

# Tickle College of Engineering Update

Matthew M. Mench

Dean and Wayne T. Davis Chair

Tickle College of  
Engineering

March 20, 2026

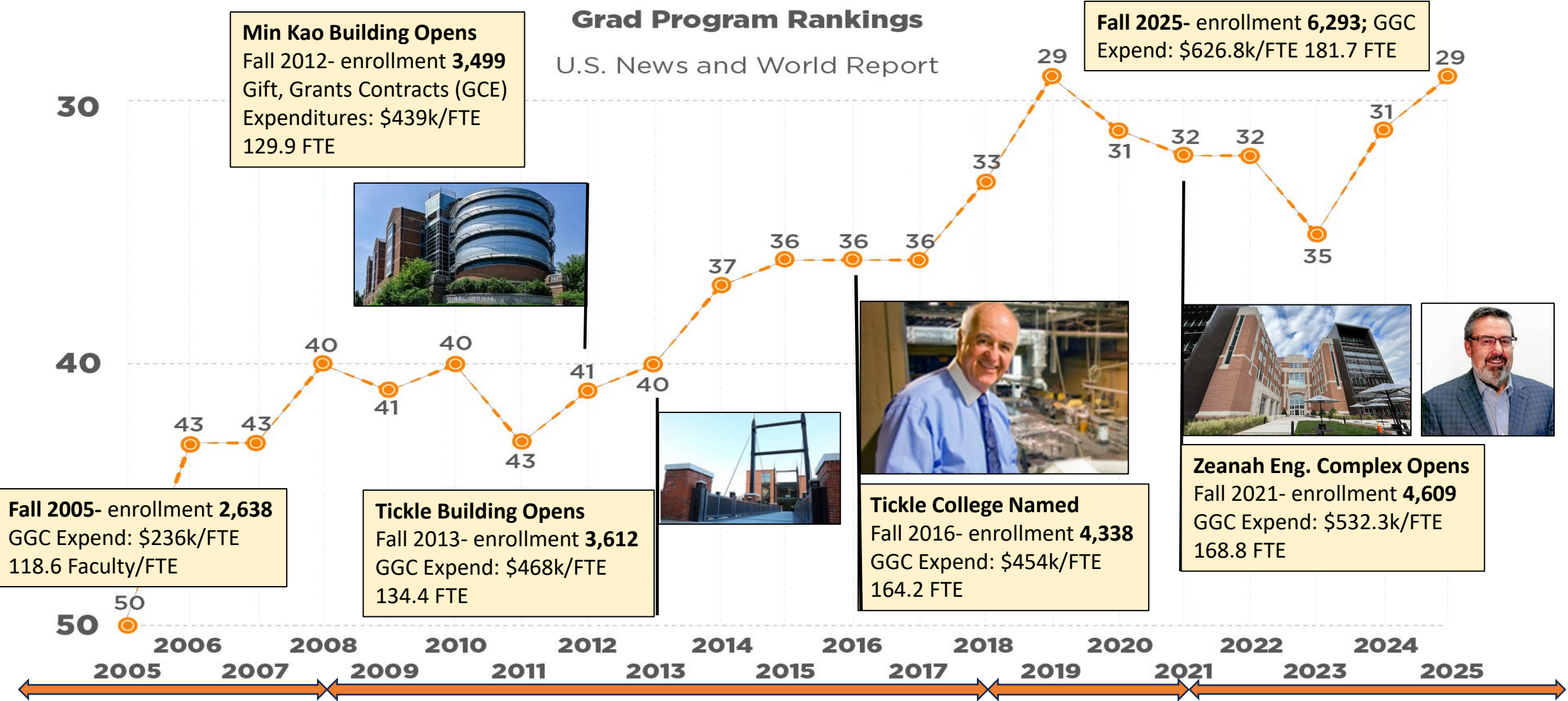
**“When someone says ‘I’m a  
University of Tennessee graduate,’  
I want people to say ‘Wow!’”**

**- Mr. John D. Tickle (BS/IE '65)**

# The Tickle College of Engineering has been on a 20 Year Roll

## Grad Program Rankings

U.S. News and World Report



**Min Kao Building Opens**  
 Fall 2012- enrollment **3,499**  
 Gift, Grants Contracts (GCE)  
 Expenditures: \$439k/FTE  
 129.9 FTE



**Fall 2005- enrollment 2,638**  
 GGC Expend: \$236k/FTE  
 118.6 Faculty/FTE

**Tickle Building Opens**  
 Fall 2013- enrollment **3,612**  
 GGC Expend: \$468k/FTE  
 134.4 FTE



**Tickle College Named**  
 Fall 2016- enrollment **4,338**  
 GGC Expend: \$454k/FTE  
 164.2 FTE

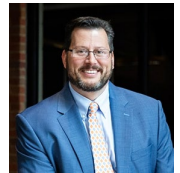


**Zeanah Eng. Complex Opens**  
 Fall 2021- enrollment **4,609**  
 GGC Expend: \$532.3k/FTE  
 168.8 FTE

 **Dean Way Kuo 2003-2008**

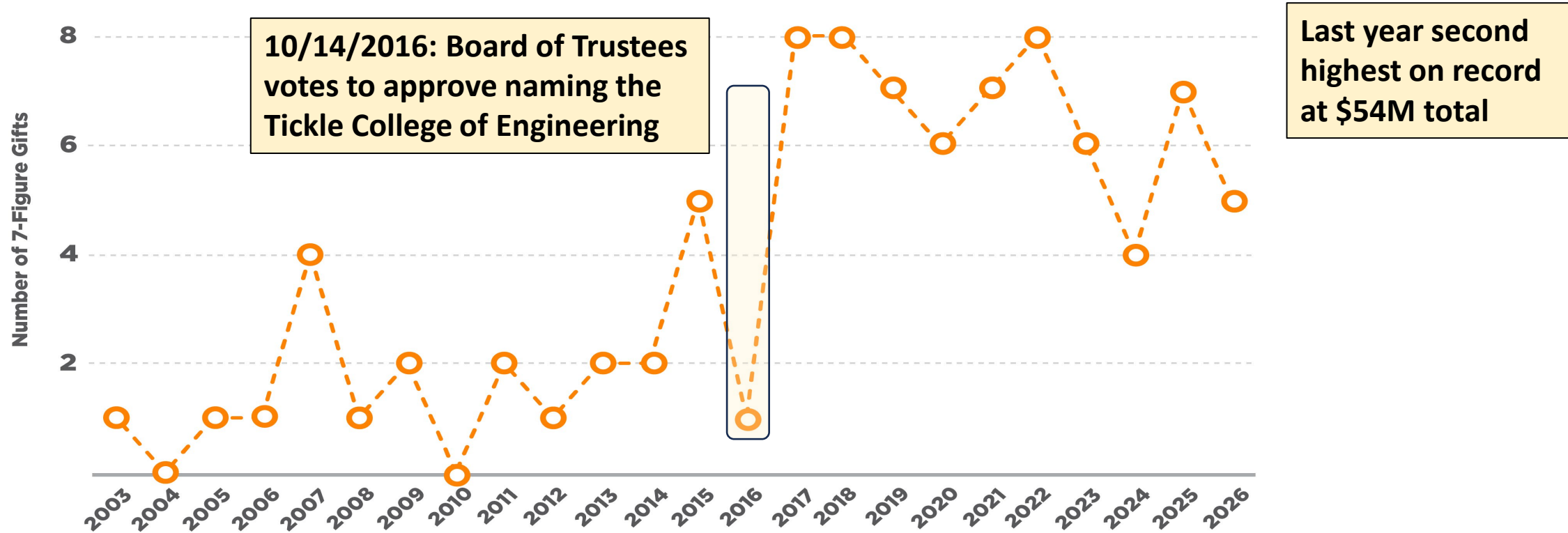
 **Dean Wayne Davis 2008-2018**

**Dean Janis Terpenny 2018-2020**  


**Dean Matthew Mench 2021-present**  


# The Impact of College Naming on Philanthropic Investment....

Number of \$1M+ Commitments to TCE by Fiscal Year



## Major Increase in Average Raised and \$1M+ Gifts

### 2008-2016:

- Average \$18.5 million
- Average of 2 gifts of \$1M+

### 2017-2025:

- Average **\$32 million**
- Average of **7 gifts of \$1M+**

- *Joseph C. and Judith E. Cook Grand Challenge Honors Program*
- *Ralph Heath Integrated Business and Engineering Program*
- *Zeanah Engineering Complex named*
- *Dwight Hutchins Expanding Access to Engineering Program*
- *Deborah Brown Summer Engineering Advancement Program*
- *Tennessee Valley Authority Department Head of NE*

# Challenges the TCE Faced in 2021

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- ▶ Stall in enrollment, student success and rankings.
- ▶ Stall in research expenditures, and need to diversify portfolio.
- ▶ Need for better coordination of industrial partnership cultivation and stewardship.
- ▶ Lack of online availability.
- ▶ Need to incorporate employer feedback into programs.



# SETTING HISTORICAL RECORDS

The Tickle College of Engineering has set historical records in the following categories:

- ✓ Undergraduate Enrollment
- ✓ Most Student Success Metrics
- ✓ Employer Engagement and Student Co-op and Internship Experiences
- ✓ Undergraduate and Graduate Degrees awarded
- ✓ Graduate Enrollment
- ✓ Online Enrollment
- ✓ Revenue

- ✓ Research Expenditures
- ✓ Research Expenditures per Faculty
- ✓ IP Disclosures, Patents Filed, Patents Issued, Start-ups Formed
- ✓ Faculty Strength
- ✓ College Overall Rank
- ✓ Online Ranking
- ✓ Multiple Program Ranks



**From FY2021 to 2024, the total revenue into the TCE is up by \$35.4M. Over the same time, direct expenditures were up only \$18.9M.**

# We are Both Bigger *and* Better

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- **Lowest UG “still seeking”** after graduation on record 2.5% (BME, CompE, EE, ISE, MSE at 0%), and paid > national average (4.1% for 2023 data)
- **#1 in the SEC** and top 10 nationally in publication related metrics
- **USNWR graduate public ranks at record levels**
  - Overall TCE **#29**
  - Nuclear **#2....Modern Record**
  - MSE **#21**
  - ISE **#26**
  - Online Programs **#21**

1957

## **Department of Nuclear Engineering is established**

The Department of Nuclear Engineering is established, becoming the first Department of Nuclear Engineering in the United States. Pietro Pasqua served as its first department head until his retirement in 1987. Its graduate program is consistently ranked as one of the top in the nation by U.S. News and World Report.



# How Did We Have This Success?

**Great Support from the University and State, Great People, a LOT of Strategic Alignment and Some Good Timing.**



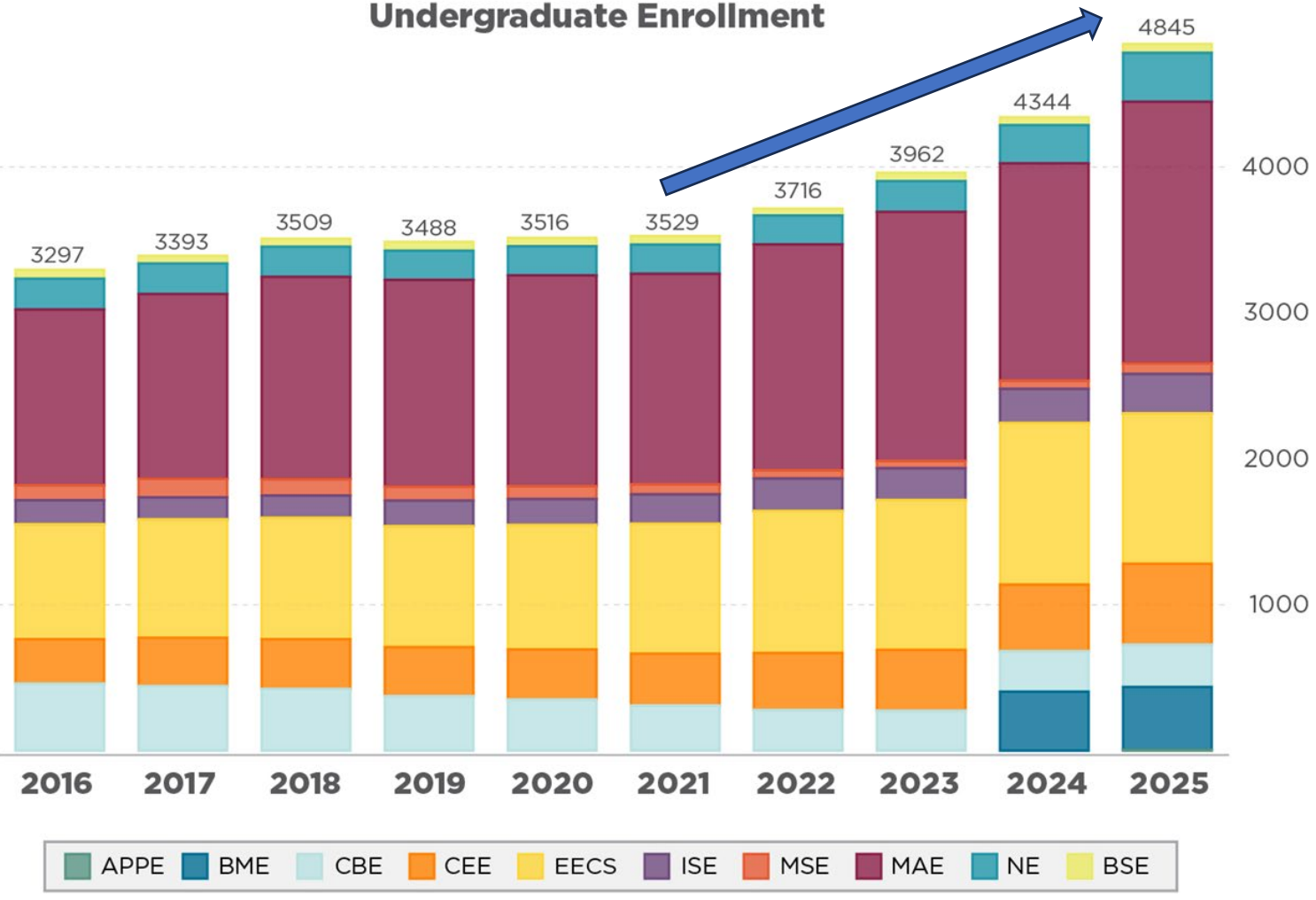
**52 - 49**

# Challenges the TCE Faced in 2021

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## Undergraduate Enrollment



TCE UG Enrollment up 37% since 2021. Nationally in engineering up 0.4% from 2021-2023 and 6.1% in 2023-2024

**TCE UG Applicants up 95% since 2021**  
**Nearly 1,500 GR students also up 34%**

Year	TCE UG Applicants (data.utk.edu)
2019	3,363
2020	3,650
2021	3,973
2022	4,548
2023	6,176
2024	7,440
2025	7,735

### Tickle College of Engineering Freshmen Retained or Graduated from UTK

Degree	Metric	Outcome	Note
Fall 2024	One-year Retention	92.7%	Highest Ever
Fall 2023	Two-year Persistence	88.6%	Highest Ever
Fall 2022	Three-year Persistence	83.3%	Second Highest
Fall 2021	Four-year Graduation	51.4%	Highest Ever
Fall 2020	Five-year Graduation	74.1%	Highest Ever
Fall 2019	Six-year Graduation	76.5%	Highest Ever

# Challenges the TCE Faced in 2021

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# Strategic Investment in National Security Related Research

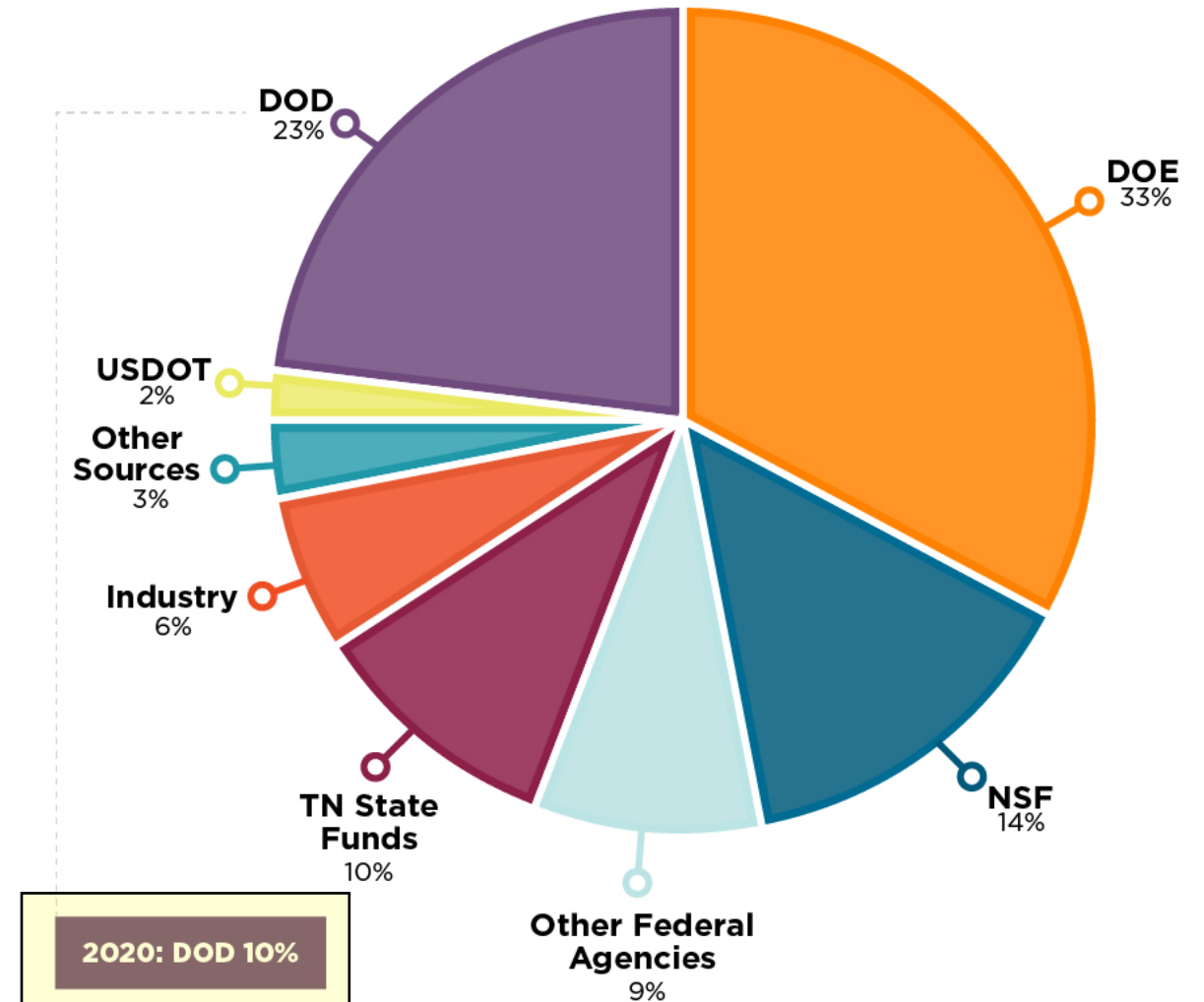
## Why?

- ▶ **High demand:** National and regional
- ▶ **We have established excellence:** in advanced manufacturing, metallurgy, and nuclear materials.
- ▶ **Unique workforce:** We have dozens of cleared faculty and high % of US citizens relative to other schools.
- ▶ **Strategic Access:** UTK close to ORNL, Y-12, Nuclear Renaissance, UTSI is close to Huntsville.

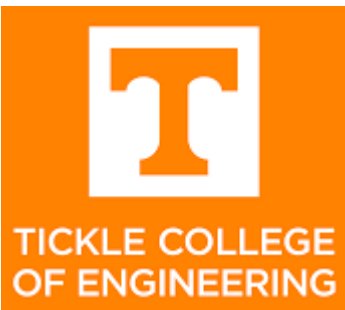
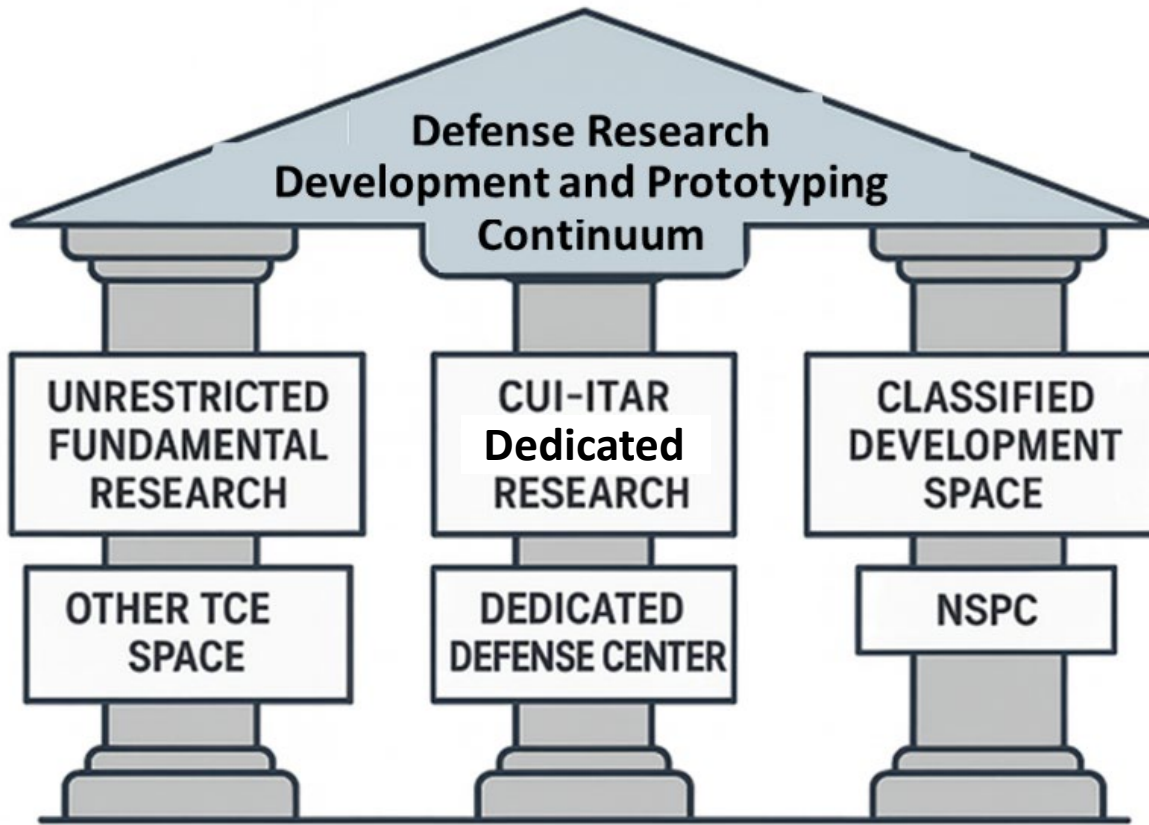
## What?

- ▶ Invest in TCE DoW research development office
- ▶ Invest in TCE DARC Center
- ▶ Expand Y-12 partnership
- ▶ Invest in UTSI Huntsville research office
- ▶ Recruit faculty suited for this work at UTK and UTSI

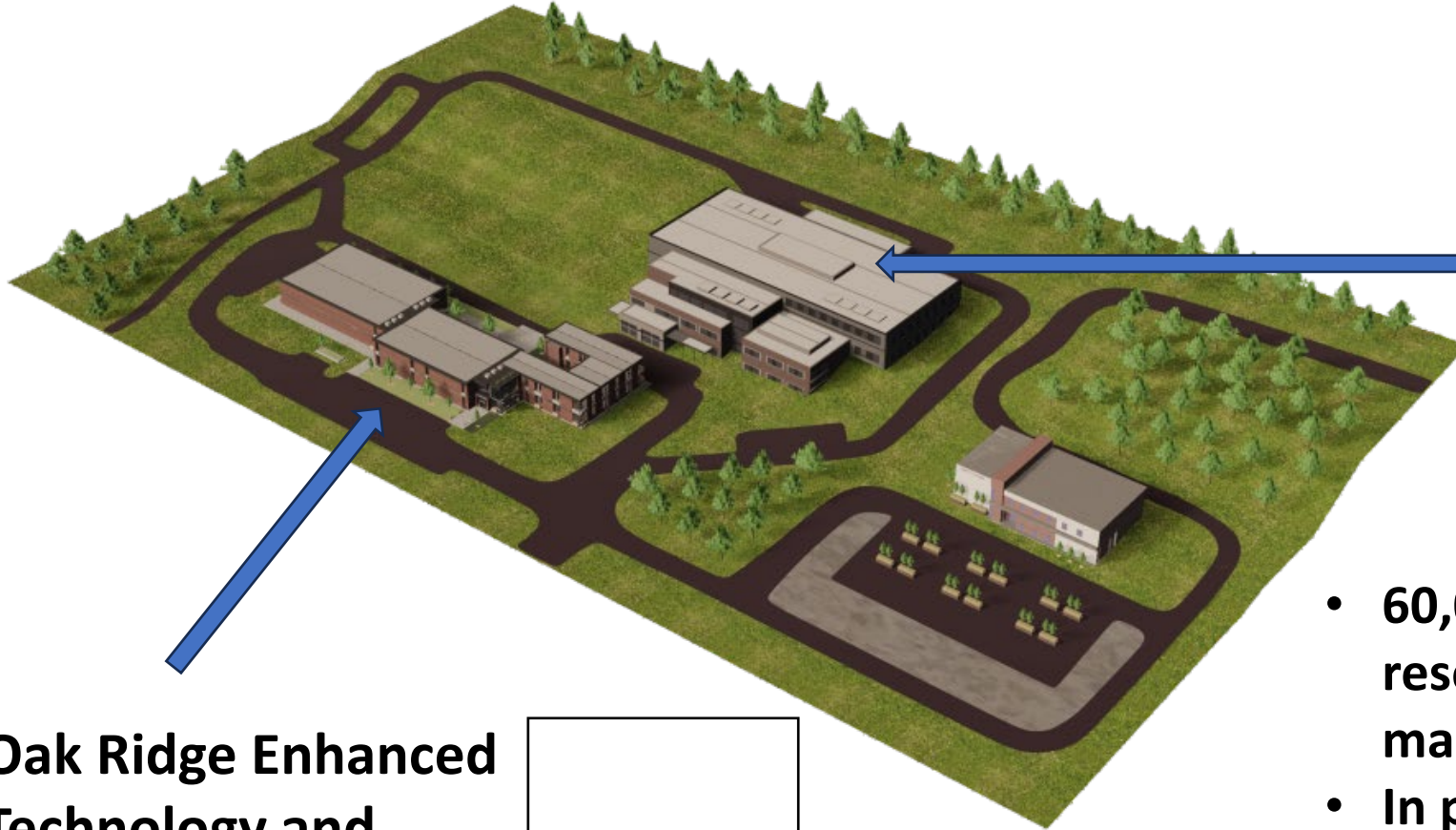
2025 Research Expenditures by Source



# Unique Research Infrastructure for Advanced Manufacturing



# New NSPC in Development (2027 completion)



## Oak Ridge Enhanced Technology and Training Center (ORETTC)

– Roane County's Nuclear Innovation Campus

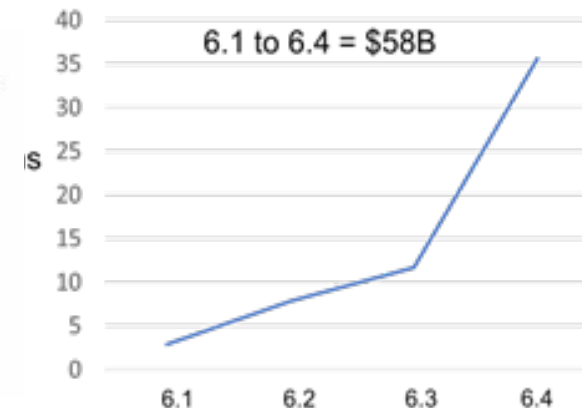
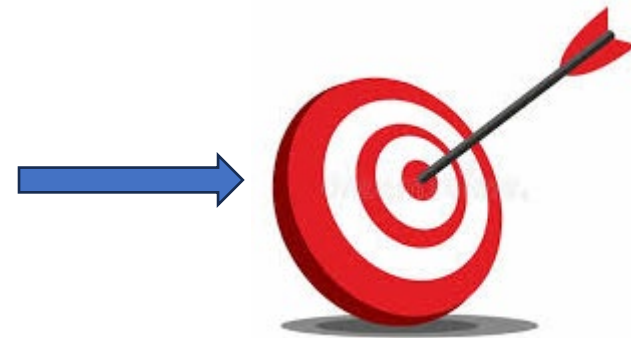


- 60,000 ft<sup>2</sup> NSPC facility for classified research and development related to manufacturing and evaluation.
- In process of hiring joint Y-12/UTK faculty.
- Just awarded joint seed project/grand challenge projects.
- Will also include expanded educational partnership.

# Defense Development and Applied Research Center (DARC)



- Developing relationship with ARL for 5 years, aimed at developing into regional center of excellence or University Affiliated Research Center (UARC) which can be \$10-50M/yr.
- Aimed at higher Technology Readiness (TRL) Level work in CUI-ITR space.
- Working with 278<sup>th</sup> Armored Cavalry of TN National Guard and 101<sup>st</sup> Airborne in Ft. Campbell.
- Participating in support role in RIMPAC field exercises this summer, have parts in field now.



Budget Activity
6.1 Basic Research
6.2 Applied Research
6.3 Adv. Technology Development
6.4 Adv. Component Development & Prototypes

# Challenges the TCE Faced in 2021

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# Creating a Strategic Partnership Continuum

## Visionary



**EASTMAN**

Blue Water Partners, LLC

**ExxonMobil**

**GARMIN**

Kairos Power

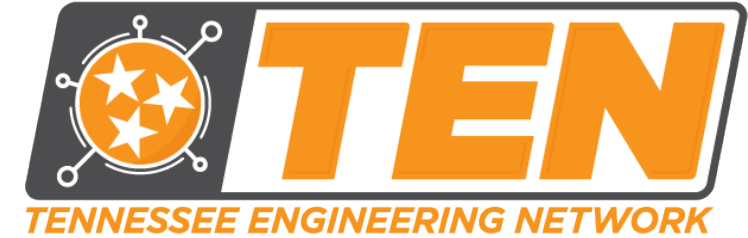
**TVA** TENNESSEE VALLEY AUTHORITY

**VITRINITE** BRIGHTER COAL

## Checkerboard



## Summit Blue



- New Matrix Position: Sr. Director of Corporate Partnerships.
- Starting point across college for corporate connectivity.
- New TEN Network Partnership program started, fully subscribed with 100% first year renewal and waiting list.

**New TVA Endowed Department Head in Nuclear Engineering announced Fa 2025**

# Expanding Co-op, Internships, and Job Opportunities for Students



- Reported student Co-op or Internships up 340% since 2021
- Corporate Attendance up 89% since 2021
- Record company Fall 25 Expo attendance: 239 (+35.8% YOY)
- Record Fall 25 on-site interviews: 361 (+42.6% YOY)
- *Employer feedback: high student preparedness; strong recruiting alignment*



# Challenges the TCE Faced in 2021

- ▶ Stall in enrollment and student success.
- ▶ Stall in research expenditures, decline in rank and need to diversify portfolio.
- ▶ Need for better coordination of industrial partnership cultivation and stewardship.
- ▶ Lack of online availability.
- ▶ Need to incorporate employer feedback into programs.



# Online Program Growth and Recognition

- Online programs are surging with great reputation
- New programs: Online MS in Computer Science and Cybersecurity, Engineering Management, and Doctor of Engineering Degree.

## Online Program Enrollment

	<i>Online Program Enrollment Percentage</i>						
<b>Degree</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>MS</b>	18.5%	22.3%	23.4%	26%	32.6%	42.7%	<b>47.3%</b>
<b>DEng</b>	—	—	—	—	—	96.4%	<b>100%</b>
<b>PhD</b>	1.5%	2.7%	3.6%	4.4%	4.2%	4.1%	<b>3.3%</b>
<b>Overall</b>	<b>7.6%</b>	<b>9.3%</b>	<b>10.8%</b>	<b>12.4%</b>	<b>16.4%</b>	<b>24.1%</b>	<b>27%</b>

# Challenges the TCE Faced in 2021

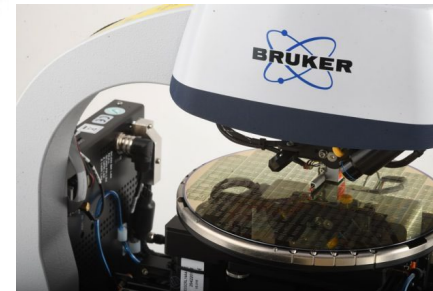
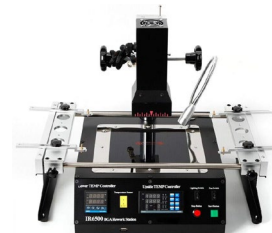
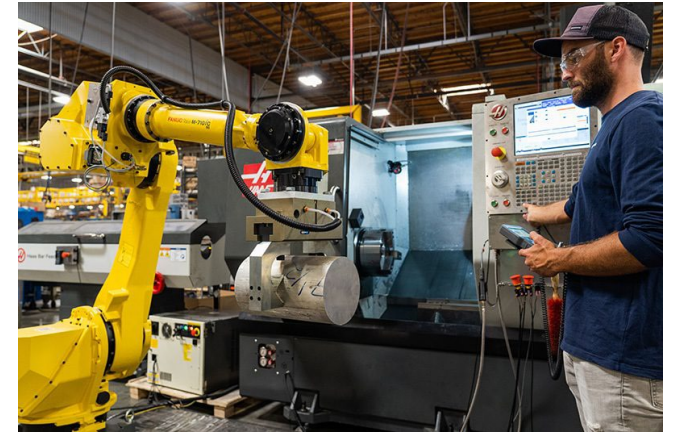
- ▶ Stall in enrollment, student success and rankings.
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- ▶ Need to incorporate employer feedback into programs.

# A Nationally Unique Approach to Meeting our Mission

- ▶ **The Problem:** Reduced Classroom exposure to engineers with practical experience.
- ▶ **A Nationally Unique *Applied Engineering Program***
  - Non-TT faculty that are professors of practice
  - Curriculum designed to emphasize hands-on learning and critical thinking with modern labs, upgraded software and facilities, more design-build-evaluate learning.
  - Focus areas in manufacturing, CS, and aerospace with AI and automation.
  - *Required* Co-op/internship.
  - All have Reliability and Maintainability minor.
  - Faculty teach in AppE and across the college, labs available to whole college.
  - *NOT engineering technology*: same level of math training, will be same level of ABET accreditation.
- ▶ **First class in Fall 26, Fully engaged Industrial Advisory Board, tremendous interest from employers and > \$1.2M in donations.**



## The Last Five Years Has Seen Tremendous Success

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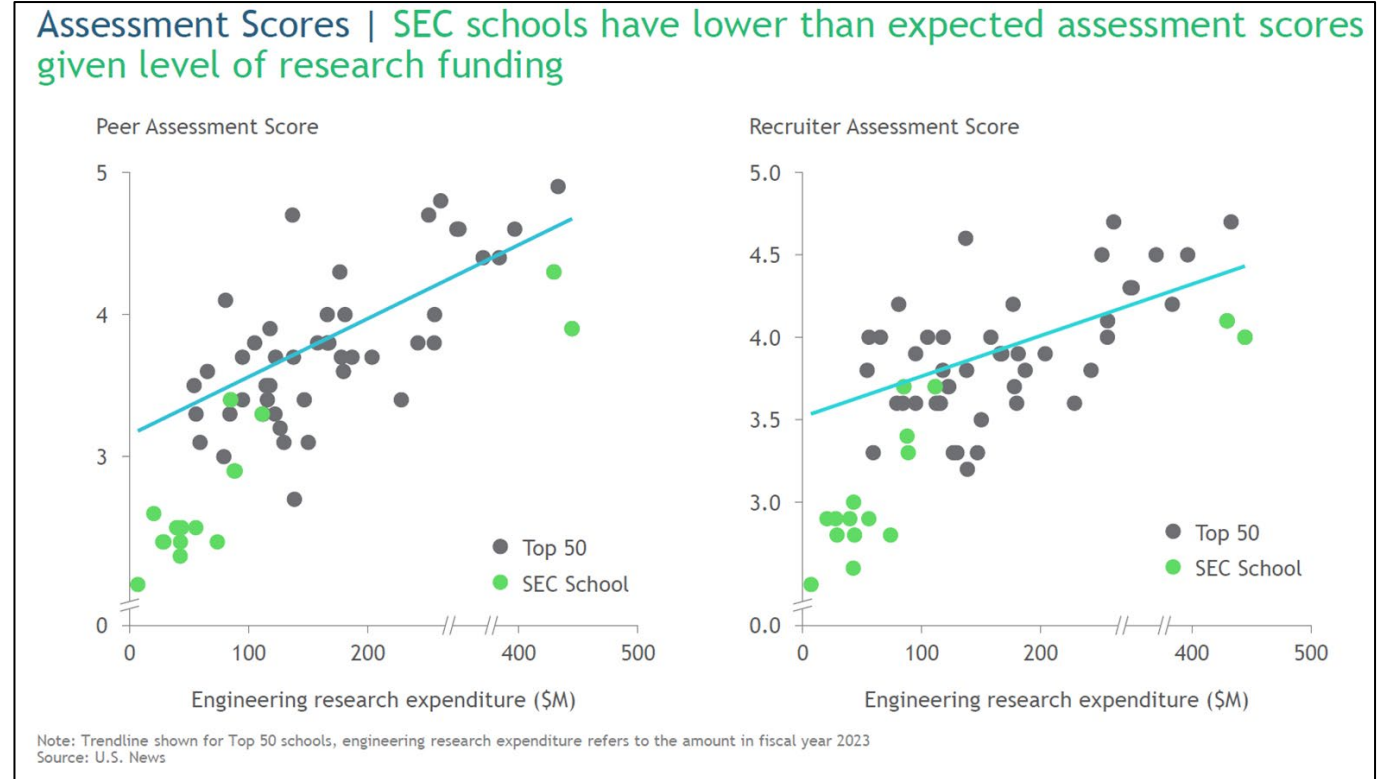
- Records in most measured metrics and ranks, and strong demand for our students.
- Applied Engineering and Biomedical Engineering Departments successfully launched.
- Rapid online program growth.
- Transformational partnership with Y-12.
- Tremendous growth in DoW relationship and DARC launch.
- Strategic alignment between TCE and national research priorities.
- Strong financial performance.

**...So what does the *next* level look like???**

# Major Challenges the TCE Faces

For the first time, the TCE has a realistic path to become a Top 20 program but:

- 1) our reputation must improve..how do we break free from the pack?
- 2) we need to continue to grow faculty size, and
- 3) we need more modernized facilities and the best students



# Fundraising Campaign Goal - Find the Best

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Data show 18% of our top applicants choose elsewhere because of money. We want the best students and to provide access to a world-class experience and education.

**We want to extend the UT Promise Program to the Tickle College of Engineering up to \$100,000 of have an adjusted gross income, topping off the TN Promise of \$75,000.**

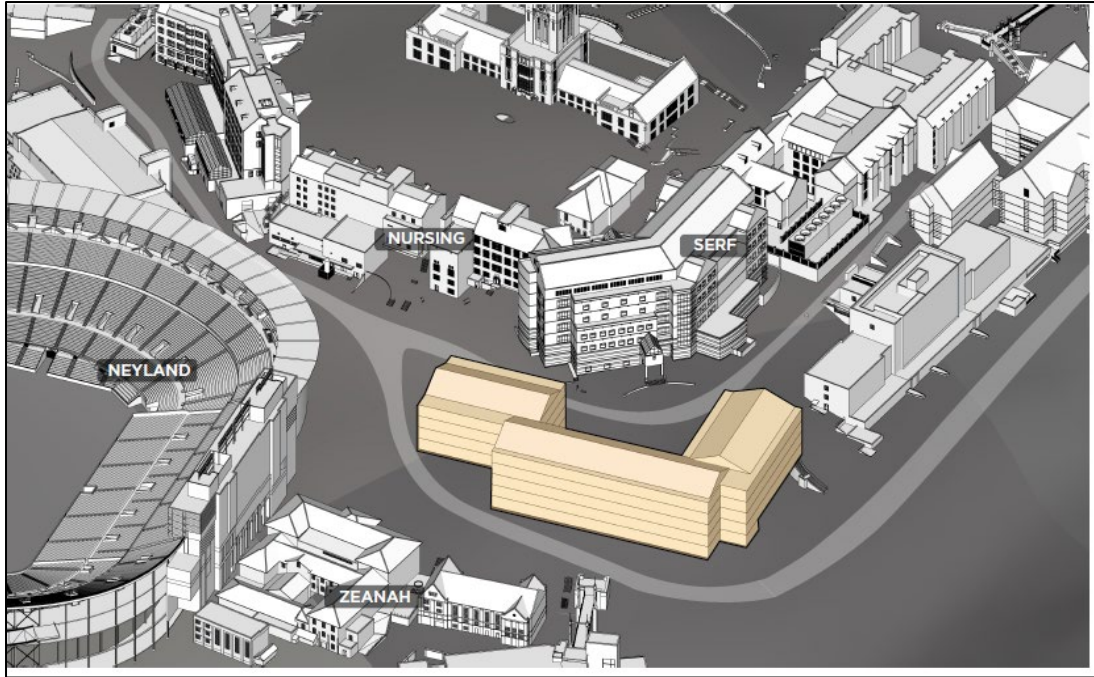
# Aspirant Colleges of Engineering (Top 10-20 public grad by USNWR)

Public Rank	School Name	Overall Rank	TCE Public Rank In Metric												
			8	16	4	3	33	32	29	35	35	26	68	50	41
			Citations Per Pub	Field Weighted Citation Impact	Pubs Cited in Top 5% of Journals	Pubs Cited in Top 25% of Journals	Research expenditures (in millions)	Research expenditures per FTE (thousands)	Total FTE	Peer Assessment score	Recruiter Assessment Score	Doctoral degrees granted	Acceptance rate (doctoral)	% of full-time tenured or tenure-track faculty in NAE	Doctoral stud/faculty ratio
10	University of Maryland	18	17.4	1.63	26.30%	67.50%	\$284.08	\$1,004	283	3.8	3.8	159	11.90%	5.90%	4.3
11	University of Washington	20	20.2	1.97	31.80%	73.20%	\$193.36	\$647	299	3.7	3.9	182	10.80%	4.30%	3.8
11	University of Colorado--Boulder	20	13.3	1.36	26.30%	73.00%	\$196.72	\$1,277	154	3.6	3.6	164	23.30%	6.40%	7.0
13	University of Wisconsin--Madison	27	15.4	1.49	25.00%	69.20%	\$181.60	\$580	313	3.9	3.9	153	19.50%	1.30%	3.5
13	North Carolina State University	27	13.1	1.34	23.50%	65.30%	\$258.54	\$665	389	3.5	3.5	233	21.40%	3.40%	3.4
13	Ohio State University	27	13.0	1.48	21.70%	66.30%	\$207.10	\$734	282	3.8	3.8	173	32.50%	3.10%	3.8
16	University of California--Snt Barbara	31	16.8	1.56	26.20%	71.90%	\$118.15	\$782	151	3.5	3.6	118	19.30%	10.30%	3.8
16	Pennsylvania State University	31	12.9	1.42	25.00%	67.80%	\$160.30	\$383	419	3.8	3.8	245	20.70%	1.50%	4.0
16	Virginia Tech	31	11.9	1.40	23.10%	66.50%	\$174.86	\$438	399	3.8	4	219	27.50%	1.00%	3.3
19	University of California--Davis	34	12.5	1.47	22.30%	70.00%	\$138.99	\$803	173	3.6	3.8	132	18%	1.70%	4.2
20	University of Minnesota	36	15.0	1.39	22.30%	74.90%	\$147.56	\$455	324	3.7	3.8	194	23.60%	2.30%	3.4
29	University of Tennessee	52	19.3	1.70	31.50%	74.70%	\$99.23	\$520	191	2.9	3.3	121	34.30%	1.00%	3.1
		<b>Ave (10-20)</b>	14.7	1.50	24.86%	69.60%	\$187.4	\$706.2	290	3.7	3.8	179.3	20.77%	3.75%	4.0
		<b>Difference</b>	4.62	0.20	0.07	0.05	-\$88.2	-\$186.2	-99	-0.8	-0.5	-58	-13.53%	-2.75%	-0.9
		<b>USNWR weight</b>	3.0%	3.0%	2.5%	1.5%	25.0%	15.0%		12.5%	12.5%	9.0%	5.0%	5.0%	6.0%

**The TCE has a viable path to the Top 20 in USNWR Rank with further progress**

- Size is directly related to 41% of rank.**
- Trendline of rank = f(FTE) shows 31 more faculty to get to Top 20, 95 more to top 10.**
- Our peer perception still lags our metrics.**

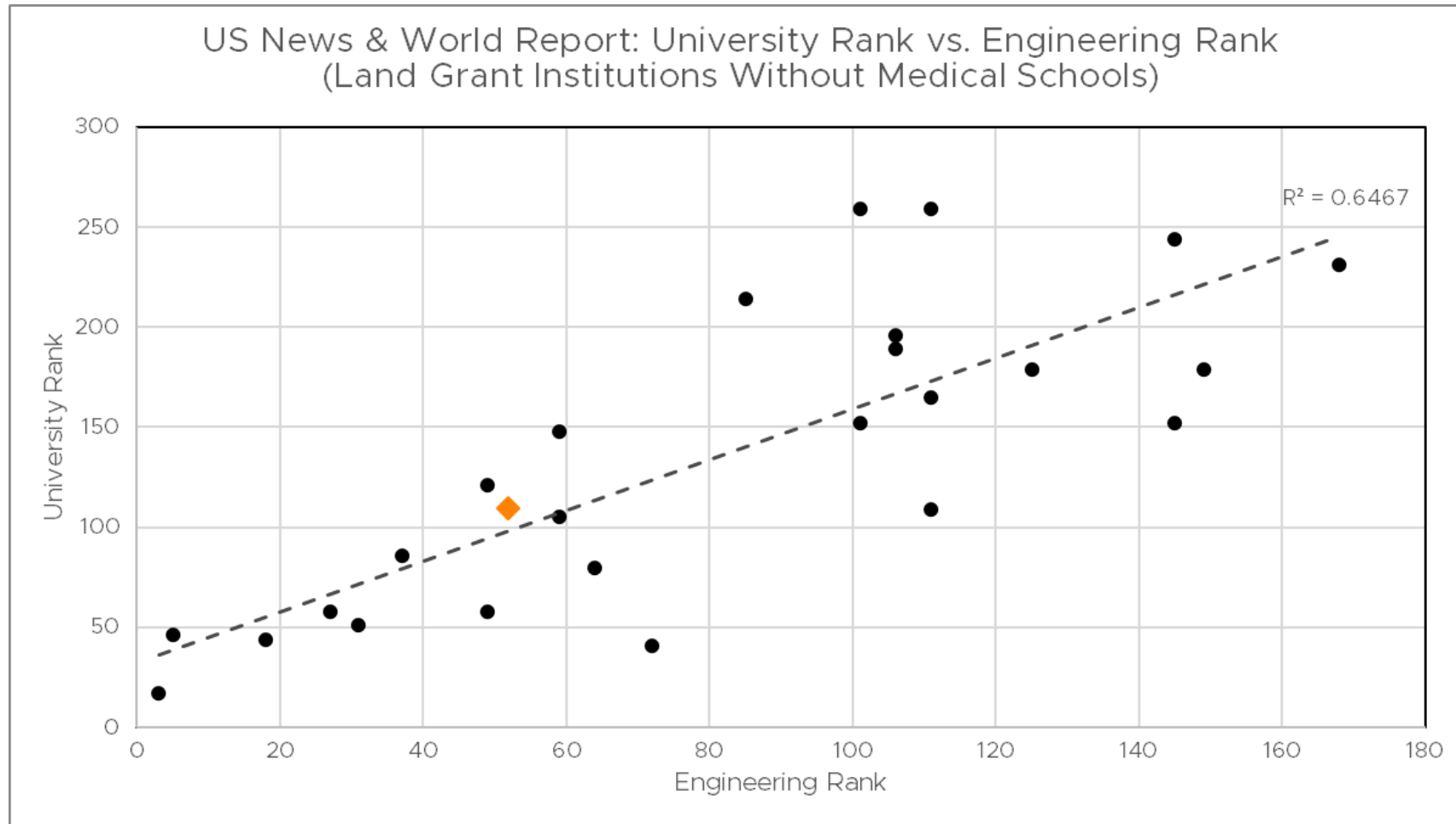
# Goal to Replace Perkins (78 yr old) and Ferris (96 yr old)



- NE rank went to #2 public after ZEC opened.
- ISE (up 13 spots) and CEE (up 8) rank since Tickle Building opened in 2013.
- MSE rank jumped with IAMM in 2015 (up 12).
- MAE is in very old facilities.
- New home for MAE would create space for modern engineering education, boost rank for college, allow space needed to reach top 20, and provide room for Applied Engineering and UTORII to grow.



# Value Added to Tickle College and University Prestige



**Facilities Matter in Engineering Rank, and our Largest Department (plus AE and CheE) are in Very Old Facilities.**

# The Transformation Taking Place

- ▶ The TCE has been on a long-term ascension, with transformative impact from Mr. John Tickle.
- ▶ The TCE is now in the best position it has ever been.
- ▶ There is a viable path to a Top 20 program. – we will have to overcome facilities limitations, a reputation lag, and continue to responsibly grow.
- ▶ The college has tremendous departmental leadership in place, tremendous support from the university, system, its alumni and strong demand from the state to continue to grow.

