Thoughts on Creating More Tier One Universities in Texas
What is Tier One?

No widely accepted definition.

Some categories to consider:

- Association of American Universities (AAU)
  - “The Club” of America’s 60 top research universities
- Research expenditures > $100 M per year
- U.S. News and World Report rankings – top 50 publics
  - Combination of numeric criteria and reputation
- Texas Higher Education Coordinating Board
  - Research expenditures > $150 M per year
Why Are Tier One Universities Important?

• Economic impact
  • Example: MIT
    • Alumni have founded more than 4,000 companies employing 1.1 million people and generating $232 billion in sales – roughly equal to the economic output of Houston or DFW!
    • One great, world-class university can have an economic impact on the order of one great city
Why Are Tier One Universities Important?

- Attract research funds, venture capital, and businesses
- Attract & keep talent
- Enhance the quality of life for communities and states
- Imagine ---
  - Boston (and Massachusetts) without MIT and Harvard
  - The San Francisco Bay area (and California) without Stanford and UC Berkeley
  - Austin (and Texas) without U. T. Austin

How does Lack of Tier One Universities Hurt Texas Economically?

- Texas has 8% of the U.S. population but only:
  - 5% of federal research and development (~$2.8 B per year)
  - 5% of venture capital investment in 2007 (~$0.9 B per year)
  - Summary: If Texas had its proportional share of federal R&D and venture capital investment, it would gain **$3.7 B per year**

- Venture capital accounts for 0.2% of GDP but 10% of U.S. jobs and 18% of U.S. business revenue

- In 2007, Austin had more venture capital investment than DFW, Houston, and San Antonio, **combined**

Sources:
- Venture Capital: pwcmoneytree.com/MTPublic/mis/nav.jsp?page=notice&iden=B
- Texas Distribution of VC Data: Mr. Ron Nash’s analysis of Dow Jones Venture Source data by area code, 2007
Texas Is Losing Talent to Other States

• In Fall, 2006:
  • Texas sent 10,163 high school students to doctoral granting universities in other states
  • Texas attracted 4,358 high school graduates from other states to doctoral-granting Texas universities
  • **Texas had a net brain drain of 5,815 high school students to universities in other states in 2006**
  • The problem is worsening – the loss increased 54% from 2000 to 2006.

• Example of positive impacts from talent importation: 15% of Rice University’s undergraduates hail from Harris County, but 33% of its alumni live there

Source: IPEDS Institutional Characteristics and Enrollment Reports, 2006 and 2000
Info. on Rice U. reported in speech by Richard Fisher, Sept. 24, 2007, as reported to him by Malcolm Gillis, former Rice U. President
## Texas Lags in the Quest for Top Science and Engineering Talent

<table>
<thead>
<tr>
<th>State</th>
<th>New NAE Members</th>
<th>New NAS Members</th>
<th>Total</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>25</td>
<td>22</td>
<td>47</td>
<td>34%</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>11</td>
<td>15</td>
<td>26</td>
<td>19%</td>
</tr>
<tr>
<td>New York</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>7%</td>
</tr>
<tr>
<td>Texas</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>4%</td>
</tr>
<tr>
<td>All Other States</td>
<td>24</td>
<td>25</td>
<td>49</td>
<td>36%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>65</td>
<td>72</td>
<td>137</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Results of 2008 Elections for National Academy of Sciences (NAS) and National Academy of Engineering (NAE)*
Key Attributes of a Tier One University

1. Undergraduate student quality – indicators may include:
   - Top 10% students
   - SAT scores
   - National merit scholars

2. Quality and scope of graduate programs
   - Number of PhD degrees awarded
   - Program rankings

3. Faculty quality – indicators may include:
   - Faculty elected to one of the National Academies

4. External Research Expenditures
   - Total funding per year
   - Funding per faculty member per year

5. Alignment with other resources (industry, people, agriculture, community support, etc.)
An Example of an Issue:
Undergraduate Student Quality

Problem: Emerging Research Universities Have Too Few Top Students
One Solution: More Merit-Based Undergraduate Scholarships to Recruit Them

Source: U.S. News and World Report, 2008 Rankings
The Problem: Texas' Emerging Research Universities Are Not Nearly as Productive at Research as Tier One Universities

The Solution: More Emphasis on World-Class Research Faculty, Research Productivity, and Support for Research & Infrastructure

Source: Research funding: National Science Foundation, all research expenditures for 2005-06 academic year. Number of FTE faculty members: U.S. Department of Education/IPEDS Enrollment.
Suggested Approach – Start a Dialogue!

1. **Suggested program includes all 7 emerging research universities** – the universities earn funding by achieving criteria that are critical to being a Tier One University

2. **Matching funds** for gifts and community support:
   - Student scholarships and fellowships
   - Endowed faculty professorships and chairs
   - Research support (programs, infrastructure)
   - Pipeline programs for at-risk students and critical fields

3. **Incentive funds** for a Tier-One profile:
   - Research funding per faculty member
   - Exceptional faculty (National Academy members)
   - Research education for undergraduates
Suggested Approach (continued)

4. Universities use state funds to hire faculty, support research infrastructure, and fund other activities essential to being a Tier One University.

5. Funding must be steady – performance criteria averaged over at least two years.

6. Assumes that a small set of universities will be more successful in meeting the criteria than the others, but all emerging research universities are eligible to participate.
UT Dallas Is Well-Positioned and Focused on Science, Engineering, and Research

1. Focus requires strong undergraduate student quality:
   • 41% of freshmen in Top 10%
   • SAT scores of freshmen 1st among Texas publics
   • National merit scholars 3rd among publics
   • Graduation rate – 4 year rate = 41%

2. Focus requires strong faculty quality, especially in science and engineering:
   • Faculty members of the National Academies (4th in state among publics)
   • Graduate engineering program is ranked 3rd in Texas among publics

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3 Web Site Directories, National Academy of Sciences and National Academy of Engineering.
3. Focus requires attracting strong research support, and emphasizing research in the institutional culture:
   • Total expenditures = $46.5 M in 2007 (expected to be $56 to $58 M in 2008)
   • Research funding per FTE faculty member = $130,000 (3rd among publics)\(^5\)

4. Focus requires alignment with other resources
   • DFW is a large, vibrant, technology-intensive, globally competitive metropolitan area that needs a Tier-One University and that can support outstanding research universities

The Cost? Total Funding (State+Tuition) Per Student Per Year

<table>
<thead>
<tr>
<th>Institution</th>
<th>Total Funding (State+Tuition) Per Student Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC Chapel Hill</td>
<td>$24,690</td>
</tr>
<tr>
<td>SUNY–Stony Brook</td>
<td>$23,436</td>
</tr>
<tr>
<td>Connecticut</td>
<td>$22,392</td>
</tr>
<tr>
<td>Tennessee</td>
<td>$20,710</td>
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<tr>
<td>NC State</td>
<td>$20,356</td>
</tr>
<tr>
<td>Massachusetts–Amherst</td>
<td>$19,745</td>
</tr>
<tr>
<td>Clemson</td>
<td>$18,180</td>
</tr>
<tr>
<td>UC-San Diego</td>
<td>$18,058</td>
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<tr>
<td>Virginia</td>
<td>$17,476</td>
</tr>
<tr>
<td>Auburn</td>
<td>$17,400</td>
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<td>Delaware</td>
<td>$17,305</td>
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<td>Georgia Tech</td>
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<td>Iowa State</td>
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<tr>
<td>Missouri–Columbia</td>
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<tr>
<td>Nebraska–Lincoln</td>
<td>$16,773</td>
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<tr>
<td>Virginia Tech</td>
<td>$16,303</td>
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<tr>
<td>UC-Irvine</td>
<td>$16,006</td>
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<tr>
<td>UC Santa Barbara</td>
<td>$15,591</td>
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<tr>
<td>UC–Riverside</td>
<td>$15,398</td>
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<tr>
<td>UC Santa Cruz</td>
<td>$14,541</td>
</tr>
<tr>
<td>Kansas</td>
<td>$12,976</td>
</tr>
<tr>
<td><strong>Texas Emerging U (Average)</strong></td>
<td>$10,794</td>
</tr>
</tbody>
</table>

Emerging Research Universities Need an Additional $3,000 per Student per Year to Be Able to Compete with Tier One Universities

Annual Cost for U. T. Dallas:

- 11,000 FTE students x $3,000 = $33 million per year
Issues that Could Prohibit or Delay Ascendancy to Tier One:

- We believe that we have the quality and focus needed – we just need to grow and scale up
- We are a growing university, and competition for top students is fierce
- We will need help in constructing research buildings to accommodate growth
Summary

1. Texas needs more Tier One Universities and is paying a price in lost financial opportunity, top talent, and brain drain

2. State funding alone will not be enough to make a Tier One university

3. This proposed program would attract local and national attention —
   - Huge incentive that will increase gifts and endowments
   - Fuel private investment in research capacity
   - Stop the brain drain of students leaving the state
   - Bring more top scientists and engineers to Texas
   - Bring more Federal R&D dollars to Texas
   - Bring more venture capital investment to Texas
   - New discoveries would benefit Texans
   - Addresses need for Texans to have access to more top universities
It will take at least a decade...

- Funding by the legislature can act as an **accelerant** to the process, but won’t be all we need.
- We need the energy (and the funding) that comes from a successful fundraising campaign.
- UT Dallas will get there, despite any short term obstacles.
What’s next?

• We continue to engage in dialog with public officials and other universities.
• We raise the issue in media and other venues, publicly and privately.
• We show the University’s readiness by telling its story of excellence and growth.