

# Strategic Plan for Research 2011-2020

## *Becoming a National Research University*

University of North Texas—April 1, 2010

### EXTENDED SUMMARY

During its 120-year history, the University of North Texas has progressed from a private normal college to a large, comprehensive public research university with 12 colleges and schools, nearly 50 doctoral degree programs, and a combined annual budget in excess of \$750 million. UNT is the flagship of the University of North Texas System and the largest university in the Dallas-Fort Worth region. With more than 36,000 students, it also is the fourth largest university in Texas. It is ranked by the Carnegie Foundation as a *Research University* in the *High Research Activity Category*.

UNT faculty produce groundbreaking research in a wide range of disciplines within the sciences and engineering, and make nationally recognized contributions in the arts and humanities. UNT's research extends outside the academy as well, with field stations as close as a neighboring lake and as far away as southern Chile. In addition, UNT is developing a research park (UNT Discovery Park) with technology incubator facilities on a 290-acre property near the main campus.

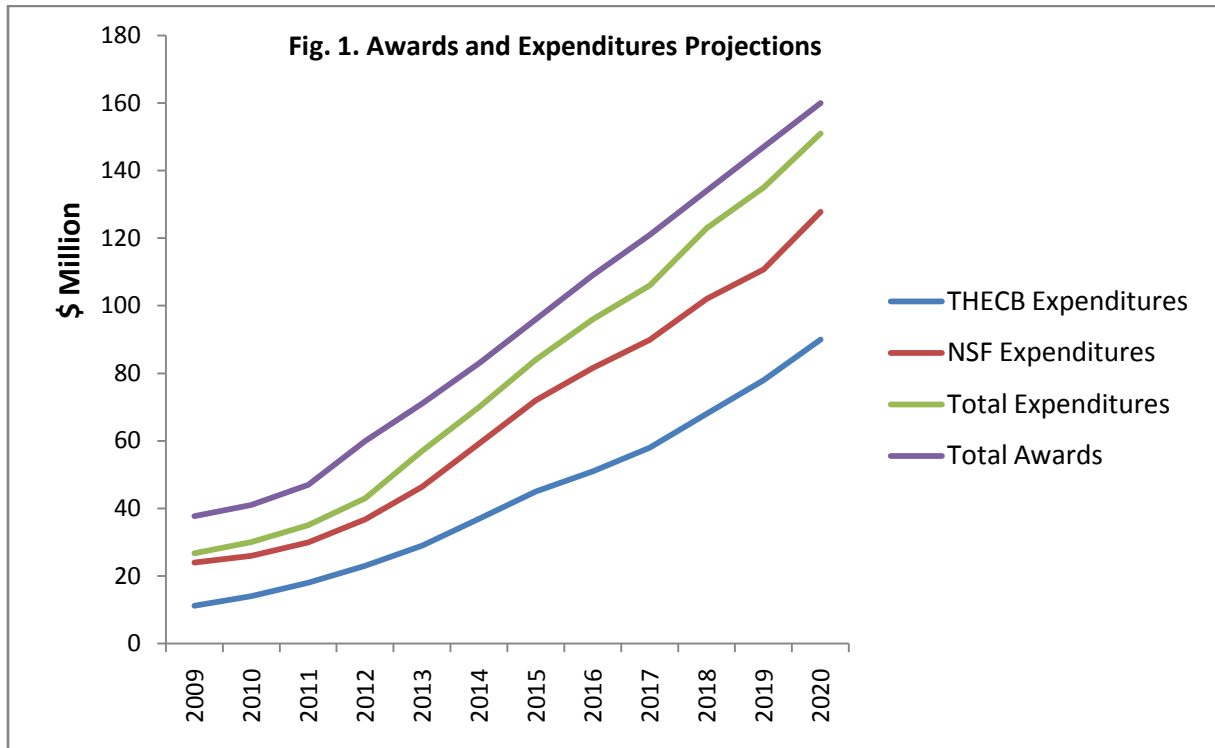
UNT, one of the seven emerging research universities in the state of Texas, is greatly energized by the opportunities created by House Bill 51, passed by the Texas State Legislature in 2009, that challenges UNT and other institutions to become national research universities. UNT has developed a long-term strategic plan to realize its vision of becoming a national research university. The university aspires to move to the Carnegie *Very High Research Activity* category. Already a comprehensive university, UNT would then be in the company of 90 percent of Carnegie *Very High Research Activity* and AAU member universities that are comprehensive and have strengths in many diverse areas.

The strategic plan for research presented here is a 10-year, two-step plan that addresses each of the seven areas in the THECB's guidelines. The first step is to meet the eligibility requirements for the National Research University Fund by 2016, and then to move forward in the second phase to reach the Carnegie *Very High Research Activity* university category. The key features of the plan are summarized below.

**Expand External Research Funding:** UNT received external funding awards in excess of \$37.6 million in FY 2009, of which \$28.03 million was derived from federal sources. Research expenditures as calculated for the National Science Foundation (NSF) Research Report were \$24.12 million, whereas the restricted research expenditures as per the THECB were \$11.24 million. These numbers indicate about 60% increase in awards and research expenditures over two years. With this as the backdrop, our future goals are:

- \$45 million in THECB restricted research expenditures by 2015, and about \$50 million in 2016, making UNT eligible for National Research University Fund (NRUF) in 2017 when the Texas legislature biennial session will be held (see Fig. 1 and Table 1).

- \$90 million in THECB restricted research expenditures and \$125 million in NSF-reported research expenditures by 2020. At this time, the external grants and contracts will rise to \$150 million. This will be comparable to some of the aspirational peers from the list of Carnegie Very High Research Activity universities.



**Table 1. Projection of Research Awards and Expenditures Compared to Aspirational Peers**

<b>Fiscal Year</b>	<b>Plan Year</b>	<b>THECB Expenditures</b>	<b>NSF Expenditures</b>	<b>% of Target Peers' NSF Average</b>	<b>% of Target Peers' NSF Minimum</b>
2009 (actual)	-1	\$11.2M	\$24.1M	9%	19%
2010 (projected)	0	\$14M	\$26M	10%	21%
2011 (goal)	1	\$18M	\$30M	11%	24%
2015 (goal)	5	\$45M	\$75M	29%	60%
2020 (goal)	10	\$89M	\$125M	48%	100%

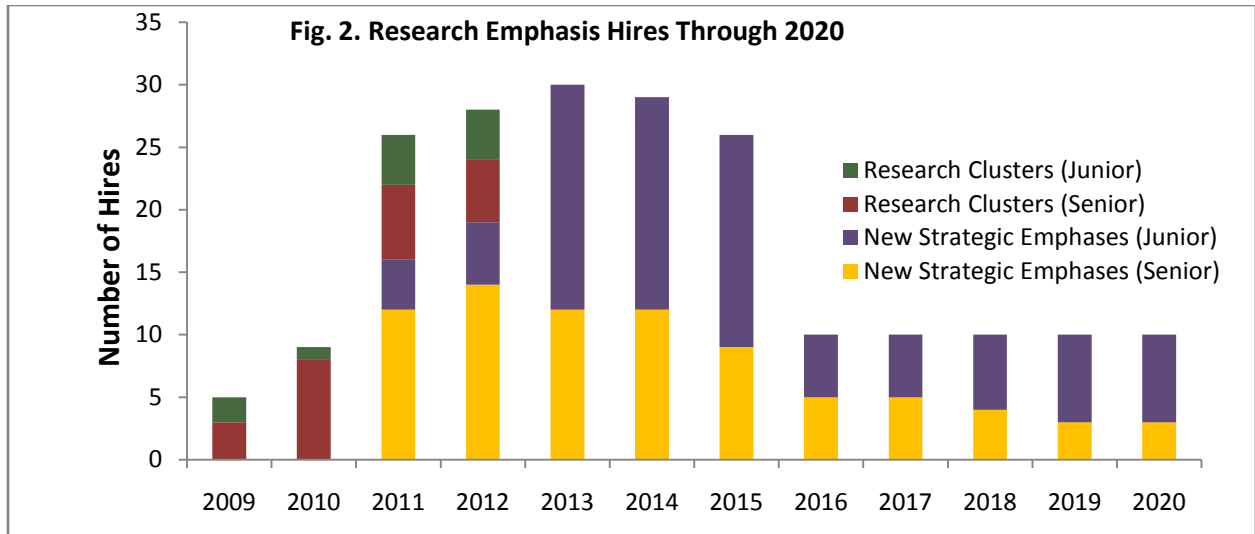
UNT plans to invest in strategic priority areas (see Table 2) that are most suited to its research expertise and infrastructure; its current and prospective partnerships with regional, national and international institutions and industry; its aspirations to be a major player in the economic development of the region and the state; and its vision of higher education for the 21st century. It is a dynamic, ambitious, and bold plan that centers on hiring more than 200 research-active faculty in the selected areas (including those in the current research cluster program) by 2020 whose external funding can contribute substantially to THECB restricted research expenditures. More than 150 of these new faculty (over 50 percent at the senior level) would be hired by 2016, and an additional 50 by 2020 (see Fig. 2 for hiring plan). These new faculty, well supported through their start-up packages and coupled with the expanded research activities of existing faculty, will enable UNT to reach its external funding goals.

**Table 2. UNT Research Emphases**

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<p><b>Next Generation Technologies</b></p> <ul style="list-style-type: none"> <li>• cyber-security and web-archiving</li> <li>• advanced materials for aerospace, biomedical, and nano-devices and applications</li> <li>• micro/nano-devices and systems for electronic, medical, and environmental applications</li> <li>• advanced technology and the arts</li> </ul> <p><b>Sustainable Endeavors</b></p> <ul style="list-style-type: none"> <li>• renewable energy</li> <li>• plant sciences and bioproducts</li> <li>• conservation, environment, and sustainability</li> </ul> <p><b>Human Decision-Making</b></p> <ul style="list-style-type: none"> <li>• disaster and emergency management</li> <li>• logistics and decision sciences</li> <li>• cognitive and behavioral neuroscience</li> </ul>	<p><b>Human Health</b></p> <ul style="list-style-type: none"> <li>• developmental physiology and genetics</li> <li>• medical informatics</li> <li>• imaging for medical, bio-identification, and geographical applications</li> <li>• pharmacology</li> <li>• music and physical health</li> <li>• forensic science</li> <li>• biomedical engineering including biomechanics</li> </ul> <p><b>Synergistic Catalysts</b></p> <ul style="list-style-type: none"> <li>• computational science and engineering</li> <li>• human-machine interaction, communication, and design</li> <li>• STEM education</li> </ul>
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Implementing this plan will certainly require significant investments in faculty salaries, accumulating to \$23.4 million in continuing funds from 2020 onward, and a total of \$170 million to be invested in these salaries from 2010 to 2020. Since faculty hiring is heavily focused on senior faculty, the start-up cost to build their laboratories and support post-doctoral fellows and doctoral students are also expected to be high, a total of about \$81 million by 2022, estimating a two year lag in expenditures of start-up packages. Therefore, the total investment in salaries and start-up packages will exceed \$250 million.

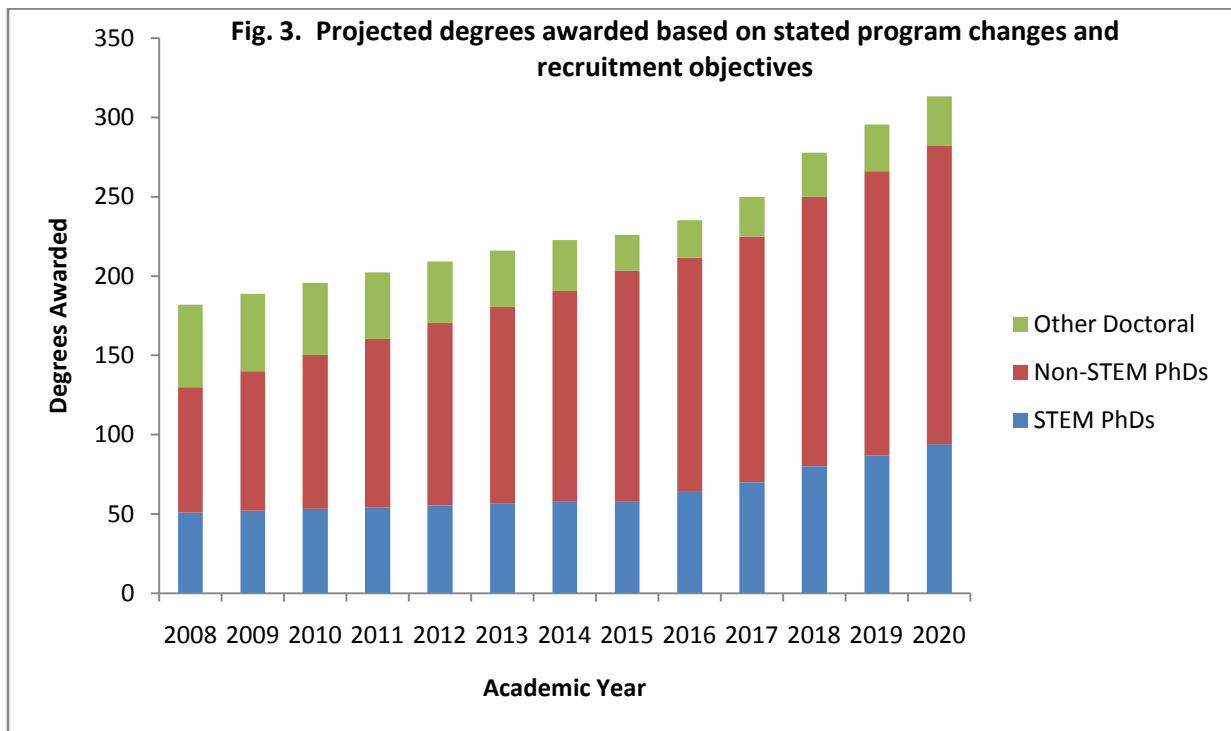
**Improve Undergraduate Education:** UNT will continue to build on its excellent reputation for high-quality undergraduate education.

- By focusing on selectivity programs for freshmen admissions, merit scholarships, and targeted recruiting, the entering freshman class will have an improved profile by 2015:
  - 75% from the top 1/3 of the high school class
  - Average SAT score of 1150
  - 95% will have advanced college preparation
- By attending to predictive progression and student services, UNT plans to:
  - Increase progression rates by 2 percent per year through 2015
  - Increase graduation rates by 1 percent per year through 2015
- Through creative course redesign tools, effective teaching evaluations, and attention to the student/faculty ratio, UNT plans to continually engage in innovative curriculum improvements.
- By capitalizing on effective recruitment and transition services for transfer students of diverse backgrounds, UNT will continue being a leader in providing access to undergraduate education and assist Texas with *Closing the Gaps*.

**Expand and Improve Doctoral Education:** UNT will continue to provide comprehensive graduate education in over 150 graduate programs. However, based on the results of a comprehensive study of existing doctoral programs, UNT will sustain the productivity of current high-quality programs through the allocation of additional resources, enhance the quality and productivity of programs through outcome-based investments, reallocate resources from low-producing programs not aligned with UNT’s strategic objectives, and create new doctoral programs in targeted STEM areas - Biomedical Engineering, Electrical Engineering, Mechanical and Energy engineering, and Pharmacology. UNT will increase funding for graduate stipends by identifying additional funds for fellowships and assistantships and by including tuition and fees for research assistants on external grant proposals. By 2015, UNT plans to increase the numbers of doctoral students supported by research grants by 50 percent; by 2020, the targeted increase is 100 percent.

UNT’s graduate programs will increase in national and international recognition for their high quality, emphasizing our growing strengths in STEM research and strong traditions in the performing arts, humanities and teacher education. UNT also plans to increase its pool of doctoral applicants, improve retention and increase selective admissions. UNT’s goals in the areas of doctoral production are (Fig. 3):

- Award 200 Ph.D.s annually by 2015
- Award 300 doctoral degrees annually (90 percent Ph.D. degrees) by 2020



**Enhance Faculty and Student Development:** UNT will focus on retention and development of high-quality faculty members through a variety of supportive and professional development resources. Student development will be enhanced by additional scholarships, fellowships and assistantships for needy as well as meritorious students. UNT will continue its highly successful efforts to promote diversity in the student body. Additionally, UNT will develop innovative ways to support faculty and students for national and international competitions, recognitions, awards, and prizes.

**Expand Research Facilities and Resources:** In addition to new construction already underway and planned reassignments, renovations, and reallocations, UNT will need to construct a 100,000 ft<sup>2</sup> trans/interdisciplinary Science and Technology Research building during the course of this plan. This new Science and Technology Research building would be located at Discovery Park. With approximately 290 acres at Discovery Park, plenty of land exists for such a building. This facility will be designed and built as a multi-phase structure so that future growth can be accommodated at the same site. Phase I (estimated 57,000-59,000 ft<sup>2</sup>) would be occupied in 2013 and paid for with institutional funds already identified to finance a loan of approximately \$55 million. Funding will be sought via the TRB process during the 82<sup>nd</sup> Legislative session to add Phase II and expand it to the full 100,000 ft<sup>2</sup>. Should TRB funding not be possible for Phase II, additional needs for research space will be accommodated by reallocations and reassignments until resources for Phase II can be identified. UNT will continue to expand and upgrade research facilities and build new laboratories, specifically in the areas of strategic priorities.

**Table 3. Reassignments, Renovations and Reallocations of Space**

Reassigned space from vacant positions	15,000 ft <sup>2</sup>
Renovated space in the Science Research building (SRB)	37,000 ft <sup>2</sup>
Renovated space in other buildings	10,000 ft <sup>2</sup>
Renovated space in vacated Business Administration building	40,000 ft <sup>2</sup>
Renovated space in Discovery Park	20,000 ft <sup>2</sup>
<b>New Construction</b>	
New Life Sciences Complex	87,000 ft <sup>2</sup>
New space for research initiatives in Business Leadership building	40,000 ft <sup>2</sup>
Planned Science and Technology Research building Phase I	*57,000 ft <sup>2</sup>
<b>Total</b>	<b>306,000 ft<sup>2</sup></b>

\*Phase II of the Science and Technology Research building would comprise 40,000-50,000 ft<sup>2</sup> and will be added if state funding can be secured.

UNT plans to significantly expand its library resources and aggressively pursue membership in the Association of Research Libraries. The Division of Advancement will align its goals with those of this strategic plan to help meet ongoing needs and to build UNT's endowment.

**Increase UNT's National Visibility:** Implementing this strategic plan will result in new avenues for UNT to gain national visibility. UNT will continue to support and promote the accomplishments of current and future individual faculty members who achieve national and international prominence. UNT will

actively develop, promote and expand its inventory of research facilities, centers and academic programs that are among the best in the U.S.

***The vision is clear. UNT will build many nationally and internationally recognized programs across the spectrum of academic degrees, research accomplishments and creative endeavors. In 10 years, a very high proportion of UNT faculty will be engaged in research and creative endeavors, both in areas for which external funding is readily available and in the disciplines for which external funding may be minimal but the intellectual contributions and doctoral production still contribute mightily. The challenging work that lies ahead to achieve this vision is invigorating and exciting to UNT leadership, faculty, students and staff. By effectively implementing this strategic plan, the University of North Texas will be recognized as one of the leading comprehensive research universities in the nation, and one day will rise to the ranks of great universities of the world.***