	1,353	1,400	1,435
Total **FTE** Faculty **(Fall)***	783	791	822	853	847	862	879	910	933
T/TT Faculty / Total FTE Faculty	0.62	0.63	0.62	0.60	0.61	0.60	0.61	0.61	0.61
FTE Enrollment/FTE Faculty Ratio	*21*	*21*	*21*	*22*	*23*	*22*	*23*	*23*	*23*

* Includes instructional TA's.

The total cost for adding new faculty (accumulated costs starting FY 2013 and new in any given year) will be $ 2.9 million in FY 2015, $6.5 million in FY 2018, and $9.5 million in FY 2020, if the high end of these faculty projections is realized. However, the marginal cost of adding new faculty to achieve research targets (i.e., accumulated costs associated with hiring T/TT faculty above historic trends) is $1.3 million in FY 2015, $3.1 million in FY 2018, and $4.7 million in FY 2020 (Appendix A). The estimated start-up costs are expected to be about $180K per faculty, and the total start-up expenses per year will be about $4.9 million in FY 2015, $5.2 million in FY 2018, and $5.6 million in FY 2020 (Table 5).

Table 5: Scenarios related to faculty salaries and start-up costs

New T/TT Faculty Cost	2015	2018	2020
T/TT Faculty **(Fall)**	553	590	617
New T/TT Faculty 9-Month Average Salary	$82,366	$90,003	$95,484
Accumulated Cost of New T/TT Faculty	$1,317,852	$3,060,111	$4,678,738
Estimated Number of New Start-Ups	27	29	31
Start-Up Costs	$4,860,000	$5,220,000	$5,580,000

It is assumed that the majority of the funds to cover faculty salaries will come from the traditional sources of tuition revenue, formula funding and other institutional funds. It is anticipated that by FY 2018, the percent of faculty salaries paid through externally sponsored projects will increase to 5% from 3.4% currently. It is expected that tuition and fee revenue (net) will increase from $78.8 million in FY 2009 to $105 million in FY 2015, $119 million in FY 2018, and $130 in FY 2020. General revenue is conservatively projected to decline from $111.6 million in FY 2009 to $94 million in FY 2015 and then increase to $100 million in FY 2018 and $104 million in FY 2020 (Table 6).

Table 6: Scenarios related to tuition and fee revenue and general revenue based on enrollment assumptions

								Projected values		
FY	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2015**	**2018**	**2020**
Total **Headcount Enrollment (Fall)**	19,268	19,842	20,154	20,458	21,011	22,106	22,640	23,250	24,055	24,634
Total **FTE** Enrollment **(Fall)** (12/9/9)	16,145	16,606	16,770	16,899	17,441	18,461	19,121	19,636	20,317	20,806
Tuition and Fees Revenue (Net)	$58.2	$65.8	$71.0	$78.8	$82.4	$89.0	$93.0	$101.3	$111.28	$118.56
Average Tuition Growth				**Average Annual Growth**			*2.00%*			
General Revenue (State Appropriations)	$90.9	$91.5	$104.6	$111.6	$115.9	$111.3	$89.5	$91.5	$94.6	$96.9
				Average Annual Growth			*0.00%*			

4.3. Assumptions regarding additional State research funding

State research funds are highly unpredictable, and therefore very difficult to incorporate into scenario models. For example, as presented in Table 7, UTEP received $1.1 million in Texas Research Incentive Program (TRIP) funds in FY 2010 and $1.8 million in FY 2011, but no TRIP funds in FY 2012 because prior-biennium, TRIP-eligible matches had fully depleted all available State appropriated funds for this purpose. The Research University Development Fund (RUDF) is another important source of funds for the recruitment and retention of highly qualified faculty. RUDF funds are distributed as a proportion of the restricted research expenditures of the State's public academic institutions excluding UT Austin and Texas A&M (see Appendix B). RUDF funds allocated to UTEP increased from $1.8 million in FY 2007 to $4.3 million in FY 2011, but decreased to $3.5 million in FY 2013. Despite an earned increase in UTEP's designated percentage, the actual amount allocated to UTEP decreased because of a reduction in funds appropriated to this program by the Legislature.

Although meeting the eligibility criteria for participation in the Competitive Knowledge Fund (CFK) during the current biennium, UTEP was excluded from the legislation to enable it; a priority of the 83rd legislative session has been to secure the CFK participation that UTEP earned. Assuming that statewide appropriations will remain constant in the future, funding to UTEP from this program in FY 2015, FY 2018, and FY 2020 will range between $3.5 million and $3.7 million. UTEP is not expecting to draw any funds from the National Research Universities Fund (NRUF) before FY 2018, and no funding from this program has been assumed in the scenario models. (NRUF funding criteria are not well aligned with UTEP's educational mission of providing access and opportunity to students in our region.) The Border Health Endowment funds available to UTEP have increased on average by 2.5% annually since FY 2006; and it is estimated that UTEP's allocation will grow by about 1.5% annually, yielding about $1.5 million in FY 2015, FY 2018, and FY 2020. Over the past four years, UTEP has received STARS funding support for an average of three faculty members per year at an average annual amount of $800,000. Our model projects approximately $1 million in STARS funds in FY 2015, FY 2018, and FY 2020.

4.4. Projections of research productivity and assumptions regarding amount of indirect cost recovery from federal and industry-sponsored research

UTEP estimated that it would achieve over $84 million in research expenditures by FY 2015, over $98 million by FY 2018, and about $109 million by FY 2020 (see Table 8). These assumptions were based on growth in T/TT faculty, faculty productivity, and efficiency in securing extramural funding. The research expenditures per T/TT faculty in FY 2009 were $112,490, and research expenditures per T/TT faculty are expected to increase to $153,035 in FY 2015, $167,225 in FY 2018, and $177,409 in FY 2020. Despite the slowdown in hiring, research expenditures exceeded the expected number in FY 2010 and FY 2011, resulting from increases in faculty productivity during these two years. In FY 2009, UTEP received $ 7.7 million in indirect cost recovery funds, an amount that was expected to increase to $9.8 million by FY 2015 and to $12.6 million by FY 2020.

Table 7: Conservative estimates of funds from other sources

Other Sources of Funds	2015	2018	2020
Texas Research Incentive Program (TRIP)*	$250,000	$275,000	$300,000
Research University Development Fund (RUDF)	$3,500,000	$3,600,000	$3,700,000
Competitive Knowledge Fund (CFK)**	$2,000,000	$2,000,000	$2,000,000
Border Health Endowment Funds	$1,500,000	$1,500,000	$1,500,000
Research Indirect Cost Recovery Funds	$8,994,892	$11,283,189	$13,187,043
STARS Funds	$1,050,000	$1,050,000	$1,050,000

* Includes TRIP gifts, and THECB and UT System matches
** UTEP's priority for the 83rd Legislative Session

Table 8: Scenarios related to research expenditures and indirect cost returns

Fiscal Year	Number of T/TT Faculty Actual	Research Expenditures per T/TT Faculty, Actual	Research Expenditures, Actual (millions)	Indirect Cost (millions)
2006	502	$91,010	$45.7	$6.6
2007	486	$95,506	$46.4	$6.6
2008	483	$99,188	$47.9	$7.2
2009	498	$112,490	$56.0	$7.7
2010	508	$129,995	$66.0	$8.7
2011	511	$135,969	$69.5	$8.0
2012	518	$138,913	$72.0	$8.2
2015	553	$153,035	$84.6	$9.8
2018	590	$167,225	$98.7	$11.4
2020	617	$177,409	$109.5	$12.6

4.5. Key assumptions regarding philanthropy efforts and projected growth in UTEP's endowment

As part of a strategy to accelerate the University's growth and development, we launched in 2008 The Centennial Campaign for UTEP, a $200 million comprehensive fundraising effort. It is the largest fundraising campaign in our history, and is being conducted in conjunction with UTEP's 100th anniversary in 2014. In addition to supporting a variety of current University initiatives, the Centennial Campaign will also support building UTEP's research and academic endowments. Student research fellowships, endowed faculty positions, and funding for innovative multidisciplinary teaching and research activities will help UTEP meet its goal of becoming the first national research university with a 21st century demographic.

Philanthropic gifts have supported UTEP's expanded research agenda and our promise to provide high quality, affordable academic programming to students – most coming from the Paso del Norte region. Advancing UTEP's research strategic plan and our extramurally funded research portfolio, and energized by the matching funds offered via the Legislature's TRIP match program and the corresponding UT System RIP matching funds initiative, endowments have supported the recruitment of high performing faculty and graduate students enrolled in our growing number of doctoral programs.

In support of enrollment growth and research development, Centennial Campaign funds have also contributed to the acquisition of state-of-the-art laboratory equipment housed in campus research facilities recently opened or soon to be opened in the next few months. UTEP donors have joined with University faculty and staff to ensure that we reach our ambitious $200 million campaign goal. Through our intensified focus on the acquisition of major philanthropic gifts as well as our partnership with the University of Texas System's Strength in Numbers Program, we have already raised more than $183 million toward our Centennial Campaign goal.

4.6. Assumptions regarding increased funding from technology commercialization

The University established the Center for Research Entrepreneurship and Innovative Enterprises (CREIE) in 2009 with a vision to become nationally recognized as both the vehicle for commercializing research and technology at UTEP and a contributor for economic development in the Paso del Norte region. The recently created Loya Center for Innovation and Commerce in the colleges of Engineering and Business Administration will greatly complement CREIE's mission by facilitating collaborations between faculty and students and establishing educational and certificate programs on research, development and commercialization. It is estimated that CREIE's technology transfer and commercialization efforts will generate $790k in FY 2015, $1.2 million FY 2018, and $1.8 million in FY 2020.

CREIE has made significant progress in its first three years helping faculty, staff, students, and local entrepreneurs commercialize their technology. Highlights include the establishment of The Hub of Human Innovation, a technology incubator; success in

securing funding through the Texas State Conservation Office (SECO) to establish a Clean Energy Incubator program in El Paso; licensing of multiple technologies; and the start-up of at least four new companies based on UTEP technology.

4.7. Additional academic and research space required to accommodate expanded enrollment and research efforts

UTEP's facilities master plan has long charted a course for the systematic development of state-of-the-art facilities. The University has recently engaged consultants to assist in updating our comprehensive campus master plan that will serve as the blueprint for development of the facility infrastructure that is so critical to attainment of UTEP's strategic goals. This master plan includes projections for the nature and placement of future buildings. A second phase Utility Infrastructure Master Plan is currently underway to plan for the required upgrades to the campus utility infrastructure to support planned campus expansion.

UTEP expects to receive support for the projected facilities expansion from continued investments of tuition revenue bonds (TRB) from the State and Permanent University Fund allocations from the UT System. In addition, the University has recently embarked on a capital campaign that includes gift solicitations targeted toward facilities expansion. A TRB request for the Interdisciplinary Research Facility is under consideration in the 83rd Legislation. The University has, in the past, been successful in securing federal funding for facilities construction/renovation, and it will continue to aggressively pursue such opportunities.

4.8. New construction in the next 10 years

Over the next ten years, UTEP plans to construct three new buildings that will address anticipated space requirements as they appear in the Texas Higher Education Coordinating Board MP1 (Master Plan) report. Table 9 provides information concerning these three structures: (1) a proposed Interdisciplinary Research Facility that will be a state-of-the-art facility integrating research, institutional research support, and teaching space aligned with needs identified in the development of the University's research priority areas; (2) an Honors and Student Leadership Institute (HSLI) that will provide space for a variety of programs and services designed to broaden the scope and enhance the quality of undergraduate students' academic and co-curricular experiences on the UTEP campus; and (3) a building to support the teaching and research needs in the Social and Behavioral Sciences. The projected cost for the expected 380,000 NASF expansion of these three buildings is $255 million. The anticipated sources of funds include Tuition Revenue Bonds, Permanent University Funds (PUF), Federal or State grants, foundations, corporations and private philanthropy.

Table 9 also makes reference to major projects recently completed that added approximately 231,000 NASF of new space to the UTEP campus. Among these projects are the Chemistry and Computer Sciences Building, with 88,000 NASF and the College of Health Sciences and School of Nursing Building with 83,000 NASF.

Table 9: University's facility plans in the next 10 years and recently completed projects

	GSF (ft^2)	NASF (ft^2)	Project cost	Year	Type
Projects Proposed for the next 5 years					
Interdisciplinary Research Facility[4]	250,000	150,000	$110,000,000	2017	New E&G
Honors and Student Leadership Institute	200,000	120,000	$75,000,000	2017	New E&G
Social and Behavioral Science Building	185,000	110,000	$70,000,000	2020	New E&G
Totals:	635,000	380,000	$255,000,000		
Completed Projects					
Physical Science /Engineering Core - Chemistry Computer Science Building	145,827	87,496	$70,200,000	2011	New - E&G
College of Health Sciences/School of Nursing	137,900	82,740	$60,000,000	2011	New - E&G
Clean Room Addition	6,876	3,643	$4,500,000	2012	New - E&G
Science & Engineering Core Facilities Upgrade - Additions	15,000	9,500	$13,000,000	2012	New - E&G
Science & Engineering Core Facilities Upgrade - R&R	68,000	48,000	$15,000,000	2012	R&R - E&G
Totals:	373,603	231,379	$162,700,000		

Table 10 makes reference to the research space added or expected to be added since FY 2011. The table includes the research space added upon completion of the Chemistry and Computer Science Building and the research spaces of our future planned constructions.

[4] *TRB Request under consideration in the 83rd Legislation*

Table 10: Research space added in the next 10 years

Year	THECB Research Space (NASF Ft2)	Additional Research Space	Source for additional space
2011	182,357		(Current)
2012	224,568	42,211	Chemistry and Computer Science Building
2015	234,568	10,000	Changes in Kelly 5th floor and shell space in Chemistry and Computer Science
2018	278,568	44,000	Interdisciplinary Research Building and Burgess loss
2020	364,568	86,000	Social and Behavioral Sciences Building

4.9. Other required resources

Information technology and research computing

Recognizing that a research computing capability is critical to UTEP's national research university goals, priority was given and progress achieved in adopting strategies consistent with the UT System Shared Services philosophy, including the appointment of director of research computing and the construction of a Research Data Center, which will contain centralized and reconfigurable high performance computing clusters with integrated operations. In addition, UTEP has adopted policies to eliminate the proliferation of decentralized servers; thus, for example, new faculty start-up packages now consist of "adding" computer nodes to the central cluster rather than installing isolated systems.

Such changes in organization and policies offer UTEP the potential not only to accommodate future growth and meet campus needs by increasing efficiencies, but to achieve significant gains in services as well. Moreover, UTEP's active participation in the UT System Research Cyberinfrastructure initiative will enable the University to capitalize on new capabilities that will advance current and future research efforts in collaborative environments, without the need for large investments in new systems.

Library resources

The UTEP Library is already strategically positioned to support the University's robust research and graduate program growth, primarily through increased reliance on electronic materials that give UTEP faculty and students access to the contents of libraries around the world. In the next decade, the Library will continue to increase services to the University

community primarily through increasing efficiencies in operation and capitalizing on new electronic materials as they are developed.

4.10. Assumptions regarding additional doctoral student support

UTEP doctoral programs have been successful in recruiting and graduating highly competitive doctoral students, as evidenced by their success in their graduate work, by the demand for them at other research institutions, and by the high-quality professional placements they secure within and outside of academe. There is, however, a growing awareness at UTEP and many other Texas universities that current stipend levels are not competitive with those offered by national research universities in other states in the Southwest, let alone nationally. A major limitation is that the state of Texas does not allow for tuition waivers. Inadequate stipends both reduce competitiveness in recruitment and increase degree completion time for doctoral students who must find other sources of financial support, resulting in negative impacts on both the student and the economy as their entry into the highly skilled workforce is delayed.

In order for UTEP to achieve its goal of graduating approximately 100 doctoral students annually, the following strategies will have to be developed and implemented over the course of the next decade:

- Identify which assistantships and fellowships are not currently competitive for successfully recruiting and retaining highly qualified students and develop specific plans to increase those support levels as quickly as possible;
- Increase the number of funded doctoral students so that programs achieve critical masses of doctoral students in key specialty areas of faculty strength and students gain the benefits of working with colleagues in academic collaborations;
- Develop funds to support assistantships for the new doctoral programs so that they can launch at critical mass and doctoral students are well distributed among research-active core faculty;
- Develop specific plans for each College to generate resources for doctoral student fellowships through private and corporate fundraising and for research assistantships through grants in order to augment the funding available through the state budget. Over time, state funds are projected to be focused on support for the first two years of a student's funding package, requiring additional funding sources for students' later support.
- Develop within each College a culture and the associated support systems to accelerate students toward graduation. The Provost, Dean of the Graduate School, and the Deans of the Colleges will monitor progress toward graduation for all doctoral students on an annual basis (this is also consistent with the Chancellor's Framework).

As part of the current planning for research, the Dean of each College conducted a market analysis of competitive nine-month assistantship stipends offered at research universities in the Southwest (Texas, Arizona, and New Mexico). This information enabled Colleges to

set targets within the context of this region's cost-of-living. Each College then developed a plan to increase its stipends to competitive levels as quickly as possible, depending upon the extent of the increases that need to be phased in and the numbers of students to whom commitments have already been made. Each College also projected the numbers of funded PhD students in its programs over the next ten years as well as funds that could be generated from the growth of existing scholarships, the College's Centennial Campaign plan, and the potential growth in support for doctoral students funded by research grants and contracts.

The results of those studies and model projections produced the following outcomes for strategic planning purposes. First, the number of full-time funded doctoral students is projected to grow from 257 in 2009-10 to 552 in 2014-15 and to 676 in 2019-20. Given current programs, the Colleges of Engineering, Science, and Liberal Arts will have the largest numbers of funded doctoral students, with the greatest growth in Engineering, Science and Psychology. Doctoral enrollment in the College of Business Administration is also expected to grow sharply as awareness of the doctorate spreads following the high national ratings of the MBA programs and the recruitment of highly competitive faculty.

Doctoral student support is projected to grow over the next decade from a total of $4.4 million in 2009-10 to $15.9 million in 2019-20. The largest budgets will be in Science and Engineering, at approximately $5 million per year, followed by Liberal Arts, with more than $3 million, and Business, with approximately $1.5 million.

Approximately 52% of doctoral-student stipends currently come from state budget sources, 33% come from grants, and 15% come from fellowships. As UTEP moves toward becoming a national research university, the proportion of our doctoral student support budget that will be generated through grants is expected to increase steadily, reaching approximately 50% by 2020. Similarly, the University's Centennial Campaign offers a good opportunity to raise private support for graduate student scholarships and fellowships, and Campaign fundraising to date has confirmed the interest of donors in supporting doctoral students. It is anticipated that sufficient funding will be generated to increase annual fellowship support for doctoral students from the present $674,000 level to more than $2,250,000 by 2020. As a result, the portion of the doctoral student support budget that comes from the state will decline from 52% to 37% by 2020.

Another element in improving the competitive position of the University in recruiting excellent doctoral students is the ability to offer tuition waivers, as national research universities in many states do, or to provide full or partial funding for tuition of full-time funded PhD students. This is an issue for all of the public research universities in Texas, and UTEP will continue to work with the rest of the higher education sector to find ways to address it.

5. Impact analyses

5.1. Regional economic development opportunities and UTEP synergies[5]

The Gross Metropolitan Product for the El Paso metropolitan statistical area (MSA) was about $28.7 billion in FY 2010, making El Paso the 75th largest economy among the 363 metro areas in the country tracked by the U.S. Conference of Mayors. About 295,000 workers are employed in the El Paso MSA. The largest employment sectors are government (23.3%), education and health services (13.7%), retail trade (13%), and professional and business services (11%). In terms of occupation, about 56% of the positions are in white collar professions (management, business, science, arts, sales, and office).

As recently as 2004, the Milken Institute ranked the El Paso metro area 118th out of 200 in terms of job growth, number of technology clusters, wage and salary growth, and high-tech output growth. However, by 2011, the El Paso metro area was ranked 2nd among large metropolitan areas in terms of job growth, wage and salary growth, and high-tech output growth.

The business climate and career opportunities have also dramatically increased. In 2004, El Paso was ranked 121st out of 150 metro areas in the Best Places for Business and Careers list, based on income and job growth, cost of doing business, qualifications of the available pool of labor, crime rate, housing costs, and net-migration. In 2011, the El Paso region was ranked 36th among the 200 most populous metro areas in the U.S. The most recent rankings considered costs (business and living), job growth (past and projected), income growth, educational attainment, projected economic growth, crime, cultural and recreational opportunities, net migration patterns, and highly ranked colleges. The U.S. Bureau of Labor Statistics also recently released a report on employment projections (to 2020) that ranked El Paso 5th for projected job growth in private sector employment (BLS.Gov, "Where will the jobs be in 2020?").

The fastest growing occupations in Texas are in health care (e.g., home health aides, personal and home aides), network systems and data communications, and medicine. The El Paso region also has a Targeted Occupations List (TOL) that was collaboratively developed by the Institute for Policy and Economic Development (UTEP), the City of El Paso, and other economic development partners in the region. The currently targeted professions, in areas that require a baccalaureate degree, include accountants and auditors, computer programmers and analysts, network administrators and analysts, electrical and computer engineers, teachers, and health professionals.

Fort Bliss, the Army's second largest installation (second only to neighboring White Sands Missile Range), is located in the El Paso region. Fort Bliss benefited from the 2005 Base

[5] This section is shaped by information and data from multiple sources, including America's Top Rated Cities (2012), OECD Self Study for the El Paso del Norte Region (2008-2010), and OECD Final Report (2010).

Realignment and Closure initiative, and the number of troops at the installation is expected to increase by about 11,500 to 35,000 by 2013. In addition, it is estimated that another 16,000 military and civilian jobs will be transferred to Fort Bliss during this period.

It is important to recognize that the El Paso economic region extends beyond Texas and the U.S. border. In fact, the region consists of El Paso, Ciudad Juárez (Mexico), and Doña Ana and Otero counties in southern New Mexico. The region is estimated to have a population of about 2.6 million. Of particular significance are the 330+ maquiladora manufacturing plants in Juárez (across the border from El Paso) that employ nearly 180,000 workers.

UTEP's academic programs are primarily focused on addressing the workforce needs of the region and state. The following are examples of academic programs from all colleges that directly address the needs of El Paso del Norte region:

- Master's in Public Administration focusing on the unique public administration issues of the border, offering such specializations as homeland security and administration in a border setting.
- Undergraduate and graduate programs in nursing, physical therapy, occupational therapy, clinical laboratory sciences, social work, pharmacy, and other health-related professions to help address the serious shortage of these health professionals in the region.
- Doctoral degree in Ecology and Evolutionary Biology that trains scientists to perform research on the fauna and flora of the Chihuahuan Desert and their relationship to organisms around the globe, especially in Latin America and Mexico.
- Doctoral degree in Psychology with emphases on bilingualism, health psychology and legal psychology addressing important regional issues such as health disparities and drug addiction as well as research on criminal investigations, interrogation, and security issues.
- Undergraduate degree in Criminal Justice, with over 1000 majors, that prepares students for the U.S. Border Patrol and other federal and local law enforcement agencies.
- Master's degree in Manufacturing Engineering and Master's degree, certificate programs, and workshops in Systems Engineering.
- Undergraduate and graduate degrees and Alternative Teacher Certification to prepare teachers for the region and state.
- Undergraduate and graduate business programs, including a PhD in International Business, Accelerated MBA, Executive MBA, managerial and executive development workshops and seminars for regional business and not-for-profit organizations in the region.

UTEP's Colleges are constantly developing and modifying programs to address the needs of the region. For example, when the El Paso Regional Economic Development Corporation determined that there was a significant opportunity to attract and grow the medical device industry in the El Paso region, UTEP's College of Engineering developed plans for MS and

PhD programs in biomedical engineering to support workforce and technology development needs for growing this industry.

Research at UTEP also has a regional focus and applies interdisciplinary approaches to explore and address major issues that confront the multicultural U.S.-Mexico border region. As an example, UTEP's research centers are designed to serve as a catalyst for regional development through knowledge creation and technology development and transfer, commercialization, and entrepreneurship:

- The Regional Cyber Energy Security Center addresses technical, regulatory, academic and commercial challenges associated with emerging cyber and energy security technologies tied to alternative energy resources. Among the Center's goals are to develop the methods to secure the commercial and energy systems in the West Texas/Southern New Mexico region against cyber attacks, equipment failures and natural threats.
- The Border Biomedical Research Center and the Hispanic Health Disparities Research Center focus on the causes and effects of health and biomedical disparities among Hispanics in the region, including conditions that are particularly chronic in the border region or in Latin America such as diabetes, obesity, West Nile virus, and Chagas disease.
- The Center for Inland Desalination Systems focuses on developing and implementing technologies to create alternative water sources in Texas and across the globe.
- The Research Institute for Manufacturing and Engineering Systems (RIMES) conducts research on and promotes the use and development of emerging systems engineering methodologies, processes, and tools in the design, development, manufacturing, implementation, and life cycle management of end-to-end enterprise systems.
- The Center for Research, Entrepreneurship, and Innovative Enterprises (CREIE) promotes innovation and knowledge exchange between researchers and industry and brings people together to pursue joint ventures.
- The W.M. Keck Center for 3D Innovation is home to state-of-the-art advanced manufacturing, reverse-engineering, and computer-aided design technologies. In addition to conducting university-level research, the Keck Center provides services to medical and manufacturing industries in the region and to others who need solutions to design and fabrication problems.

5.2. Local community support for UTEP's national research university goals

UTEP has engaged community stakeholders in helping shape the institution's path to Tier 1 in a variety of ways. In turn, the community strongly supports the institution's evolution into a national research university and recognizes the positive impact that this change will have on the region. The following are examples of major initiatives that were designed to engage the community:

Centennial Commission

The first major effort was the Centennial Commission, which was convened in 2004 to develop a vision for the University in 2014, UTEP's 100th anniversary. The Centennial Commission drew its 100 members from a broad cross-section of the public, whose interest and support are essential elements in the future of the University. Assigned to one of eleven committees (Executive Committee, PreK-16 Educational Collaboration, Undergraduate Education, Graduate and Professional Development Programs, Health Professions Education/Health and Biomedical Research Programs, Regional, UTEP's Neighborhood, El Paso's Quality of Life, UTEP's Image, Alumni Relations and Development) commission members reviewed and evaluated the opportunities and challenges of UTEP's future, and recommended long-range goals and strategies to achieve them.

As a part of Centennial Commission process, several study groups (Task Forces) comprised of faculty, staff, and students were also established. Of most relevance to this business plan was the Research Task Force, which was established to develop a roadmap to raise research expenditures at UTEP to $100 million annually within 10 to 15 years. To determine strategic research directions that would assist UTEP in achieving Tier 1 status, the Task Force concluded that the University should emphasize areas in which UTEP already has, or can develop fairly quickly, comparative advantages—advantages that include our border location and our primarily Hispanic, bilingual/bicultural population. To select research themes to emphasize, the Task Force looked at areas where UTEP's comparative advantages intersect with the current priorities of funding agencies. Looking at UTEP's strengths in terms of faculty, doctoral programs, and research center support, the Task Force identified three primary areas of current research strength: Regional Capacity Development, Infrastructure Technologies, and Biomedical and Health.

The final Centennial Commission Report was released in November 2005, and progress on achieving its goals is updated annually and made available on the Commission's website.

Organization for Economic Cooperation and Development's Study (OECD)

During 2008-2010, Paso del Norte stakeholders, including higher education institutions from Juárez, El Paso, and Las Cruces, participated in the Organization for Economic Cooperation and Development's (OECD) Reviews of Higher Education in Regional and City Development project, part of a wider study of higher education in cities and regions. According to OECD, the objectives of the reviews were "to mobilize higher education for economic, social, and cultural development of cities and regions" and to "analyze how the higher education system impacts local and regional development and assist[s] in improving this contribution." The reviews were also designed to "examine higher education's contribution to social, cultural, and environmental development and regional capacity building." (page 3)

As part of the OECD Project, UTEP participated in and contributed to a self-study of the region. The Self-Study and the Site Visit Team reports shaped the final OECD Report

(Higher Education in City and Region Development: The El Paso del Norte Region, Mexico and the United States, 2010), which reinforced the important role that UTEP plays in the bi-national, bi-state region.

Road to Tier 1 Advisory Board Summit

In April 2011, President Natalicio convened the first Summit for Advisory Boards, which was attended by more than 100 advisory board members representing UTEP's seven Colleges, schools, and divisions, as well as the University's Development Board and Centennial Campaign leadership. The purpose of the summit was three-fold: (1) to update our board members on UTEP's progress toward becoming a Tier 1 national research university; (2) to seek our board members' perspectives on UTEP's success in meeting the needs of our students and the Paso del Norte region; and (3) to engage our board members in helping UTEP achieve its Tier 1 vision to become the first national research university with a 21st century student demographic.

The Summit achieved its objectives, and the board members offered to help in three major ways: (1) by helping broaden awareness of UTEP, locally, regionally, and nationally through connecting students and faculty to regional businesses, facilitating internship and job placement opportunities, promoting research opportunities for UTEP faculty, and facilitating a national dialogue on UTEP's progress toward becoming a national research university; (2) by helping expand UTEP's resources through public and private funding such as gifts from individual donors, corporations, and foundations and supporting endowments; and (3) by helping others understand how UTEP's Tier 1 goal strengthens the regional economy through commercialization of UTEP research and the preparation of an educated workforce.

Task Forces on Community Engagement and Global Outreach

In spring 2012, the Office of Academic Affairs established two new task forces: the Provost's Task Force for Community Engagement and the Provost's Task Force on UTEP's Global Reach, both of which were designed to engage the community in understanding and supporting UTEP's educational, research, and service activities. Both Task Forces are now making implementation plans (e.g., calling for nominations for standing advisory groups, prioritizing recommendations), and re-alignments of existing efforts will occur.

The Task Force for Community Engagement, which includes community representatives, will explore and develop methods to improve student learning outcomes, understand emergent social needs, enhance institutional identity, and create new opportunities for resources and funding. The group surveyed the ongoing community outreach efforts conducted by University staff, students, and faculty, and then recommended methods to improve and expand on those initiatives.

The Task Force on UTEP's Global Reach is comprised of 15 University staff and faculty who were selected from a strong pool of candidates. The Global Reach team developed short-

and long-term plans for the expansion and development of international education and research activities, based on assessment of UTEP's international initiatives and feedback from international partners in the region (Juárez and Northern Mexico), the Americas, and the world.

Opportunity Nation

UTEP is one of 12 higher education institutions across the U.S. selected to participate in the Opportunity Nation initiative, whose goal is to develop strategies to revitalize the American Dream, foster social mobility, and stimulate new economic opportunities. As part of its participation in Opportunity Nation, UTEP convened a regional conference in May 2012 called "Building Opportunity and Social Mobility through Collaboration: The El Paso Model." Building on the nationally recognized success of the work of UTEP, El Paso Community College, area school districts, and other El Paso Collaborative for Academic Excellence partners to increase academic achievement and social mobility, the program explored the relationship between educational attainment, economic development, and quality of life in the Paso del Norte region. Through a series of coordinated presentations by nationally recognized leaders and discussions among participants, the program served as a catalyst to launch a multi-year collaborative education and economic development initiative with the active engagement of a broad cross-section of the El Paso community. Program participants heard from speakers who placed El Paso's human and economic development challenges and successes in a broader context, to include this region's role in serving as a model for addressing the demographic shifts across our state and nation. They also heard about the region's potential to prepare growing numbers of highly skilled and globally competitive professionals and to provide more attractive professional career opportunities for them in El Paso through more robust educational and business partnerships.

The conference met all its objectives, and elicited very positive ideas and commitments for working together to advance the prosperity and quality of life of the El Paso Region. Bob Cook, president and CEO of the El Paso Regional Economic Development Corporation, captured the predominant impression of attendees at the conference when he said: "I think when we look back on this day three, five, 10 years from now, what happened today will be considered historic."

5.3. Key limitations of the region in supporting UTEP's goals, and competitive forces

Balancing access and excellence

UTEP's designation as an emerging research institution is a source of pride for the El Paso community. Still, there was concern that, to emerge as a Tier 1 institution, UTEP would shift toward more selective admissions and greater recruitment of students from outside the region. The El Paso community's concerns deserve a clear and reassuring institutional response. More than 80% of UTEP students are from the region, and more than 50% will be the first in their families to graduate from college. Nearly 30% of UTEP's undergraduate

students report family incomes of $20,000 or less. Given the student demographics of prominent national research universities, it is not surprising that our community was concerned about the UTEP's research university vision. But UTEP has made every effort to assure the community that the move to Tier 1 is consistent with institution's path over the past 20 years:

> *UTEP's responsibility to its students and to the state is to demonstrate that a commitment to both access and excellence – to both "Closing the Gaps" and "Tier 1" goals – can and must be achieved. We have been highly successful over the past 20 years in building research and doctoral program capacity while maintaining our strong access commitment to first-generation, low-income and mostly Hispanic students, who also happen to be highly talented. We intend to continue to build on the success to achieve our Tier 1 goal, for and with the students we serve, not in spite of them. They- and Texas- should expect nothing less.*
>
> *UTEP President Diana Natalicio*
> *The Texas Tribune, January 10, 2010*

UTEP takes great pride in its role as the economic, social, and cultural engine of the region and in our growing national reputation as a research university. However, we remain vigilant to ensure that external factors – political, economic, and administrative – do not shift the institution's primary mission of serving of region and the state.

Impacts of declining State support

The recent reduction in the state-funded portion of UTEP's budget has slowed the expected growth in hiring new T/TT faculty members. UTEP's Tier 1 targets are based on research-output models that are tied to growth in enrollment. The underlying principle is that research is one of the expected activities of faculty, and UTEP's growth in research expenditures is expected to increase through the steady growth in the research productivity of existing teaching faculty and the contributions of new teaching faculty. Although the decline in the state budget had a direct impact on the number of T/TT faculty that were hired, research expenditures continued to increase and surpassed the expected figures for FY 2010 and FY 2011. To address the slower growth in faculty hires, UTEP works to create the conditions for faculty to become more productive – that is, to apply for more grants and to secure larger grants. UTEP's Office of Research and Sponsored Projects has taken a proactive approach to identifying major grants, pulling together faculty with expertise in supporting the research, and providing grant-development support to ensure that proposals have a strong chance of being funded. Finding new sources of funding to hire faculty (either through tuition increases or other strategies) is one key element in meeting the Tier 1 targets within a decade.

The limited growth in T/TT faculty has also had an impact on the growth in the existing doctoral programs and the development of new doctoral programs. UTEP has focused on ensuring the quality of doctoral programs by establishing a small ratio of doctoral students

to T/TT faculty. This approach ensures that sufficient numbers of faculty are available to mentor doctoral students and guide them to timely completion. The reduction in funding also creates a challenge in finding resources to support doctoral students. Because supporting undergraduate students continues to be a priority, any reduction in funding will require that resources be reallocated to support undergraduate students before any are allocated to graduate students. To address resources needed for doctoral programs, UTEP has undertaken a complete analysis of revenue and costs associated with each doctoral program on the campus. UTEP has also developed a new net-revenue model for each new doctoral program to ensure that all costs associated with new programs, including student support, are considered prior to submission to the UT System and the THECB for approval. Similarly, UTEP is exploring other scenarios, including finding new approaches to fund faculty. For example, the current scenario assuming that 5% of the new T/TT faculty salaries will be generated from extramural funds can be increased to 10%. In addition, our models allow for the hiring of high-yield faculty, whose higher salaries would be supported by other sources, including endowment funds. However, the model currently assumes that all hires are based on college resources and priorities. It may be more effective to explore a new approach of campus-based high-yield hires that could secure larger, campus-wide grants.

Philanthropy

As operational expenses increase and state appropriations decline, private giving has become an increasingly important source of funding for public higher education. Effective and efficient management of all institutional resources has contributed to UTEP's positive reputation as one of the nation's most affordable universities. Gifts to the University and the creation of endowments have become an increasingly important element of our institutional strategy to address student needs and grow research programs. Our fundraising initiatives have been well received by alumni, friends, corporations, and foundations. The Centennial Campaign has thus far generated an unprecedented amount of donor support, and therefore we anticipate that UTEP will sustain its positive performance profile and research trajectory.

UTEP's development strategy is grounded in our firm belief that all students deserve access to quality programs and in our sustained commitment to become the first Tier 1 University with a 21st century demographic. Our fundraising targets are aligned with research and academic program development initiatives that also focus on "access and quality." Demonstrating to donors that UTEP consistently produces a positive return on investments and that we have effectively used gifts to positively improve the lives of graduates, their families, and the people living in our region is a key element of our fundraising plan.

Competition from other institutions

As pointed out in the OECD report, there are efforts underway that will allow higher education institutions in the region (including Mexico, Las Cruces, and El Paso) to work together synergistically to address the workforce and other economic and social needs of the region. In addition to the major institutions, many new for-profit institutions have established a presence in the region. UTEP is supportive of any effort to increase the number of college graduates in the region. However, it is clear that UTEP will continue to be the predominant producer of undergraduate and graduate degrees in the region, and we expect our share of students to increase and not reduce over time.

From an academic perspective, the new institutions in the region cannot compete with the educational experiences offered by UTEP in terms of credentials of faculty, student support services (UTEP is identified as one of the top 20 exemplary institutions by George Kuh and others), and facilities (including new state-of-the-art facilities in nursing, health sciences, chemistry, computer science, and engineering). We currently enroll more than 60% of the most highly recruited students (Top 10 students) from the region. We continue to aggressively promote the benefits of UTEP experiences and outcomes to all students in the region: e.g., UTEP is a top ten feeder nationally for Hispanic doctoral graduates and the second largest feeder of Mexican-American medical students and has high acceptance rates to top tier law schools (30% compared to 5% national average).

From an economic perspective, UTEP is well positioned to compete with any other research or emerging research institution. The cost of producing a degree at UTEP is among the lowest of all research or emerging research institutions in the nation, and even lower than some of the non-research institutions. UTEP's tuition is the lowest among research institutions and among the lowest (17th percentile) among all four-year granting institutions in the country.

The increased world-wide demand for research faculty is another emerging challenge. Developing countries, especially in Asia, are aggressively recruiting American faculty and recent PhD graduates. This demand will continue to increase faculty salaries, especially for very productive faculty, at much higher rates than previously experienced. Interestingly, the institutions in Asia have come to recognize a fact that we have used to our advantage to recruit and retain highly productive faculty. Salaries, generally, are not the primary determinant in successful hires – the mission, community, and cultural fit are equally strong drivers. UTEP's mission of serving first-generation, low-income students and focusing on addressing the needs of this community are strong factors in faculty's decision to work and remain at the institution. UTEP's mission has an added advantage. The demographics and issues that confront the El Paso region of today are the demographics and issues that will confront Texas and the nation in the future. Working or learning at UTEP moves faculty and students to emergent areas of instruction and research. UTEP will use this comparative advantage to continue to recruit and to retain talented faculty, staff, and students.

Fallacy of exactness

There is a confluence of high-stakes initiatives in higher education (e.g., accountability, TQM, dashboards, cost-centered budgeting, analytics) that focus on metrics, measurement, modeling, predications, and benchmarking. At the heart of these movements is the assumption that empirical models and methods will allow us to evaluate, diagnose, and shape higher education institutions, which are large social systems shaped by complex environments.

We can develop simple models based on relatively historically-stable variables that help us to understand these complex systems and allow us to explore future scenarios. However, these simple models are not very reliable tools for making predictions or for comprehensive assessment. The models used in this research strategic planning exercise are similar. Stable historical trends (e.g., enrollment, number of faculty per students, faculty productivity) are used to model future scenarios related to outputs (e.g., graduates, research expenditures) and are based on complex assumptions regarding demand, resources, technology, public policy, and other environmental factors, including the proliferation of research institutions across the world.

Clearly, our assumptions about the environment are simplistic. The higher education environment is changing rapidly, and to be successful, higher education institutions must be prepared to quickly adjust strategies based on conditions and comparative advantages. Scenario models or benchmarking are of limited value in this dynamic context. In fact, these empirical models and targets can be a distraction if the institution narrowly focuses on reaching milestones, or attempts to focus on achieving benchmarks related to other "peer" institutions that have different missions, resources, conditions, and comparative advantages.

Of greater concern is the inclination to rely exclusively on existing metrics to assess the impact of outcomes. Not all degrees awarded are of equal value; and not all research activity, however similar, is of equal value. A first-generation college graduate from a low-income family (e.g., family income of $20K or less) has a far greater personal, family, and social impact than a second- or third-generation college graduate from a middle- or high-income family. The addition of another college graduate into the workforce of a low-income region is also significantly different from the addition of another college graduate into the workforce of a middle- or high-income region. Similarly, research activity that transforms K-12 education in a low-income community has a far greater impact than the dollar value associated with the direct and indirect costs of the research. Current models and metrics do not, and cannot, adequately consider these important outcomes, which are fundamental elements of a public institution's mission and goals.

UTEP's response to the inherent difficulties in planning is not to avoid modeling, benchmarking, or analytics. In fact, we believe we are at the cutting edge of these planning activities, including advanced tracking and analysis in enrollment management, advanced tools to monitor and track research and sponsored program activity, advanced tools and

models to track student progress and success, and innovative frameworks and initiatives to ensure efficient administrative systems and services. We also have a sophisticated framework for tracking metrics associated with our peer institutions. Still, we recognize that our success is not measured by the sophistication of our tools, models, analysis, or processes, or how we compare to other "peer" institutions. Our success will be determined by our ability to respond to the increasingly dynamic environment in which we work and to address the emergent needs of the El Paso region and the state.

6. Appendices

6.1. Appendix A: Research Targets and New Faculty

RESEARCH TARGETS AND NEW FACULTY

FY	2012	2015	2018	2020
Faculty				
T/TT Faculty **(A)**	518	**529**	**548**	**561**
Growth **(B)**	7	6	6	7
Growth %	*1.4%*	*1.1%*	*1.2%*	*1.2%*
T/TT Faculty/Total Faculty	0.61	0.61	0.61	0.61
T/TT Faculty Trend Growth	518	527	540	549
Growth **(C)**	7	4	4	4
Total FTE Faculty				
Total FTE Faculty	847	870	900	921
Growth	-6	9	10	11
Annual Growth of Total Faculty	-0.7%	1.1%	1.2%	1.2%
Research Expenditures - High				
Research Expenditures **(A x D)**	$71,956,741	**$81,023,028**	**$91,603,446**	**$99,521,951**
Growth %	3.6%	4.1%	4.2%	4.2%
Research Expenditures per T/TT Faculty **(D)**	$140,048	**$153,035**	**$167,225**	**$177,409**
Annual Growth of Research Expenditures per T/TT Faculty	3.0%	3.0%	3.0%	3.0%
Research Expenditures - Low				
Research Expenditures **(based on T/TT Faculty Trend Growth)**	$71,956,741	**$80,643,833**	**$90,307,565**	**$97,353,290**
Growth %	3.6%	3.9%	3.8%	3.8%
Research Expenditures per T/TT Faculty **(D)**	$140,048	**$153,035**	**$167,225**	**$177,409**
Annual Growth of Research Expenditures per T/TT Faculty	3.0%	3.0%	3.0%	3.0%

FY	2012	2015	2018	2020
Faculty Cost				
New T/TT Faculty 9-month Average Salary	**$75,376**	**$82,366**	**$90,003**	**$95,484**
Average Net Cost of New T/TT Faculty	$75,376	$82,366	$90,003	$95,484
Total Net Cost of New T/TT Faculty (Based on Trend Growth)		$358,879	$392,157	$416,039
Accumulated Cost of New T/TT Faculty (Based on Trend Growth)		*$738,350*	*$1,983,286*	*$2,936,147*
Additional Total Net Cost of New T/TT Faculty to Support Research Targets **((B - C) x F)**		$117,016	$174,292	$223,654
Accumulated Cost of New T/TT Faculty		*$204,089*	*$697,464*	*$1,167,208*
Annual Growth of Faculty Salary	3.0%			

6.2. Appendix B: Restricted Research Expenditures (RRE) for Emerging Research Institutions and Percent (RRE) of Texas Total

FY	2008		2009		2010		2011		2012	
University	Total	%	Total	%	Total	%	Total	%	Total	%
Univ. of Houston	$38,787,095	15.5	$50,130,712	17.1	$56,564,687	16.4	$53,100,109	15.3	$51,663,426	14.5
Texas Tech	$27,098,487	10.8	$35,030,672	12.0	$50,071,546	14.5	$50,205,458	14.4	$46,106,813	12.9
UT at Dallas	$36,768,849	14.7	$36,829,369	12.6	$40,906,393	11.9	$43,659,514	12.5	$45,573,771	12.8
UT at El Paso	**$26,067,537**	10.4	**$30,227,283**	10.3	**$37,813,868**	11.0	**$40,179,653**	11.5	**$43,156,720**	12.1
UT at San Antonio	$21,013,453	8.4	$25,526,758	8.7	$28,084,442	8.1	$30,429,992	8.7	$32,356,827	9.1
UT at Arlington	$23,138,951	9.3	$26,555,703	9.1	$32,288,186	9.4	$29,869,344	8.6	$32,284,249	9.1
Texas State - San Marcos	$11,300,309	4.5	$13,336,491	4.6	$17,778,634	5.2	$19,078,112	5.5	$21,761,575	6.1
University of North Texas	$9,378,481	3.8	$11,240,239	3.8	$13,293,480	3.9	$14,476,509	4.2	$16,557,183	4.6
Other RDF-Eligible Institutions	$56,494,743	22.6	$64,034,380	21.9	$68,206,739	19.8	$66,972,177	19.2	$66,684,349	18.7
Total	**$250,047,905**	**100.0**	**$292,911,607**	**100.0**	**$345,007,975**	**100.0**	**$347,970,868**	**100.0**	**$356,144,913**	**100.0**

6.3. Exhibit A - Emerging Research University Goals over the next 3, 5, and 8 years

Area	Parameter	FY 2012 (Most recent data)	Goal in 2015	Goal in 2018	Goal in 2020
Students					
	Total Enrollment	22,749	24,167	25,798	26,945
	FTE Enrollment	19,123	20,411	21,788	22,758
	Top 10% Students (Freshmen)	17%	20%	21%	22%
*	Top 25% (Freshmen)	35%	36%	37%	38%
Faculty					
	Tenure and Tenure-Track Faculty (High Projection)	518	553	590	617
	Faculty with externally-funded research	213	221	236	247
Research					
	Total Research Expenditures ($ millions)	$71.96	$84.60	$98.7	$109.5
	State and Local Restricted Research Expenditures ($ millions)	$ 5.2	$5.1	$5.9	$6.6
	Federally-sponsored Research Expenditures ($ millions)	$40.0	$38.0	$48.0	$56.0
*	Restricted Research Expenditures ($ in millions)	$43.2	$46.5	$54.3	$60.2
Doctoral Programs					
	Number of Doctoral Programs	19	22	28	31
*	Number of Doctorates awarded per year	61	94	116	138
Other					
*	National Academy Members	0	0	1	2
	Other Faculty Awards (e.g., Fulbrights)	3	3	4	5
	Annual giving ($ millions)	$ 27.0	$35	$41	$45
*	Endowment ($ millions)	$179	$200	$220	$240
	Academic and Research Space (million sq. ft)	1.82	2.25	2.79	2.79

* National Research University Fund metric reported by the Texas Higher Education Coordinating Board. With the exception of Restricted Research Expenditures and Endowment (FY 2012), figures correspond to FY 2011 (based on February 2012 Report)

The University of Texas at San Antonio

STRATEGIC PLAN FOR RESEARCH

submitted to
The University of Texas System
for transmittal to the
Texas Higher Education Coordinating Board

March 22, 2013

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Executive Summary

I. Vision Statement

It is UTSA's vision to be a premier public research university, providing access to educational excellence and preparing citizen leaders in the global environment. This involves the creation of new knowledge and new perspective and creative activity through research. Our research will also assist the community in identifying solutions to the pressing issues of today. Through a comprehensive strategic planning process, the university has identified five multidisciplinary areas in which we intend to excel in academics and research: ***health, security, energy and environment, human and social development, and sustainability.*** When UTSA achieves its goals and objectives, it will reflect a stronger focus on research activities, a greater proportion of its students enrolled in graduate programs, an internationally recognized faculty, and a talented, diverse undergraduate and graduate student body. The university will be recognized for achieving its mission of providing access and excellence by embracing multicultural traditions, as a leader for intellectual and creative resources, and as a catalyst for socioeconomic development for Texas, the nation and the world.

Given this vision, we have redesigned the framework for research (see Research Enhancement Plan).

II. Plan to Increase Research Funding and Productivity

Our multi-faceted strategy for increasing external funding comprises the following components:

- selective hiring of senior ("established") faculty, followed by entry-level faculty appointments to achieve critical mass in targeted areas;
- creation of multidisciplinary institutes to focus activity in the five areas of emphasis and facilitate "center of excellence" funding from federal, state, and private sources;
- development of partnerships with well-established educational, research and governmental entities in the local region;
- utilization of targeted seed funding programs to promote innovative ideas and collaborative projects; and
- expansion of support for graduate students in targeted areas and to promote diversity as a means of enhancing the quality of our graduate programs, attracting high quality faculty, and supporting both our research and our instructional missions.

External research funding and expenditures have grown by more than 50% over the past five years and this growth is projected to continue. The largest research programs are in the biological and other life sciences, followed by engineering and the physical sciences. Crucial to the growth of our funded research portfolio has been the development of successful partnerships with the UT Health Science Center in San Antonio, Southwest Research Institute, Texas Biomedical Research Institute (TX BioMed) and various military installations in San Antonio. Critical senior-level faculty appointments in cyber security, biomedical engineering, infectious diseases,

nanoscale physics, and energy and environment are facilitating the ongoing leadership of those disciplines in funded research at UTSA.

Additional strong developments at UTSA include the commercialization of intellectual property and entrepreneurship through an innovative program at UTSA. As a result, disclosures, patents and other IP metrics are growing exponentially. UTSA signed a multimillion dollar licensing contract and Sponsored Research Agreement with *Merck Pharmaceuticals* for vaccine development that formed the foundation for the San Antonio Vaccine Center, spanning UTSA, UTHSCSA, and TX BioMed. Based on new awards received in the past year, we had $78 million in sponsored programs for FY2011-12. With this growth in research activity, there is increasing opportunity and funding for student participation in research at all levels. The growth in this area has led to the newly formed office of Undergraduate Research within the Office of the Vice President for Research.

III. Plan to Improve Undergraduate Education

To achieve its objectives to become a premier research university, UTSA must attract top quality undergraduate students to its degree programs. We are employing several strategies to enhance the distinction and diversity of our incoming freshman class by:

- updating our enrollment management plan to raise admissions standards, increase access through partnerships with community colleges, improve college readiness among local high school graduates, increase funding for merit-based scholarships, and engage in aggressive recruitment of talented students;
- increasing our support mechanisms for enrolled students, including mandatory advising, improving academic support services, and targeting financial aid and merit based award to improve student persistence; and
- addressing known student success indicators by increasing the proportion of student credit hours taught by full-time regular faculty, increasing on-campus housing, and engaging students in more on-campus co-curricular and extracurricular activities.

Among the key performance indicators we wish to address through these efforts are:

- the percentage of incoming freshman graduating high school in the top quartile;
- the first- to second-year persistence and four- and six-year graduation rates;
- the ratio of FTE students to student headcount; and
- the number of baccalaureate graduates pursuing advanced degree programs and achieving special post-graduate fellowships.

Among the programs designed to enhance the quality of our undergraduate educational experience are the Honors College, which presently has approximately 900 students, and the university's Quality Enhancement Plan. Nearly 50% of the Honors College students are engaged in thesis or research-related activities, and plans are to increase this proportion to 70%. The university's Quality Enhancement Plan, the Quantitative Literacy Program, has been launched to improve the quantitative skills of all UTSA baccalaureate graduates. Moreover, UTSA continues

to add new undergraduate degree programs to its inventory to meet the needs of our students and the demands of the critical fields identified in *Closing the Gaps by 2015*. For example, B.S. degrees in Computer Engineering, Biomedical Engineering, Biochemistry, and Public Health and a dual degree leading to a B.S. in Nutrition and Dietetics and Master of Dietetic Science, have been added recently to our list of degree offerings.

Additionally, the university has embarked on an ambitious project to improve the academic success of undergraduates, which is described in the Four-Year Graduation Rate Improvement Plan. One of the main components of this plan is the Freshman Focus Initiative designed to introduce freshmen to the academy, to improve the overall undergraduate experience at the university, and to better prepare undergraduates to be involved in research and other scholarly experiences through community engagement.

IV. Plan for Doctoral Programs

Existing Doctoral Programs: UTSA's 24 existing doctoral programs share important strengths that contribute to the near-term and long-range plans of the institution, and are reflected in the recent growth of the doctoral student enrollment, doctoral publications, and placement of graduates in postgraduate professional positions. To further strengthen those programs, the university has prioritized the allocation of additional funding to support graduate students, has formalized a comprehensive program review process that periodically reviews all degree programs in a given discipline using external experts, and is developing more aggressive recruitment activities to attract high quality applicants regionally, nationally and internationally. Each program must identify aspirant programs at other universities as a means of developing suitable target metrics for their performance.

New Doctoral Programs: UTSA is developing additional doctoral programs that complement the five areas of UTSA's research excellence identified in our Strategic Plan. Regional needs and impact are of critical importance as new programs are designed and developed. Programs currently under development that contribute to regional needs include: Ph.D. in Higher Education, Civil Engineering, and Math. Table 1 below displays a list of programs that are being planned or that are under review by UTSA, the UT System, or the Texas Higher Education Coordinating Board, as well as the strategic areas of research excellence that each will complement.

Table 1: Planned New Ph.D. Programs (all proposals are currently under development)

Strategic Area(s)	**Degree**	**Program Title**
Energy; Security; Sustainability	Ph.D.	Civil Engineering
Energy	Ph.D.	Built Environment
Health; Human & Social Development	Ph.D.	Health and Kinesiology
Human & Social Development	Ph.D.	Education Administration
Health; Human & Social Development	Ph.D.	Sociology
Human & Social Development Security; Energy; Sustainability	Ph.D. Ph.D.	Mathematics Materials Nanotechnology

V. Plan for Faculty and Student Development

A number of strategies are being implemented to allow faculty to become more innovative, productive, and efficient, including:

- setting appropriate work-load expectations;
- providing greater recognition of research accomplishments;
- awarding targeted seed grants for high-risk collaborative research proposals;
- expanding core facilities for research; and
- supporting mentoring programs for new faculty.

The university is also taking several steps to assist faculty in achieving national recognition by nominating them for national awards and boards, assisting them with organizing major disciplinary meetings, and providing travel funding to conferences to present research results.
An important strategy for the university as it facilitates the development of its faculty and students are through the establishment of research partnerships with well-established educational, research, and governmental institutions. UTSA has been very active in this area, spawning productive partnerships with various UT System institutions; Southwest Research Institute; Texas Biomedical Research Institute; CPS-Energy; San Antonio Water System; San Antonio Military and Medical Center and other local military and governmental institutions.

To facilitate faculty recruitment and retention, UTSA is implementing a number of strategies, including:

- recruiting top scholars to seed targeted programs, often with the aid of critical institutional research partners, then following up with multiple junior faculty appointments to develop critical mass;
- combining attractive recruitment packages with a welcoming academic and community environment; and
- attract experienced researchers from other premier institutions

Similarly, UTSA plans to utilize several initiatives to increase the number and prestige of undergraduate students, offering additional competitive merit scholarships, providing training grants, raising funds to provide graduate fellowships, and providing support for students to compete for major national and international scholarships (e.g. Rhodes). There are also a number of strategies centered on enhancing opportunities for students from diverse backgrounds.

VI. Other Resources

To ensure that its physical plant keeps pace with its expanding academic and research activities, UTSA is pursuing several strategies:

- planning for new facilities is based on the completed campus master plan which charts the physical development of the university;

- prioritizing for near-term new construction, as well as renovation of current facilities, to address critical needs; and
- optimizing the usage of existing space through rigorous planning, assessment, and reallocation.

Mirroring the steady increases in student enrollments and research expenditures, critical planning for the university's library includes an expansion of the space available for student use, an increase in library materials budget, and an increased emphasis on providing important academic and research services through the library. The UTSA Libraries' materials budget has increased from $4.3 million in FY2007 to $5.8 million in FY2012. During this period, the Libraries have expended over $2 million to acquire primary source and core research materials in all formats to support new doctoral, Master's, and bachelor's programs.

VII. National Visibility

UTSA is actively working to increase its visibility nationally through effective marketing strategies and through development of nationally competitive programs. The university's success at garnering national recognition for its production of Hispanic graduates in the sciences, engineering and in business, and its increasing visibility regionally as a school of first choice for students, suggests that those efforts are meeting with success.

We have a centralized marketing plan that was derived from a study of attitudes and awareness completed in 2008-09 which coordinates UTSA's messaging for student recruitment and university branding. The three central operational goals that are currently being implemented are to establish consistent brand standards for UTSA, to integrate and improve internet media and the websites of UTSA, and to improve the utility, maintenance, and tracking of all of the UTSA contact databases. First of all these efforts is branding of UTSA's first capital campaign.

UTSA has achieved international research visibility in many areas including the following: Cyber security, infectious diseases, nanoscale physics, finance and marketing, bioengineering, energy and sustainability, sculpture, sociology of religion, urban and regional planning, historic preservation, education of diverse learners, wellness and nutrition, criminal justice and demography. Integral to all of these issues of national visibility is the great synergy gained with our external research partners and collaborators. One manifestation of this growing visibility is UTSA's listing the past two years among the top 400 universities in the world by The Times Higher Education World University Rankings. UTSA's ranking in this list is greatly enhanced by citations to faculty publications.

UTSA Strategic Plan for Research 2012

UTSA is committed to achieving premier research status as a minority-serving institution and, to that end, has published its strategic plan, *UTSA 2016: A Shared Vision*, and its strategic implementation plan, both of which outline in detail the steps the institution will take in the coming years to accomplish this goal. In this Strategic Plan report, we review the priorities, strategies, and tactics outlined in those institutional documents, and illustrate ways that we are already aligning our resources toward realizing that vision.

I. Vision Statement

A. Targeted status

It is UTSA's vision to be a premier public research university, providing access to educational excellence and preparing citizen leaders in the global environment. As we move toward this targeted status of becoming a premier (Tier 1) research university, UTSA is building the foundational blocks necessary for our success. Our recent strategic planning process has identified five multidisciplinary areas in which we intend to excel in academics and research. These include: health, security, energy and environment, human and social development, and sustainability. The president has charged the provost and vice president for research (VPR) to selectively enhance these areas through the hiring of top faculty, developing selective graduate programs, increasing support for graduate students and developing research infrastructure.

When UTSA achieves the goals and objectives outlined in *UTSA 2016: A Shared Vision*, it will be an institution embracing core values of integrity, excellence, inclusiveness, respect, collaboration and innovation. The university will be recognized for achieving its mission of providing access and excellence by embracing multicultural traditions, as a leader for intellectual and creative resources, and as a catalyst for socioeconomic development for Texas, the nation and the world.

B. Expansion of mission

This plan is the natural extension of the institution's existing mission that has been evolving for the past ten years. During the past decade, UTSA has grown from a modest, undergraduate, commuter campus to an emerging research university. UTSA is now one of the largest of the UT System academic institutions with outstanding growth in research (e.g. 54% increase in research expenditures over the past 5 years). The strategies and tactics for reaching these targeted goals have been carefully developed and are presented in detail in *UTSA 2016: A Shared Vision*.

As a reflection of this expanded mission, the university will have a total student enrollment of more than 30,000 in 2016, with a projected one-sixth of that population enrolled in graduate degree programs. We have also set strategic targets for our research productivity, our faculty composition, and our physical plant in both the near-term (2016) and the long-term. Achieving these latter metrics will, of course, be dependent upon the total resources available.

II. Plan to Increase Research Funding and Productivity

A. External funding

Our strategy for increasing external funding embraces the following components:

- selective hiring of senior ("established") faculty, followed by entry-level faculty appointments to achieve critical mass in targeted areas;
- creation of multidisciplinary institutes to focus activity in the five areas of emphasis and facilitate "center of excellence" funding from federal, state, and private sources; and
- development of partnerships with well-established research and governmental entities in the local area, including Southwest Research Institute (SwRI), Texas Biomedical Research Institute (TX Biomed), the UT Health Science Center in San Antonio (UTHSCSA), and the Center for Military Medicine (San Antonio Military Medical Center-SAMMC), among others.

As one measure of the efficacy of these approaches, research expenditures were $54 million ($78 million total sponsored program expenditures) in 2012, and figure 1 shows that research expenditures have grown by 54% over the past five years.

Figure 1. Research and Sponsored Programs Statistics

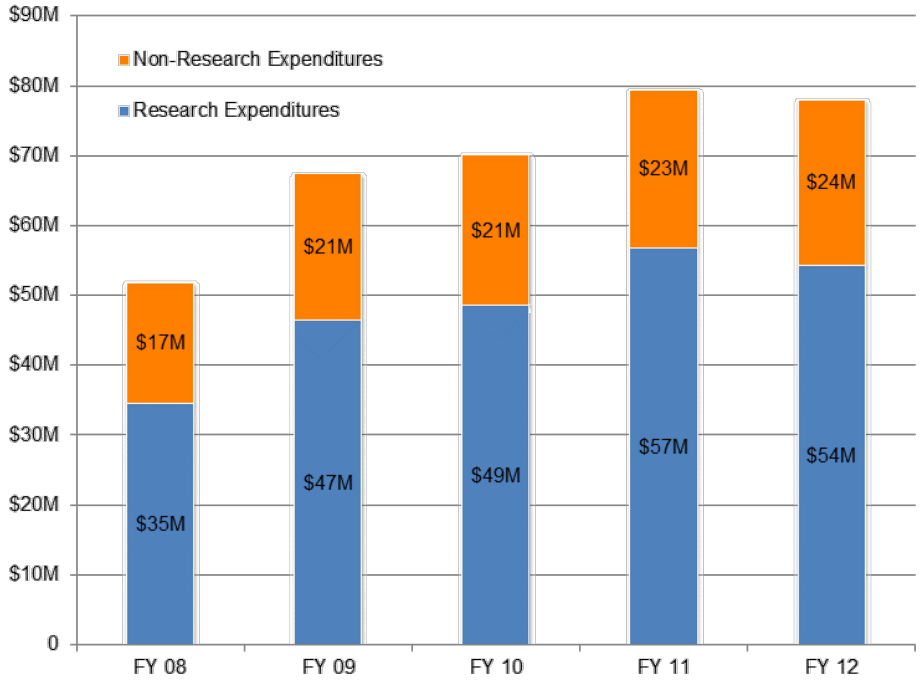

Table 2 displays the distribution of external funding among the university's disciplines. The largest research programs at UTSA are in the "Biological and Other Life Sciences,"with expenditures of $18.9 million followed by Engineering. The College of Engineering is relatively new (established 2000) and is still adding graduate programs, faculty and facilities. It is the fastest growing component of UTSA with an increase of approximately 300% in research expenditures in the past four years. The Physical Sciences is third in research expenditures and is expected to show major growth from new partnerships with Southwest Research Institute (SwRI) and new leadership in Energy and Physics (see later) and medicinal chemistry.

Table 2 Research Expenditures for UTSA FY2011-12

THECB Survey of Research Expenditures FY 2011-12 for UTSA							
	Federal	State		Institution Controlled	Private		Total
		Appropriated	Contracts/ Grants		Profit	Non-Profit	
Agric. Sciences	0	0	0	0	0	0	0
Biological and Other Life Sciences	14,477,079	2,006,912	0	1,453,108	58,014	878,253	18,873,366
Computer Science	1,819,164	120,381	0	214,575		107,151	2,261,271
Engineering	5,091,315	1,742,270	1,989,848	1,996,170	83,143	894,337	11,797,083
Environmental Sciences	196,815	30,280	6,151	22,017	0	8,957	264,220
Mathematical Sciences	87,164	7,829	0	13,443	0	0	108,436
Medical Sci.	0	0	0	0	0	0	0
Physical Sciences	2,855,089	451,052	164,636	1,090,426	131,112	874,575	5,566,890
Psychology	127,525	8,744		41,430		88,504	266,203
Social Sciences	578,812	1,396,585	670,488	360,728	192,793	166,296	3,365,702
Other Sciences not class. above	3,725,473	109,787	389,320	353,612		589	4,578,781
Arts and Humanities	38,336	283,237		73,294		37,205	432,072
Business Administration	71,207	689,966		625,942	151,809	519,163	2,058,087
Education	3,603,605	682,732	46,713	233,826	4,288	251,885	4,823,049
Law	0	0	0	0	0	0	0
Total Expend. by Funding Source	32,671,584	7,529,775	3,267,156	6,478,571	621,159	3,826,915	54,395,160

It is anticipated that Health and Human Services and especially the NIH will continue as the major source of research support. For example, UTSA's *South Texas Center for Emerging Infectious Diseases* (STCEID) will continue to be a major strength of life science research and has developed a center for vaccine research. The *Center for Research and Training in the Sciences* (CRTS) will continue to lead minority research programs. The *San Antonio Life Science Institute* (SALSI) provides targeted stimulus for growth of collaborative research programs in the life sciences between UTSA and UTHSCSA (see below).

Expanded research support is expected from the National Science Foundation and the Department of Energy. This is in part due to our hiring of a new world-class senior research leader and team to head the *Texas Sustainable Energy Research Institute (TSERI).* This growth is, in part, due to new collaborations with SwRI, the CPS-Energy, San Antonio Water System (SAWS), *etc.* (see Section V.C. *Collaboration and Partnerships*) This increase will also result from new leadership and senior recruiting in physics and nanotechnology.

Commercialization of intellectual property and entrepreneurship are beginning to play a significant role in UTSA's research portfolio. Funding from the Department of Commerce and the Small Business Administration are growing, and proof of concept (POC) funds from State (Ignition Funds) and local (*POC-SPARC* and Road Runner POC funds) sources are catalyzing development and commercialization of UTSA's discoveries. For example, UTSA signed a multimillion dollar licensing contract and Sponsored Research Agreement (SRA) with *Merck Pharmaceuticals* for development of a vaccine for *Chlamydia*.

The annual report of Research Expenditures from the Texas Higher Education Coordinating Board (THECB) compares research activity of UTSA with all other universities in Texas as well as the Health Science Centers. In our Strategic Plan, we have identified a set of public universities without medical schools as aspirational peers for the purposes of setting performance goals (see Section IV.D. *Comparisons with National Peers*). In addition, research metrics of The Center (The Top American Research Universities) Annual Report from the Lombardi Program on Measuring University Performance are used as indicated in the following sections.

B. Targeted Research Priorities

The development of targeted research programs of excellence is critical to UTSA's trajectory toward Tier 1 status. Our strategies for developing research foci for the institution include:

- developing a limited number of interdisciplinary research areas of critical importance to San Antonio and South Texas through our strategic planning process (see *UTSA 2016: A Shared Vision*)— these include
    - *Health,*
    - *Security,*
    - *Energy and Environment,*
    - *Human and Social Development, and*
    - *Sustainability;*
- focus special opportunity hires of senior faculty to these areas;

- providing targeted seed funding to encourage innovative and collaborative projects in these areas;
- prioritizing the development of centers/institutes and of graduate programs in disciplines related to the targeted research areas; and
- improving our research support infrastructure and employing partnerships with external entities to provide optimal support for faculty research efforts.

UTSA's strategy to promote interdisciplinary and multidisciplinary research is facilitated in part through the creation and support of research centers and institutes. These entities are evaluated on a four-year cycle by an external review committee which visits the campus annually and reviews written and oral reports from each center or institute. The committee files a written evaluation to the Deans Research Council, which is also reviewed by the VP for Research and the provost. These data are used to assess the continuing viability of these units and identify any extraordinary resource needs. Progress metrics include:

- Research expenditures (Total and Federal);
- Establishment and growth of centers and institutes in strategic areas;
- International and national research awards to faculty (National Academy, Nobel, etc);
- Number of publications and quality (e.g. impact scores);
- Supervision and recognition of Ph.D./graduate students and post doctoral fellows;
- Doctorates awarded in related disciplines;
- Postdoctoral appointees;
- SAT scores;
- National Merit and Achievement Scholars;
- Development of intellectual property and commercialization;
- National Centers/Hubs of Research Excellence;
- Program project and training grants;
- Annual giving and endowments; and
- National research rankings.

Table 3 (following page) provides a listing of the current university research centers and institutes, and identifies the strategic area(s) of emphasis that each addresses.

In addition to the use of multidisciplinary centers and institutes, UTSA also stimulates research in these focus areas through an active set of seed grant programs. The university is presently in the process of assessing our seed grant programs and re-aligning them, as indicated, to better support the growth of faculty research activity and external funding success.

An important component of the seed grant program is to promote external collaborations among UTSA faculty and collaborators at other institutions. For example, SALSI funds used to seed collaborations between UTSA and UTHSC-SA have resulted in spin-off extramural grants with funding almost twice that of the seed funding. Similar collaborative seed projects have been established with other external partners (*e.g.* SwRI and TX Biomed).

Table 3: Research Institutes and Centers

Institute / Center	Strategic Areas
San Antonio Life Sciences Institute (SALSI)	Health; Human & Social Dev.
Center for Research and Training in the Sciences	Health; Human & Social Dev.
Institute for Health Disparities Research	Health; Human & Social Dev.
Simulation Visualization and Real Time Prediction	Health; Human & Social Dev.
South Texas Center for Emerging Infectious Diseases	Health; Security
UTSA Neurosciences Institute	Health
San Antonio Cellular Therapeutics Institute	Health
Center for Innovation and Drug Discovery	Health
Texas Sustainable Energy Research Institute	Energy; Sustainability
Institute for Cyber Security	Security
Center for Infrastructure Assurance and Security	Security
Center for Education and Research in Information and Infrastructure Security	Security
Center for Water Research	Sustainability; Energy
Water Institute of Texas	Sustainability; Energy
Center for Advanced Manufacturing and Lean Systems	Sustainability; Energy
Center for Archeological Research	Sustainability; Human & Social Dev
Center for High Performance Computing and Software	Security; Health; Energy
Center for Cultural Sustainability	Human & Social Dev.
Institute for Demographic and Socioeconomic Research	Human & Social Dev.
Center for Research and Policy in Education	Human & Social Dev.
Center for Urban and Regional Planning Research	Human & Social Dev.
Bank of America Child and Adolescent Policy Research Institute	Human & Social Dev.; Health

Details and missions of the centers and institutes can be found at http://research.utsa.edu/Research_Centers.php

As we actively recruit senior faculty to lead UTSA in these five focus areas, we utilize a special opportunity hiring process to target those who can contribute in meaningful and substantive ways toward the advancement of our objectives. For example, in the current year, we are pursuing high-level senior hires in both chemistry (a $4.2 million endowed Welch chair) and in the neurosciences. We are also selectively investing in the development of graduate programs and students, by prioritizing the development of new graduate degree programs in these areas and closely-related disciplines (see Section IV.A. *New Doctoral Programs: Areas of Emphasis*). Part of our prioritization strategy includes increasing graduate student support. In this manner, we support teaching, research, and graduate education all at once, and build a solid foundation for excellence in these five areas.

The institution allocates resources in accordance to the strategic research foci (see also Section II.C. *Allocation of Resources*). This not only includes choice of areas of hiring of new faculty but also the distribution of internal resources and research space. An example of this is the distribution of resources from SALSI. This program, established by the Texas Legislature, has provided more than $10 million over the past four years for collaborative research between

UTSA and the UTHSCSA. Joint grants of up to $750,000 were awarded to targeted areas of: Medicinal Chemistry, Bioengineering, Health Disparities, Neurosciences and Regenerative Medicine. Similarly, we are actively developing our Energy/Sustainability initiative through partnerships with SwRI, CPS-Energy, and San Antonio Water System, and the *Energy Research Alliance of San Antonio*. UTSA has recruited a world-class leader to head this program.

Another priority is to strengthen UTSA's research infrastructure. A formal program for research space evaluation and allocation has been developed (Section VI.A. *Research Facilities*). Laboratory animal facilities have achieved AAALAC accreditation. On-line electronic submission of proposals, effort reporting, and on-line research compliance (Click Commerce) have been implemented. In the case of Click Commerce, UTSA provided the initial test site for a UT System-wide rollout of this compliance software package.

UTSA is seeing record numbers of invention disclosures, patents filed, patents awarded and licenses. UTSA has also opened the *New Venture Incubator* (NVI), with spin-off companies on campus.

C. Allocation of Resources

To focus the university's resources on achieving its strategic goals, UTSA has formed a Strategic Resource Planning Council (SRPC), co-chaired by the provost and the Vice President for Business Affairs, whose members include the vice-presidents, the deans, and representatives from the faculty, staff, and students. This council reviews budget allocation requests and provides recommendations to the president based upon the alignment of those requests with strategic goals and objectives. Each year, the SRPC assesses the university's progress toward meeting its goals as indicated by several key performance metrics and reviews the work plans of the various academic and administrative support units. With this mechanism in place, UTSA can ensure that it is implementing its strategic plan effectively and efficiently.

A key priority in our budgeting exercise is investment in the success of our faculty and students. This year we are recruiting 66 new tenured/tenure track faculty across all colleges, though the vast majority of these are replacements for faculty who have left the university the new faculty are enhancing our research capabilities. The university has also made allocations of incentive funding to increase equipment and instrumentation, expand our library space and the services it provides on the main campus, add more than $5 million of support for graduate assistantships, and migrate to paperless processes in a number of areas to improve efficiency.

Moving forward, to accommodate growth and the strategic objectives outlined in ***UTSA 2016***, our implementation plan, approximately $11 million yearly is required solely for faculty recruitment. The largest single item is the startup packages (*i.e.* equipment and materials) needed to launch the research programs of new faculty, especially in the sciences and engineering. Funding allocated from development funds, research excellence funds from the UT System, STARS funding, Research Development Funds, and F&A funds will all be utilized. Strategies such as leveraging salaries from external grants and salary savings generated from vacant positions will also be employed to fund new faculty hires.

A major allocation of resources is targeted at seeding collaborative research, as described in section *B* above. This includes $750,000 for joint projects under SALSI which is allocated from UTSA for collaborative research programs. Each year about $500,00 in university resources are allocated to fund internal seed grant programs (Collaborative Research Seed Grant Program, and the Tenure-Track Awards Program). These programs have, over the past three years resulted in greater than three-fold return on investment. This year we will increase our allocation toward a collaborative seed program with Southwest Research Institute (SwRI) to $150,000.

To facilitate and enhance UTSA's external funding and research support, the university has decentralized its sponsored project infrastructure to create several distributed Research Service Centers (RSCs) located in the colleges. The RSCs are supported through F&A recovery and other university sources.

We have completed the full implementation of Click Commerce, to include additional modules for Institutional Animal Care and Use Program (IACUC), Laboratory Animal Resources Center animal billing, Institutional Biosafety Committee (IBC), and the Institutional Review Board (IRB). However, we have recently committed to additional investment in the software to enhance reporting for new conflict of interest and conflict of commitment requirements of the U.T. System. Funding from Research Development Funds and reallocation of institutional resources provide this support.

Space is one of the key constraints impacting our ability to expand the research enterprise, as outlined in our strategic implementation plan and the more recent *Research Enhancement Plan*. The status and policies and procedures for allocation of research space are detailed in Section VI.A. *Research Facilities*.

D. Student Participation

With modest growth in faculty and facilities, there is nonetheless increasing need to provide opportunities for student participation in research at both the undergraduate and graduate levels. We have implemented a number of strategies to increase student participation in research, including:

- increasing funding available for graduate assistantships;
- appointing a Director of Undergraduate Research (currently underway);
- providing special funding to support summer undergraduate research activities;
- modifying our major curricula to encourage more students to engage in signature experiences, including research, study abroad, internships, community service, and so forth; and
- increasing recognition for student achievement in research.

The growth of graduate student enrollment is a result of the efforts to increase graduate student research opportunities and has been stimulated by an important gift that has provided $5 million

in graduate fellowships in Business and in Engineering. At the same time, increased research grant funding provides support for these students to work as research assistants (RA's).

In 2009, the provost initiated a summer research program which provides stipends to students to work on research projects with faculty mentors across the 10-week summer session. Each college holds a student research conference in the spring to showcase student research, and many of the colleges also send graduate students to present their research at regional and national research conferences. UTSA has also implemented a process for awarding Graduate Student Research Awards, which will be awarded for the first time in Spring 2013.

The university is also working with younger students to stimulate their interest in research and creative activity prior to coming to college. UTSA's Interactive Technology Experience Center (iTEC) reaches out to K-12 students in various forms including holding robotics camps (800 students) and the GEAR Robotics Competition (up to 125 teams). iTEC also makes available scanning microscopy facilities and rapid prototyping machines for K-12 students to use on the UTSA campus. UTSA has partnered with Dean Kamen's FIRST organization to host the regional competition for the FIRST Robotics Competition for high school students in San Antonio and is now the largest regional completion in the nation. Since 2005, UTSA has managed the ExxonMobil Texas Science and Engineering Fair

III. Plan to Improve Undergraduate Education

A. Strengthening the quality of undergraduate education

One of the necessary components of UTSA's journey towards Tier 1 status is its ability to attract, retain, and graduate talented undergraduate students who will successfully achieve their educational goals. At the same time, UTSA is committed to providing access to high-quality educational opportunities to a diverse student population representative of the historically underserved population of San Antonio and South Texas. In this way, we hope to fulfill both the state's need for additional top-tier research universities, as well as the goals for closing the gaps in educational attainment.

1. Goals for top 10% and top 25% of high school class rank among entering freshman:

   The entering 2012 class of new freshmen is comprised of 50% students from the top quartile (25%) of their high school class, with 12% coming from the top 10% of their high school class. This represents a substantial enhancement relative to the entering freshman class of only a few years ago for which less than a third came from the top quartile of their high school class.

   We are initiating several new focused strategies to increase the percentage of top quartile and top 10% students, and to essentially eliminate, those from the bottom half of their high school classes. These strategies include:

   - **Adjusting our admissions standards** over the next several years to gradually eliminate those students from the lower half of their high school graduating classes

from direct admission to UTSA. UTSA plans to terminate its participation in the U.T. Austin Coordinated Admission Program (CAP) following this year's admissions cycle. In this program, students who do not qualify for direct admission to U.T. are provided guaranteed admission as a transfer upon completing 30 credit hours at another U.T. institution with a GPA of 3.0 or greater. In addition, UTSA now utilizes a more holistic admissions process for student outside the top quartile of their high school class. This process focuses on a combination of criteria that our research indicates correlates strongly with student academic success.

- **Increasing merit-based scholarships** as an inducement to enroll top quartile and top 10% applicants. UTSA is allocating $500,000 toward "Top Scholar" grants that will be extended to applicants in the top 5% of their high school class with SAT scores above 1400. In addition, the university is realigning its financial aid resources to support the recruitment of students in the top quartile of their high school classes and emphasizing the solicitation of merit-based scholarships through its capital fund raising campaign. Part of this effort is funded by a large estate gift received by the university in 2009, and a recent expansion of UTSA's participation in the Terry Scholar program.

- **Direct recruiting by academic units** to attract top scholars through personal recruitment efforts. Until recently, academic units were not utilized very extensively in undergraduate recruitment; however, this is changing. All colleges are now involved in direct correspondence with applicants who indicate an interest in a particular academic discipline or field, and many are prepared to offer endowed scholarships to enhance recruitment success. UTSA is now purchasing student lists from SAT and ACT to identify highly qualified potential applicants from our region and contact them. Faculty are also encouraged to visit local area schools to reach out to more students and interest them in UTSA's academic programs. Finally, the university has developed over time several special summer programs for K-12 students for which there will now be a more intentional recruitment component to interest top students in attending UTSA when they graduate from high school.

- **Setting goals for student recruitment** to motivate our efforts to shape our enrollment in effective ways. Over the next 10 years, UTSA's goal is to increase the percentage of entering freshman graduating from high school in the top quartile of their class from 50% to 85%, or an average increase of 5% each year over the previous year. During the next 10 years, the goal is to increase the percentage of incoming students ranking in the top 10% of their high school class from 12% to 35%. Finally, UTSA enrolls a student body comprised of 53% students from under-represented groups, primarily Latino and African American. Through our recruitment efforts, the university wishes to maintain and even increase this percentage while improving the academic quality of our student population. As the percentage of top quartile students has increased the past couple of years, the proportion of Latino students in the entering class has increased from 44% to 48%. Finally, UTSA is gradually changing the proportions of undergraduate and graduate enrollments with a goal of having graduate student enrollment at 18% of the total student body of 30,600 by 2021.

2. Goals for student retention rates:

   There is generally a strong correlation between the quality of the entering freshman class and student retention rates. UTSA has already seen an increase in the fall-to-spring retention following the most recent change in admissions criteria. At present the freshman-to-sophomore retention rate among non-CAP students is 70%; including CAP students, it is about 60%. Following the sophomore year, we lose about another third of our remaining students, so that only 48% of our initial first-time full-time (non-CAP) freshman cohort remains enrolled at UTSA into the third year of study.

   As we adjust our admissions criteria and selectively enroll an entering class of higher achieving students, the freshman-to-sophomore retention rate is expected to increase over the next five years to 85%. The retention rate to the third year of study should likewise improve over the next several years to over 75%.

   Among the specific initiative used to improve student retention rates are:

   - enhancing the quality and frequency of academic advising, with several points at which advising will be mandatory to keep students on track for a degree;
   - enhancing the accessibility of student academic support services by co-locating them on the main level of the university library;
   - initiating an "early-warning" system whereby faculty provide reports prior to mid-term when first-year and second-year students are struggling in their classes;
   - expanding available tutoring services, especially for demanding majors in the sciences and engineering;
   - increasing the number of faculty to reduce the student-FTE-to-faculty-FTE ratio from 24.1 to less than 20;
   - increasing the percentage of student credit hours taught by full-time regular faculty from 70% to 85% by 2016; and
   - increasing on-campus housing (a new residence hall has been added over the next three years and close by apartments has been added at every faster rate) and employment opportunities for students.

3. Goals for graduation rates:

   As with retention rates, it is generally true that student six-year graduation rates generally correlate with the quality of the entering freshman class, and in particular, with the percentage of freshman who graduate within the top quartile of their high school class. As a result, we expect our six-year graduation rate to roughly mirror the percentage of top-quartile students in our entering classes as we adjust admissions standards and apply more aggressive recruiting. This means that the six-year graduation rate for the 2009 entering cohort will likely be 36% ± 2%, but it should increase to ~60% for the 2015 entering cohort. In the long-term, the six-year graduation rate should achieve top-tier public university levels of 80-85%.

Four-year graduation rates are more difficult to project because they are much more dependent upon the socio-economic status of the student population, and UTSA currently serves a population 40% of whose families make $40,000 or less annually. These rates are also more sensitive to whether or not a student's parents have any higher education experience, and 47% of UTSA's student population is comprised of first-generation college students. For this reason, our goals for four-year graduation rates are more conservative and the university envisions an increase from the current 12% for the 2009 entering cohort, to 15-20% for the 2015 entering cohort, and to 30-35% in the long-term.

To meet these goals, UTSA is employing the following interwoven strategies to enhance the distinction and diversity of its incoming freshman class and provide a higher quality educational experience:

- updating our enrollment management plan to target high-achieving high school students and ensure our incoming freshmen are "college-ready":
    - adjust admissions standards based on criteria taken from student success data for various high school achievement indicators;
    - develop partnerships with local community colleges to provide alternative access for students to a baccalaureate degree;
    - develop partnerships with local school districts to bolster college-readiness among high school graduates;
    - increase funding for merit-based scholarships; and
    - increasingly employ academic units in active recruitment activities at both the undergraduate and graduate levels;
- increasing our support mechanisms for enrolled students to improve student success outcomes through:
    - requiring mandatory advising at various stages of a student's studies;
    - co-locating academic support services in the library to provide more effective access to them;
    - enhancing academic support for science and engineering students at early stages of their studies to increase the persistence rate;
    - increasing on-campus employment opportunities; and
    - targeting financial aid specifically to boost student retention;
- increasing the proportion of student credit hours taught by full-time regular faculty and lowering the ratio of FTE students to FTE faculty;
- increasing on-campus student housing opportunities; and
- utilizing student cohorts, co-curricular and extracurricular activities to build common experiences and greater student community cohesiveness.

The issues of retention and completion are the focus of UTSA's *Four-Year Graduation Rate Improvement Plan*. Some of the initiatives described in that plan include:

- **Freshman Focus initiative**— Beginning in the fall of 2014, all entering freshmen will be admitted to UTSA through University College, where they will have access to enhanced advising and career counseling as they choose a major field of study. New students will be organized into cohorts of 25, each mentored by an upperclass student. Students will also have a more highly prescribed first semester curriculum which will

include a course in Academic Inquiry and will compel them to complete their core writing and math requirements as quickly as possible upon enrollment at UTSA.

- **Online resources for student communication and advising**— UTSA is developing and/or purchasing multiple software packages that will provide students 24-hour access to advising and degree planning tools.
- **Curriculum streamlining**— All departments are presently studying their major curricula and assessing course prerequisites and curriculum structure to eliminate unnecessary obstacles to student progress.
- **Course availability and scheduling**— The university is studying its course scheduling practices and proposing modifications that would increase students' ability to schedule the classes needed to progress through the curriculum. This effort is constrained by the limitations in available classroom space and the already-high utilization of those spaces.
- **Alternative course delivery**— UTSA is undertaking a comprehensive initiative to examine effective ways of delivering courses, particularly those that must accommodate large numbers of students. Strategies include the expanded use of classroom technology, the development of online and hybrid delivery courses, and the widespread adoption of instructional techniques pioneered by UTSA's best teachers.
- **Summer school expansion**— UTSA has increased its investment in summer school the past couple of years as a means of helping students gain access to high demand courses.
- **Early alert system**— Student success can be greatly aided through academic and financial early alerts that trigger intervention to address emerging problems. UTSA is examining a number of software platforms that may serve this purpose.
- **Policies and incentives**— UTSA is reviewing its enrollment policies and next year will offer special financial incentives to encourage students to complete their degrees in four years. The university is examining policies concerning course withdrawal and repeat enrollment and their role in encouraging steady progress toward degree completion.
- **On-campus employment**— UTSA currently supplements the federal work-study program by $1.4 million each year to provide more on-campus work opportunities for students. The university seeks to expand on-campus work opportunities further as a means of enhancing student success.

In coordination with the *Four-Year Graduation Rate Improvement Plan*, the *UTSA Advising Plan*, and the *Emerging Research University Business Plan*, the university has recently updated its *Enrollment Management Plan* to incorporate these strategies. Among the key performance indicators we wish to address through this new plan will be:

- increase the percentage of incoming freshman graduating high school in the top quartile;

- increase the proportion of graduate students in our student population;
- enhance the first- to second-year persistence and four- and six-year graduation rates;
- increase the ratio of FTE students to student headcount (i.e. decrease the number of part-time undergraduate students); and
- increase the number of graduates pursuing advanced degree programs and achieving special post-graduate fellowships, including Rhodes, Marshall, Truman, Fulbright, and other scholarships.

As our student recruitment strategies are in the early implementation stages, there are fewer examples we can point to that demonstrates the success of our efforts. However, since implementing higher admissions standards in the Fall 2009, we have seen an increase in our first- to second-semester persistence to 92.4%, the highest since the university began measuring this statistic. We have also realized a noticeable increase in undergraduate student enrollment despite a small decline in the number of new incoming students (combined freshman and transfer), suggesting that overall student retention rates are improving.

To complement our efforts in student recruitment and retention, UTSA is also engaged in enriching the undergraduate experience through a variety of signature experience opportunities. A university wide office of Undergraduate Research is currently being developed through the Office of the VP for Research. This office will focus on mentoring undergraduate students interested in pursuing research and research-based careers. The focus of this office will be to:

- assist in university wide efforts in recruiting students interested in research and research based careers
- provide research, internship and faculty mentoring opportunities
- develop undergraduate research award competitions
- assist students in preparing students for graduate school
- develop seamless pathways between UTSA's undergraduate and graduate programs
- prepare students for careers in research from an interdisciplinary perspective
- seek funding for undergraduate research travel, and publishing opportunities

Several colleges are also encouraging participation in signature experiences that supplement classroom-based education. The College of Architecture is now requiring its majors to participate in one signature educational experience which can be satisfied by participation in one of the following activities: a long-term study abroad program, a community-based design/build project, or an internship in a local business. The Colleges of Business, of Education and Human Development, and of Public Policy similarly provide a wealth of opportunities for students to participate in internships and outreach activities with local businesses, educational institutions, and community and governmental organizations, respectively.

B. Increasing baccalaureate degrees awarded in the fields identified in Closing the Gaps by 2015.

Among the strategies that UTSA is implementing to increase the number of baccalaureate degrees awarded in critical fields are:

- employing our academic units to actively recruit high achievement students in science and engineering fields in an effort to retain them in the state for their higher education;
- adding $500,000 in merit scholarships to enroll talented students and expanding our participation in the Terry Scholar program;
- providing additional academic support for science and engineering majors in the early stages of their studies to aid persistence in these fields and increasing the frequency of mandatory advising to keep students on track for graduation;
- increasing undergraduate research opportunities in these areas, as outlined above;
- providing summer research opportunities to stimulate interest in technical fields; and
- collaborating with community colleges to provide a more seamless transition to UTSA for transfer students.

IV. Plan for Doctoral Programs

Existing Doctoral Programs

A. Summary

The doctoral programs that UTSA has introduced in the last ten years have been developed to support and enhance the institution's existing research strengths and strategic plans for growth. Each program contributes to UTSA's goal of attaining premier research university status. UTSA's 24 existing doctoral programs share many important strengths that contribute to the near-term and long-range plans of the institution:

- Doctoral student enrollment is increasing (up over 6% between Fall 2011 and 2012). This is consistent with UTSA's strategic goal of increasing graduate student enrollment. This suggests that our doctoral programs are developing a regional and national reputation, and that UTSA is becoming an institution of first choice for a growing number of doctoral students.
- Doctoral students authored or co-authored 2,226 publications and conference presentations during the last three years.
- Students who graduate from UTSA's doctoral programs are successfully employed in academic and nonacademic positions relevant to their respective field of study.

- Doctoral programs are maximizing partnerships that strengthen their ties to the community. For instance, Doctor of Educational Leadership students and Doctor of Philosophy in Counselor Education and Supervision students participate in internships in community schools and agencies, and many are employed by community organizations. Similarly, the Ph.D. in Business with a concentration in Information Systems places many of its students in internships and jobs in the growing IT and cyber community in San Antonio. Southwest Research Institute (SwRI) relies on UTSA as its primary source of scientists and engineers.
- UTSA is committed to hiring high caliber faculty members who are research-active with distinguished publications and impressive records of securing external funding. Over the past three years, UTSA has hired 86 new faculty committed to continuing this trend.
- UTSA provides the infrastructure to support existing and planned doctoral programs, including the updating and expansion of IT and library resources, laboratory facilities, and support for developing, submitting, and managing external grants.
- UTSA offers unique doctoral programs that provide students opportunities to gain training from both UTSA faculty and faculty from partner institutions, such as the Biomedical Engineering and Translational Sciences Ph.D. programs, offered in partnership with the UTHSCSA and the Physics and Mechanical Engineering Ph.D. programs, offered in partnership with SwRI. The Physics and Educational Leadership doctoral programs have also been extended to other U.T. institutions, including U.T. Brownsville and U.T. Permian Basin, respectively. UTSA also offers some unique doctoral programs, such as the Ph.D. in Applied Demography that provides students from a variety of academic backgrounds with the opportunity to develop skills that will provide them with the ability to provide expertise and leadership in demographic research.

B. Quality Control

UTSA has no doctoral programs with low graduation rates or that do not meet other standards of excellence. There are no plans to close or consolidate any of the existing doctoral programs. However, the university is considering broadening the scope of some of its existing programs to serve a larger base of students and faculty research interests. This will enable the accumulation of a greater "critical mass" of appropriate expertise among our faculty (by drawing on a broader base of faculty), and lessen the pressure to add new doctoral programs that could have low enrollment issues.

C. Quality Enhancement

Most of UTSA's doctoral programs have been implemented within the last ten years and are therefore still growing and establishing their reputations and visibility. Although they are making excellent progress, there remain areas that need to be addressed if we are to become nationally prominent. In order to enhance the quality of these programs, our strategies include addressing the issues highlighted in the following sub-sections.

1. Recruiting

UTSA strives to attract the best and brightest students. The Graduate School and the academic colleges are partnering to recruit highly qualified undergraduate and masters' students. The university has developed strong pipelines from other institutions in the UT System, and target prospective applicants in the South Texas Region.

UTSA plans to continue and expand on these successes by increasing our efforts to recruit nationally and internationally, and committing additional resources to do this. The university recognizes the need to increase the yield rates among national and international applicants, and are devoting more resources to making competitive offers to the best students from these applicant pools.

2. Diversity

UTSA is ranked third nationally in the training of Hispanic STEM graduates thanks to the efforts of the Colleges of Science and of Engineering. It is also ranked third nationally for providing opportunities for minority students to earn M.B.A degrees, and UTSA's Ph.D. in English program was honored by Excellencia in Education as one of America's top programs in increasing graduate degree completion among Latinos. This provides a great potential source of diverse students for our graduate programs. Although the diversity of the students in UTSA's doctoral programs is above (and in many cases significantly above) national averages for the specific field, we are committed to further enhancing the diversity of our student population. To do this, we are increasing efforts to recruit UTSA undergraduate and graduate students, and to strengthen our pipelines with regional institutions of higher education. One action we have to support this effort is implementing the Provost's Summer Research Program, which provides a diverse group UTSA students and students from regional universities with the opportunity to spend several weeks during the summer working on a research project with a faculty mentor. A second action is the introduction of Minority Recruitment Scholarships, which doctoral programs may use to increase the diversity of their class of entering students.

The university recognizes the need to increase graduate fellowship funding in an effort to make competitive offers to students from diverse backgrounds., One strategy UTSA is utilizing is to have academic colleges partner with the Office of University Advancement to secure more philanthropic donations that can be used for the purpose of increasing the diversity of our doctoral student population.

A second strategy is to increase the amount of grant funding that is targeted for support of minority graduate students. In Spring, 2012, Minority recruitment Scholarships were introduced for the purpose of assisting programs in their efforts to recruit excellent minority students. Yet another strategy is to increase recruitment at events that have a large minority student population attendance, such as Society for Advancement of

Chicanos/Latinos and Native Americans in Science (SACNAS). UTSA is the host and a platinum sponsor for the Fall 2013 SACNAS conference.

In addition, many of the colleges have initiated efforts to increase diversity. For instance, the Colleges of Business and of Sciences have assisted each department to develop a diversity plan for recruitment and is participating in a project designed to increase minority student participation in doctoral programs in business.

At the university level, the Provost has formed a Diversity Advisory Board to provide guidance and advice concerning a number of diversity issues, including recruitment of faculty and students, but also dealing with the campus environment, the curriculum, and other factors that contribute to a thriving multicultural environment.

3. Student Support

The strategies outlined above are also being utilized to increase funding to support students through stipends, work opportunities, and student travel to conferences. For instance, the president allocates funds to provide Presidential Dissertation Fellowships to students conducting dissertation research. This year, the university allocated funds to award Graduate Student Teaching Awards to students who have excelled in the area of research, and Graduate Student Professional Development Awards for the purpose of helping fund student travel to professional conferences.

The university has also initiated programs to assist with graduate student development as teachers. Part of the graduate student orientation program now includes workshops to develop sound instructional practices and all teaching assistants are now required to undergo training through our Teaching and Learning Center. Four years ago, UTSA launched the University Teaching Fellows program which provides enhanced teacher development training and a special stipend to a select number of graduate students across the university. These University Teaching Fellows play an important role in developing new teaching methods, assisting both faculty and fellow teaching assistants, and in raising the quality of undergraduate education.

4. Space

UTSA has grown at a pace that has caused a severe space shortage (see Section VI.A. *Research Facilities).* The administration is committed to ensuring that doctoral programs have sufficient space for faculty and student research, and for other activities that support students' academic progress. Major new research facilities have recently been added and are detailed below.

5. Retention and Graduation

UTSA continues to work to reduce time to degree and to increase retention rates. We currently have a number of activities that were implemented to meet this goal, such as

requiring annual doctoral progress reports from each program, and offering a series of student success workshops and other services. In addition, UTSA is in the process of implementing several initiatives designed to reduce time to degree and to increase retention rates, in response to the action items that the Chancellor has asked U.T. System institutions to address in his Framework for Excellence. These initiatives include:

- Ensuring that UTSA's academic program review process adheres to the requirements of Texas Administrative Code, Part 1, Chapter 5, Subchapter C, Rule 5.52. As part of this initiative, UTSA will, beginning in Fall, 2012, follow THECB's seven-year cycle for academic program reviews, will submit the outcomes of each program review to THECB and the UT System no later than 90 days after the conclusion of each review, and will verify annually to the UT System's Office of Academic Affairs that UTSA is complying with THECB's review schedule.

- Starting with the 2012-13 academic year, all doctoral programs are reviewed to provide written annual feedback to students about their progress. Each evaluation includes the student's written acknowledgement that the feedback has been received, and any written comments that the student wishes to include, are submitted to the appropriate College Dean's office and to the Graduate School. Action plans for students who are not making good progress are submitted, along with follow-up reports that describe the results of the initiation of those action plans.

- Beginning in Spring, 2012, each doctoral program at UTSA developed a *Milestones Agreement Form* for its students, based on the version of this form that was developed by a task force of U.T. System Graduate Deans and approved by the UT System. The core faculty of each doctoral program, in collaboration with the administrators responsible for each doctoral program, began the process of making additions to the form so that it accurately describes the expectations for students and faculty advisors in their program and provides an accurate, program-specific timeline for reaching each milestone. Programs will introduce these forms to entering doctoral students in Fall, 2012. Students will be required to meet with their faculty advisor to discuss the information included in the form, and the student and advisor will be required to return a signed copy of the form to the doctoral program chair by the end of the student's first semester in the program. UTSA's existing Doctoral Progress reports will be modified so that the each year, the reports provide an accurate description that each students has made toward meeting the expectations included in the *Milestones Agreement Form.*

- UTSA will make available the *MyEDU* career resources that are being developed once they are completed so that students can utilize it as a resource for career and salary information. Until this component of *MyEDU* is completed for graduate students, UTSA will use alternative sources of data, such as annual salary data for professors, as reported by the *Chronicle of Higher Education,* whenever possible.

- Beginning in Fall, 2012, continuous enrollment is now required for all doctoral students.

D. Comparisons with National Peers

As part of the implementation process of the Strategic Plan, UTSA has selected a number of aspirant universities to gauge our progress toward Tier 1 status. The aspirant institutions are a group of medium-to-large public universities without medical schools in large metropolitan areas whose key performance characteristics are currently higher than UTSA's. Those institutions whose performance might be reached within the time frame of the current Strategic Plan (2016) comprise the near-term aspirants. Conversely, long-term aspirants represent a group of institutions whose performance levels might be reached by UTSA in a somewhat longer timeframe. The list of aspirant institutions was revised in the summer of 2012 as part of the goal-setting exercise of the U.T. System, associated with the *Chancellor's Framework for Advancing Excellence*.

Table 4: National Aspirants

Short-term aspirants: • Arizona State University • Georgia State University • University of California, Riverside • University of Connecticut • University of Central Florida • University of Oklahoma	**Long-term aspirants:** • University of California, Santa Barbara • University of Colorado, Boulder • Rutgers University • University of Oregon

Each of the doctoral programs developed an additional list of specific aspirant list of universities which the doctoral programs administered in their units will be benchmarked.

New Doctoral Programs

A. Areas of Emphasis

UTSA plans to develop doctoral programs that complement and are consistent with the five areas of emphasis as identified above and introduced in our institution's Strategic Plan (health, security, energy and environment, human and social development, and sustainability). Adding doctoral programs that complement these areas will help to attract and maintain top-caliber faculty researchers who will contribute to our strategic goals, and will provide students with opportunities to work on cutting edge research projects with faculty mentors who are leaders in their respective fields.

B. Assessment

For over two decades, UTSA has conducted rigorous, periodic reviews of all graduate programs and all reviews involve external evaluators. Recently, revisions were made to this process in accordance with changes suggested by the U.T. System administration, and the revised review process is outlined in Section 2.39 of UTSA's Handbook of Operating Procedures (Appendix A).

UTSA has a program review process in which all degree programs in a specific discipline are reviewed simultaneously by external review teams. Follow-up meetings are conducted one year after each review, for the purpose of determining the degree of progress that a reviewed discipline has made toward addressing suggestions/recommendations from the review. If the provost and vice-provost and dean of Graduate Studies determine that adequate progress has not been made, the discipline must submit an action plan, and progress will be followed each year until adequate progress has been made.

C. Regional Impact

In addition to complementing one or more of the five areas of identified collaborative research excellence, UTSA's planned doctoral programs are designed to meet specific regional needs. Examples of programs that are intended to provide students with skills that can contribute to regional needs include:

- **Ph.D. in Higher Education Administration**, designed to address closing the gaps in educational attainment needs. Progress will be measured by the number of graduate student dissertations that contribute knowledge to improving the effectiveness of leaders who will train the next generation of teachers and P-16 educational administrators.
- **Ph.D. in Mathematics**, designed to address closing the gaps in educational attainment needs. Progress will be measured by the number of graduate student dissertations that contribute knowledge to improving the effectiveness of math education in K-16.
- **Ph.D. in Health and Kinesiology**, designed to contribute to the military's efforts to centralize care for the health-related needs of military personnel, veterans, and their family members in San Antonio, Progress will me be measured by the number of graduate student dissertations that address problems designed to address health-related needs of the target population and by the number of program graduates who are employed in positions that include conducting research and related activities addressing military health-related needs.
- **Ph.D. in Materials Nanotechnology**, designed to contribute to the region's development as a leader in the fields of energy use and security. Progress will be measured by the number of graduate student dissertation that address problems designed to add to our knowledge in the fields of energy and security and by the number of program graduates who are employed in organizations related to energy or security after graduation.

V. Plan for Faculty and Student Development

A. Faculty Research

As UTSA moves toward Tier 1 status, it is essential that the university work toward optimizing the environment of research productivity. A number of strategies are being implemented to allow faculty to become more innovative, productive, and efficient, including:

- increasing creative innovation by establishing new work-load expectations that encourage more effort for research and creative activities;
- providing greater recognition of research accomplishments through the promotion and tenure and annual evaluation processes at all levels of review;
- awarding targeted seed grants for high-risk collaborative research proposals, as well as opportunities for off-campus collaborators and developmental leave opportunities are also being encouraged to allow faculty to develop new research skills and creative opportunities;
- expanding core facilities for research (e.g. Microscopy, Imaging, Materials, and Proteomics/Genomics Centers) to allow faculty to increase collaborations;
- supporting mentoring programs for new faculty through institutional research programs for Hispanic serving institutions (e.g. RCMI); and
- implementing an expanded and integrated program on the Responsible Conduct of Research (RCR), which will involve not only students, but technicians, postdoctoral fellows and faculty.

UTSA has implemented electronic submission of grants, time and effort reporting, and electronic management of research compliance. This currently covers issuers of conflict of interest IRB, IACUC, IBC and Export Control. These automated services will decrease effort and turnaround time for faculty and increase efficiency and accuracy. Similarly, the VPR website has become an indispensable one stop shop with quick links making grant proposal preparations, submissions, and management much more efficient. A 24/7 assistance research hotline has been implemented.

Finally, the Offices of the Provost and the VPR are currently engaged in collaboratively planning a Faculty Resource/Development Center to be housed in the university library that will provide a range of support services for faculty. These services will cover both instructional and research development needs, and will house seed grant programs to assist faculty with their professional growth.

B. Faculty Recognition

To be a premier institution, it is essential that the faculty be recognized as the leaders in their disciplines. In addition to the efforts made to increase our national visibility, detailed in Section VII, several steps are being taken to assist faculty in achieving national recognition. These include

- nomination of faculty
  - to serve on national research review panels (e.g. NIH Study Sections),
  - as members of research policy making committees/groups;
  - for national and international research awards and recognition such as the National Academies;
- assisting faculty in organizing and chairing major national and international research conferences and meetings; and

- providing funding for junior faculty to attend conferences and meet with other leaders in their areas of research.

In-house seminars, symposia and national/international conferences at UTSA also provide excellent opportunities to profile our faculty and research facilities. Research achievement awards are given to faculty by each college.

C. Collaborations and Partnerships

Educational and research collaborations and partnerships are central to broadening and strengthening the opportunities for research and graduate education, and UTSA has arguably some of the best opportunities for research partnerships in Texas. Some examples of external research partnerships which are playing a major role in UTSA's effort toward becoming a premier research university include:

- **University of Texas Health Science Center at San Antonio (UTHSC-SA)**: The San Antonio Life Science Institute (SALSI) has become a model for collaborations between universities and medical schools. Joint graduate programs (*e.g*. biomedical engineering, applied statistics, and neurosciences) and multidisciplinary research programs (*e.g.* aging, health care disparities, medicinal chemistry, regenerative medicine, Vaccine Center) are already established and are expanding. SALSI commits all its funding ($1.5 million for the current biennium) toward funding of collaborative research between UTSA and UTHSC-SA.
- **UT Brownsville**: UTSA offers a collaborative doctoral program with UT Brownsville in Physics, and is developing collaborations in Cell and Molecular Biology and Neurobiology. UTSA offers doctoral programs to UTB resident students, and UTSA students can take and transfer UTB courses that satisfy the requirements of their respective doctoral program. A 10-week summer program at UTSA accepts students from UTB who are matriculating to graduate studies at UTSA.
- **UT Permian Basin**: UTSA has developed a similar agreement with UT Permian Basin to offer the Doctor of Educational Leadership on that campus. This program admitted its first cohort of students in the Spring 2010 semester.
- **UTHSC Houston**: The College of Business and the College of Public Policy are collaborating with the UTHSC School of Public Health, Houston, to offer both a dual MBA/MPH degree and a dual Ph.D./MPH degree, with the Ph.D. in Applied Demography.
- **UT Austin**: UTSA and UTHSCSA are collaborating with counterparts, the UT Austin College of Pharmacy and UT School of Public Health, have developed a joint Ph.D. program in Translational Science.
- **Southwest Research Institute (SwRI):** With an annual research budget approaching $600 million, SwRI has become a world leader in research in the physical sciences and engineering and a major partner with UTSA. Initial joint research and education programs in Physics/Astrophysics are being expanded into areas of Mechanical

Engineering, Energy, and Chemistry. UTSA and SwRI collaborate to offer Ph.D's in Mechanical Engineering and Physics.

- **Texas Biomedical Research Institute:** With its Biomedical Safety Level 4 (BSL4) facilities for containment of pathogens and its non-human primate center, TBRI is collaborating with UTSA's *South Texas Center for Emerging Infectious Diseases*. UTSA has initiated and formed a three-way partnership with TBRI and UTHSC-SA for the joint development of the San Antonio Vaccine Center.
- **CPS-Energy (CPSE) and San Antonio Water System (SAWS)**: UTSA's *Texas Sustainable Energy Research Institute* includes not only SwRI, but the local providers of power (CPS-Energy) and water (SAWS). These partners work closely with UTSA's Texas Sustainable Energy Research Institute (TSERI) in developing strategic and tactical plans for meeting the energy needs of South Texas.
- **Military**: The military in San Antonio offers unique collaborations in research. These include; the Army Ft Sam Houston, and Air Force (Randolph, Lackland, and Brooks AFBs). UTSA has MOUs with Lackland AFB and Ft Sam Houston, - 59th Medical Wing; CRADAs with Lackland AFB, 688th Info Operations Wing; and partnerships with the Center for the Intrepid and the VA Audie L. Murphy Hospital in rehabilitation efforts; clearances for special projects and MOUs with Joint Information Operations Warfare Command and the Information Operations Center at Lackland AFB. These collaborations are currently focused primarily on Security and Health. In addition, collaborations in regenerative and rehabilitation medicine (*e.g.* regeneration of long bones in wounded warriors) are being explored with the Institute of Surgical Research at SAMMC. UTSA collaborates with several military organizations to train students in the Ph.D. in Psychology Program.
- **Governments, Public Agencies, and Industry**: UTSA is expanding a number of contracts and research programs with local governments and industries (*e.g*. in the Health, Energy, and Security programs). For example, *BioMed San Antonio* links UTSA to the health industry of the community and assists in developing collaborations with pharmaceutical and medical device industry. The Chambers of Commerce, Mayor's Office and city and county governments are major partners in the energy programs being spearheaded by UTSA's TSERI. State and city governments and local companies such as Rackspace and the Denim Group, partner in information security headed by UTSA's Institute for Cyber Security (ICS) and Center for Information Assurance and Security (CIAS). The university also works with public school districts, community agencies, health and wellness clinics, and mental health clinics on a variety of research projects that also serve its public outreach mission.

D. New Faculty

Recruiting and retaining top faculty is a priority for becoming a premier research university. This past year we appointed 32 new tenured/tenure track faculty members, most of whom we recruited from prominent research universities, and nearly half coming from underrepresented

groups. The provost, VPR and the deans employ a number of strategies to recruit top-tier faculty to our campus. We are recruiting world-class leaders in areas of excellence. These include:

- **Recruit world-class leaders:** UTSA has recently recruited world-class leaders in the life sciences, cyber security, physics, and energy. In the coming years we will focus efforts on medicinal chemistry, energy and vaccinology.
- **Utilize research partners to help recruit:** The use of research partners such as TBRI, UTHSC-SA, and SwRI markedly enhances the opportunity to recruit top research faculty, especially in engineering and the sciences. Faculty search committees, which include members from our research partners, broaden our scope of candidates and enhance the potential to hire.
- **Establish attractive recruitment packages:** In order to recruit established leaders in the sciences and engineering, it is necessary to put together multi-million dollar recruitment packages. This has been facilitated by our research partnerships and by leveraging UTSA funds with support from the U.T. System (e.g. STARS program) and the State of Texas (*e.g.* Emerging Technology Fund).
- **Create an environment for faculty success**: Part of recruiting high quality faculty is demonstrating that UTSA has the infrastructure to support their success. We have worked hard to ensure that our research facilities are top-notch. Part of what we "sell" to faculty candidates is the opportunity for research collaboration with the community (see above), the quality of life, low cost of living in San Antonio, and the relatively healthy Texas economy.
- **Accelerate the faculty recruiting schedule to make earlier appointments**: Our goal in recruiting top faculty is to complete the search process and make offers early in the recruitment cycle. This enhances the opportunity to select from the best quality and most diverse candidates on the faculty job market.
- **Utilize a mixture of junior and senior appointments**: As we focus on our areas of excellence in which to grow faculty expertise and quality, we seek active senior faculty who have experience to "seed" the effort. Ideally, we are looking for faculty who want to engage in program-building, and who will serve as models and mentors for younger faculty. We follow these appointments with several junior-level faculty appointments, with a special effort to recruit from top-tier graduate programs.

E. Student Awards

UTSA has already implemented several initiatives to increase the number and prestige of undergraduate student competitive awards— these are outlined below.

1. *Merit Scholarships for Undergraduates*
   The *University Excellence Fund* makes available presidential scholarships to colleges to award to undergraduates who have demonstrated high academic achievement. Moreover, with the support of many generous donors, several of the colleges also offer a variety of

competitive and prestigious scholarships. In addition, the Honors College offers several competitive and prestigious awards, such as the Terry Scholarship and the Peter T. Flawn Presidential Honors Scholarship.

2. *Student Training Grants*
   The university has procured several grants that provide training and financial support for students in critical areas identified by *Closing the Gaps*. These include the Minority Access to Research Careers (MARC), Undergraduate Student Training in Academic Research (U*STAR) program, the Minority Biomedical Research Support (MBRS), the Research Initiative for Scientific Enhancement (RISE) program, the Hispanic Leadership program in Agriculture and the Environment, the McNair Scholars program, and the Louis Stokes Alliance for Minority Participation (LSAMP) program. The RISE program also supports doctoral students.

3. *National Scholarships and Fellowships*
   The Honors College has a position of Assistant Director for National Scholarships and Fellowships. This individual works with students who are candidates for prestigious awards such as Ford Foundation Fellowships, Rhodes Scholarships, Barry M. Goldwater Scholarships, Harry S. Truman Fellowships, and NSF Graduate Fellowships.

4. *Graduate Scholarships and Fellowships*
   Beginning in 2006, the Graduate School began receiving funds from the President's Scholarship Fund to award as *Presidential Dissertation Fellowships*. These fellowships are designed to assist doctoral students who are in the final stages of dissertation work and who are recognized for their excellent academic performance and the high quality of their research. These awards are very competitive, and the quality of applicants is high.

   In Fall, 2012, the Graduate School began to offer Graduate Student Professional Development Awards to help support graduate students' travel to conferences for the purpose of presenting a research paper or product. In Spring 2013, the Graduate School began to offer Graduate Student Teaching Awards to graduate students who are recognized for excellence in teaching performance, Graduate Student Research Awards, to students who are recognized for their research productivity. The Graduate School also offers the Beldon Scholarship to an excellent entering Ph.D. student each year and Minority Recruitment Scholarships to excellent entering Ph.D. students who are from a group underrepresented in their area of study. Through increased donor activity, we intend to continue to increase the number of institutional scholarships and fellowships awarded to graduate students.

   Beginning in 2008-09, the Teaching and Learning Center implemented the University Teaching Fellows' Program that provides one year of support for graduate students in focusing on excellence in teaching and in conducting research designed to improve teaching and learning. The Teaching and Learning Center also began in 2009 to award competitive awards to graduate TAs who were recognized for their teaching excellence.

5. *Scholarships in Critical Areas*
   The College of Sciences has established and directed a number of outreach programs for recruiting and promoting students. The university offers scholarships in critical areas to help students.

In addition to scholarships and fellowships, there are available many positions as graduate research assistants that are funded through university, college, department, or grant funds. As the number of externally grant-funded faculty awards continues to increase, the number of positions that are funded through grants will continue to increase as well.

F. Student Diversity

UTSA has developed an aggressive program for the recruitment and graduation of doctoral students who will contribute to the state's goals of diversity in Closing the Gaps. Specifically, four strategies have been developed and implemented. The summary below outlines these strategies. The specific tactics employed, the progress made in the past year and the resources utilized are detailed in Appendix B. All of these are continually assessed for their effectiveness:

- enhance and expand programs with other institutions to recruit a diverse population of students;
- provide expanded support for academic colleges and offices across campus in recruitment targeting of underrepresented populations;
- enhance the Graduate School pipeline programs to recruit talented UTSA undergraduates; and
- facilitate graduate programs to nontraditional students at times and locations more accessible to them.

VI. Other Resources

A. Research Facilities

UTSA's strategy for enhancing its research facilities includes several complementary dimensions:

- the university's 2009 campus master plan outlines the future physical development of each of the institution's various campuses, including a projection for needed research space as the university stabilizes at a student enrollment of ~31,000 and increases its funded research program beyond $100 million in annual expenditures;
- the university has set priorities for the near-term development of new facilities, as well as the renovation and adaptive re-use of existing facilities, including:
  - the construction of an Experimental Science Instructional Building and associated renovation of spaces presently housing functions that would move to the new building;

    - the development of expanded library facilities to enable the expansion of the university's collection in support of research activities;
    - the development of the UTSA College of Architecture Advanced Fabrication and Construction/Sustainable Materials/Assemblies Testing laboratory at the Downtown Campus
    - the construction of an office complex that will free up space in academic buildings and allow for faculty and graduate program expansion;
    - the renovation of spaces that will facilitate the consolidation of academic units currently fragmented across campus; and
- the Office of Space Planning optimizes research space usage on campus through rigorous planning, assessment, and reallocation.

While space continues to be a major concern, UTSA is fortunate in having benefited from the recent construction of excellent research facilities which include the Biotechnology, Sciences and Engineering Building (2006), the Tobin Research Laboratories (2004), and the Applied Engineering and Technology Building (2010). This latest building provides an additional 145,000 square feet for the delivery of STEM courses, teaching and research laboratories, and faculty and graduate student offices and provides essential growth space in areas such as energy, physics and nanotechnology. Altogether these new research facilities have provided a positive selling point for attracting new research faculty.

A research space allocation system is in the process of being developed and implemented. In this process, a three-year average of funded research and research personnel is quantified for each space. Values for dollar per square foot are then compared with national averages for each discipline. These values are used at the levels of the chair, dean, and provost to reallocate space for programs that are expanding or contracting.

Because of the recent growth, research administrative offices are currently situated in a variety of locations. In order to increase efficiency and provide a one-stop-shop for faculty, the 75,000 square foot Plaza Norte Building, a multi-function office complex completed in 2011 at a cost of approximately $15.25 million (paid from institutional funds), houses central offices for the VP for Research, as well as several components of the Provost's Office, ROTC programs, and the Writing Program.

Also, UTSA has renovated an existing building on the west side of the Main Campus to develop a sculpture and ceramics facility. This project (approximately $3.1 million) provided a highly needed facility for students and faculty. Renovations to three science facilities (Science Building, Life Sciences Lab and Physical Science Lab) upgraded facilities for physics, chemistry and biology labs. These renovations ($23.9 million) were funded by a combination of PUF Funding and Revenue Finance System bond proceeds. In the same area is the River Science Research Facility established to model the streams found in the Texas hill country

A North Paseo Building is under construction on-campus adjacent to the Plaza Norte Building to accommodate the departments in the leased space at University Heights (57,419 square feet). Departments include Human Resources, Grants & Contracts, Accounting, Legal Affairs, Budget,

Management Reporting, Controller, Asset Management, Payroll, Travel and Disbursements, Communications, Auditing and Consulting, Art Curator, Office of Information Technology, Telephone Services, Registrar SIS, Undergraduate Studies. Leased space also includes Lockhill-Selma (approx. 9,000 square feet) that houses the Center for Infrastructure Assurance and Security which is a part of the Institute for Cyber Security.

B. Library Resources

Mirroring the steady increases in student enrollments and research expenditures, the UTSA Libraries' materials budget has increased from $4.3 million in FY2007 to $5.8 million in FY2012. During this period, the Libraries have expended over $2 million to acquire primary source and core research materials in all formats to support new doctoral, Master's, and bachelor's programs. Subject specialist librarians work closely with departmental faculty to establish the level of collections necessary to fully support each new program, as well as faculty research.

The Libraries purchase materials in all formats, including books and e-books, e-journals, streaming media, and databases. Quick and easy access to additional materials is facilitated through interlibrary loans and a ***Get It For Me*** retrieval service, streamlining the process for faculty and students through direct delivery of books and articles. The Libraries also participate in the TexShare reciprocal borrowing system, hosted by the Texas State Library and Archives Commission, which enables UTSA students, faculty, and staff to borrow books from academic libraries throughout the state.

The Libraries employ 35 librarians and archivists who hold accredited graduate degrees, as well as three instructional designers and two instructional technologists. Librarians, instructional designers and instructional technologists support faculty in on several levels. Not only do they assist with course redesign, but also with developing students' critical thinking skills by collaborating on assignments that support students' ability to find, evaluate and use information.

In addition to providing information and instruction services, librarians monitor the academic publishing environment and ensure access to appropriate materials for university programs, adding more than 60,000 print and electronic volumes each year. The Libraries house over 1,774,000 volumes, over 70,000 periodical and serial titles, and nearly 68,000 multimedia items. The libraries' consortial partnerships with other UT System and Texas academic libraries leverage collective purchasing and lending power, particularly for research-level collections. Collaborative purchasing partnerships with other departments on campus, such as the Office of Sponsored Programs and the College of Business, allow the Libraries to provide access to high-demand, high-cost materials, including datasets that are of vital importance to upper-level researchers.

Membership in prestigious organizations such as the Center for Research Libraries and the OCLC Research Partnership further extends the Libraries' ability to provide access to research collections. Recognized as the nation's first bookless library on a university campus when

opened in 2010, the Applied Engineering and Technology (AET) Library caters to the research needs of students in STEM majors. Spaces in this satellite library encourage teamwork, communications and problem solving – skills integral to the success of today's professional engineers and scientists – and librarians with expertise in STEM resources are available for reference and research consultations.

The UTSA Libraries' Special Collections serves as a repository for the university's primary source materials, including manuscripts, rare books, historic photographs, and university archives. Strengths of the collection include San Antonio history, urban development and architecture, regional authors, Mexican cookery, women and women's history, and the Texas-Mexico border region. Recent acquisitions include the congressional papers of former U.S. Representative Charlie Gonzalez, and the organizational records of the San Antonio River Authority.

A Faculty Resource/Development Center—a collaborative effort between the UTSA Libraries, the Vice Provost for Academic and Faculty Support and the Assistant Vice President for Research Support—will open in 2014. The Faculty Center will provide a collaborative framework for coordinating planning and leveraging resources for faculty development activities. In addition, the libraries provide graduate student-only study spaces for both quiet and collaborative study.

C. Graduate Student Support

Graduate student support comes from a variety of sources (*e.g.* see also Section V.E. *Student Awards*). The university has allocated funds to support graduate students in their first two years, but it is expected that Ph.D. students in their last portion of their research training will largely be supported as research assistants from research grants and contracts.

Specifically, the university has established and is increasing the following funds to support graduate students for the targeted doctoral programs identified in the Strategic Plan:

- University Graduate Student funds increased from $6.1 million in FY 2008 to $10.3 million in FY 2012;
- Student funding from other sources increased from $1.6 million in FY 2008 to $2.2 million in FY 2009;
- Valero Energy Corp. funding $5,000,000 to support graduate fellowships in College of Engineering and College of Business; and
- Academic Affairs is working closely with University Advancement to raise more donor funds to support graduate students through a comprehensive fund raising campaign.
- The university will increase stipend amounts for students in five doctoral programs in Fall, 2013, for the purpose of increasing the programs' ability to compete for outstanding students.

VII. National Visibility

In 2012, UTSA hired a Chief Communications Officer to implement a marketing plan to increase regional and national visibility and reputation. During the 2008-09 academic year, the first comprehensive research study of attitudes and awareness regarding UTSA was performed. The results of this study were used to develop a centralized marketing plan that would coordinate UTSA external communication messaging for undergraduate and graduate student recruitment and university branding. This marketing plan supports all aspects of UTSA's vision, mission, and core values, as articulated in its Strategic Plan. The three central operational goals that are currently being implemented are:

- to establish consistent brand standards for UTSA in all communication activities;
- to integrate and improve internet media and the websites of UTSA in all marketing communication; and
- to improve the utility, maintenance, and tracking integration of all of the UTSA contact databases.

The three central communication goals that are currently being implemented are:

- to create awareness and support for the UTSA Capital Campaign;
- to promote UTSA academics, improving both recruitment and retention efforts; and
- to increase public awareness and positive feeling about UTSA.

UTSA's established research visibility in the life sciences is clearly projected to continue to increase as is its pre-eminence in research and training of Hispanic students. Important emerging areas of national visibility include cyber security, bioengineering, international finance and economics, neuroscience, energy and sustainability, and nanoscale physics. Increased research collaborations with the military will expand beyond these already established (*e.g.* information and cyber security) to include military medicine, advanced diagnostics, robotics, vaccines, medicinal chemistry, tissue engineering and regenerative medicine. UTSA has the opportunity to become a major partner with the military in these areas.

The multidisciplinary approach of UTSA's centers and institutes will bring colleges such as Public Policy, Architecture, Business, Education and Liberal and Fine Arts into collaborative research and educational programs dealing with sustainability, energy, and social and human development. Integral to all of these issues of national visibility is the great synergy gained with our external research partners and collaborators.

Appendix A

From UTSA Handbook of Operating Procedures (HOP)

2.39 Academic Program Review

I. Purpose
The University of Texas at San Antonio provides quality programs to students in each of its academic disciplines. Quality programs result from careful, collaborative self-study and reflection by the faculty in each of the disciplines and appropriate stewardship by university administrators.

II. Policy
A. All department programs shall undergo periodic academic program review.
B. Reviews shall be conducted by a panel of external reviewers representing expertise in the academic discipline of the programs under scrutiny.
C. The frequency of program review shall not be more than ten years between successive reviews.
D. Units subject to periodic specialized accreditation reviews may use those reviews to satisfy this requirement.
E. Reviews shall be based on organizational units (for example, departments) and shall integrate reviews of all degree programs offered through those units. Exceptions include
    1. Interdisciplinary programs involving multiple departments
    2. Instances where specialized accreditation only reviews the undergraduate or graduate programs (e.g. ABET only reviews undergraduate programs). In this event, the department or college shall separately schedule a complementary review for programs not covered by specialized accreditation.
F. The vice provost for accountability and institutional effectiveness shall maintain a general schedule of program reviews and will notify the dean, department chair and other appropriate individuals (e.g. program director) no less than eight months in advance of an upcoming review.
G. The provost's office shall maintain a set of guidelines specifying the process by which external reviews take place. Said guidelines will be made publicly available on the provost's web site.

Provost Guidelines
Process for Academic Program Review
Review Process and Timeline
A Department shall be notified at least eight months in advance that a program review has been scheduled. Upon notification, the program shall implement the following process.

Appendix A (cont)

A. The review team and its chair shall be established six months in advance of the review.
B. The Office of the Vice Provost for Accountability and Institutional Effectiveness shall oversee the arrangements for the review visit.
C. The department shall assemble its self-study materials (see Self-Study Document below) for posting online at least one month in advance of the review team visit and shall notify the reviewers how to access the materials.
D. Review visits shall typically extend over two days and include the following meetings:
    1. an initial meeting on the first day attended by the provost, vice provost for accountability and institutional effectiveness (AIE), vice provost for undergraduate studies (US), dean, and vice provost for the graduate school (GS) with the review team;
    2. meetings with department faculty;
    3. meetings with students of the department, including both undergraduate and graduates students where appropriate;
    4. a meeting with the dean;
    5. a meeting with vice provost GS, dean and Graduate Council representatives, when appropriate;
    6. other meetings as requested by the review team in advance;
    7. unscheduled time for the review team to formulate initial recommendations
    8. an exit interview with the provost, vice provost for accountability and institutional effectiveness, vice provost for undergraduate studies, dean, and vice provost for graduate studies.
E. The review team shall submit a written report of their review as soon as is feasible following the completion of the review visit

Self-Study Document

Departments undergoing a program review shall prepare a set of materials to aid external reviewers in their task of reviewing the strengths, weaknesses, challenges, and opportunities of the unit.

A. The preparation of materials for a program review should be an inclusive process, involving all faculty to the extent possible.
B. The materials should include, but need not be limited to, the following:
    1. the unit's strategic plan
    2. documentation of expected learning outcomes for each of the department's degree programs (described in the department assessment plans and course syllabi)
    3. documentation of assessment of student learning outcomes for each degree program
    4. a summary of research productivity, as compiled from FAIR

5. curriculum vitae for all continuing faculty
6. program enrollment information
7. a brief summary statement (no more than ten pages)

C. Specialized accreditation processes may require other materials in addition to those listed here.
D. The department's self-study materials shall be posted online for the external reviewers to access at least one month in advance of the reviewers' visit. Printed copies of the strategic plan and the summary statement shall be sent to each reviewer at the time the materials are posted.
E. A hard copy of or electronic access to all of the materials shall be made available to the chair of the review team during the visit.

External Reviewers

The external reviewers should be senior faculty members at institutions equivalent to the university's aspirant institutions. Whenever possible, the reviewers should be eminent scholars and academic leaders who have achieved national prominence.

A. Choice of reviewers
   1. A department shall propose a list of suitable reviewers to the college dean at least six months in advance of a scheduled review.
   2. The dean shall select a subset of no more than three reviewers from the list provided by the department.
   3. The dean may also choose to add up to two members not on the department list, but the total number of reviewers should not exceed five.
   4. The dean should identify alternate reviewers in the event one or more of the reviewers chosen is unable to commit to the review.
   5. The dean shall consult with the provost and the vice provost GS before finalizing the list of reviewers and alternates.
B. Once the set of reviewers is finalized, the dean and department chair shall consult to appoint a chair for the review team from among the reviewers.

Review Response

The report of the external reviewers, as well as the response of the department, college, graduate school, and university will be documented in writing.

A. Following the submission of the written report, the department shall prepare a written response to the review team recommendations and submit that response to the dean.
B. The dean shall review the unit response and prepare a written recommendation for the provost.
C. If the review includes graduate programs, the Graduate Council shall review the reviewers' report and prepare a written response to any recommendations involving graduate studies in the unit and submit that response to the vice provost GS.
D. The vice provost GS and dean shall meet with the provost to discuss the review and their respective recommendations.

E. The provost shall meet with the department chair, department's graduate advisor of record (GAR), dean, vice provost GS, and vice provost AIE to discuss the outcome of the review and formulate the final response. For those programs housed at the downtown campus, the vice provost for the Downtown Campus shall also participate in the discussion.
F. The provost shall provide a written final response to the department indicating any actions the university will take in response to the external review.
G. One year after issuing the final response, the provost shall meet with the department chair, GAR, dean, vice provost GS, and the vice provost for the Downtown Campus (when appropriate) to review progress in responding to the external review.

Appendix B

Strategy for Student Diversity

Strategy 1: Enhance programs with other institutions to recruit a diverse population of students

Tactic 1: Submit an Alliance for Graduate Education and the Professoriate (AGEP) grant proposal to NSF in partnership with UT Arlington and UT Dallas.

- Cost: No cost to write the grant
- Results: Grant proposals are being reviewed by NSF

Tactic 2: Applied for and received an Alliance for Graduate Education and the Professoriate (AGEP) planning grant from NSF ($150,000 from 2011-2013) in partnership with UT Arlington and UT Dallas.

- Cost: No cost to write the grant
- Results: Funded three meetings and other activities that allowed faculty from participating institutions to work together to develop collaborative strategies for building pipelines for students from comprehensive institutions to doctoral institutions that were included in the full grant proposal.

Tactic 3: Students from institutions in South Texas were recruited for Provost's Summer Research Program. This is a program that provides students with the opportunity to work with a UTSA faculty member on research during the summer and also provides a seminar designed to optimize participating students' professional development.

- Cost: $50,933.38 in Summer, 2012
- Results: 11 students were funded, including students from UT Brownsville and Texas A & M International; 3 have applied to graduate programs at UTSA

Tactic 4: Continue to participate in the Annual Lone Star Graduate Diversity Colloquium to assist underrepresented Texas undergraduate students to apply and attend a graduate program at UTSA.

- Cost: $612.00 for Spring, 2013, colloquium
- Results: 37 students from UTSA registered for the event, which was hosted by UNT; 35 students who attended the event inquired about graduate programs contacted the UTSA recruiters with inquiries about our graduate programs.

Tactic 5: Continue to work with UTB to increase diversity of doctoral students in the area of Physics and to offer doctoral education to students in the South Texas region.

- Cost: Administrative costs and cost of travel to UTB 1-2 times a year
- Results: The two institutions are working together to ensure that there is a diverse population of students registered at UTB.

Strategy 2: Provide expanded support for academic colleges and offices across campus in recruitment targeting underrepresented populations

Tactic 1: Continue to work with programs to develop recruitment strategies that are directed at increasing diversity of students in the programs.

- Cost: Cost is staff time
- Results: Approximately 2 meetings a month with representatives of specific programs to develop recruiting plans.

Tactic 2: Work on cross-campus team to provide assistance with the activities involved in hosting the SACNAS conference in San Antonio in 2013.

- Cost: Cost is staff time
- Results: Will be reported after the SACNAS conference

Strategy 3: Enhance Graduate School pipeline programs to recruit talented UTSA undergraduates

Tactic 1: Recruit talented students from UTSA to participate in Provost's Summer Research Program (see Strategy 1; Tactic 3).

Tactic 2: Hosted information sessions and events to recruit UTSA juniors and seniors who have been identified as high-achieving.

- Cost: Approximately $1500
- Results: 12 events; approximately 366 attendees

Tactic 3: Financial aid outreach specialists attend recruiting events and new student orientation with the Graduate School staff members.

- Cost: Staff time
- Results: 115 events with approximately 2,233 students attending

Strategy 4: Offer graduate programs to nontraditional students at times and locations more accessible to them

Tactic 1: The majority of UTSA's master's courses are offered during evenings or weekends

- Cost: Standard operating costs for course offerings
- Results: Master's students who work or have other responsibilities during the standard working day are not prohibited from taking courses/earning a master's degree.

Tactic 2: Develop more online and hybrid courses

- Cost: Cost is staff and faculty time
- Results: This initiative is in progress

Appendix C

ABBREVIATIONS

AAALAC	Association for Assessment and Accreditation of Laboratory Animal Care International
AIA	Accountability and Institutional Effectiveness
ARRA	American Recovery and Reinvestment Act 2009
BSL	Biosafety Level
CAP	Coordinated Admission Program
CPS	CPS Energy
CRADAs	Cooperative Research and Development Agreement between a private company and a government agency
CRTS	Center for Research and Training in the Sciences
IACUC	Institutional Animal Care and Use Committee
IBC	Institutional Biosafety Committee
TSERI	Texas Sustainable Energy Research Institute
iTEC	Interactive Technology Experience Center
IRB	Institutional Review Board For Protection of Human Subjects
GAR	Graduate Advisor of Record
GS	Graduate School
LSAMP	Louis Stokes Alliance for Minority Participation
MARC	Minority Access to Research Careers
MBRS	Minority Biomedical Research Support
MOU	Memorandum of Understanding
NIH	National Institutes of Health
OSP	Office of Sponsored Programs

Appendix C (cont)

PI	Principal Investigator
POC	Proof of Concept grant program
PUF	Permanent University Funds
RCMI	Research Centers in Minority (Serving) Institutions
RCR	Responsible Conduct of Research
RISE	Research Initiative for Scientific Enhancement
SALSI	San Antonio Life Sciences Institute
SACNAS	Society for Advancement of Chicanos/Latinos and Native Americans in Science
SAMMC	San Antonio Military Medical Center
SAWS	San Antonio Water System
SFBR	Southwest Foundation for Biomedical Research
SPARC	Short Proposals to Accelerate Research Commercialization
SRPC	Strategic Resource Planning Council
SRA	Sponsored Research Agreement
STARS	Science and Technology Acquisition and Retention
STCEID	South Texas Center for Emerging Infectious Diseases
STEM	Science, Technology, Engineering, Math
STTM	South Texas Technology Management
SwRI	Southwest Research Institute
THECB	Texas Higher Education Coordinating Board
US	Undergraduate Studies
U*STAR	Undergraduate Student Training in Academic Research
VPR	Vice President for Research