

A Path Forward for Research Supporting Top 25

WORKING DRAFT

Presentation to Top 25 Research Advisory
Committee

February 20, 2013

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Approach

- Feedback from AVP Melissa Shivers (1/11/13)
- Feedback from Chancellor Cheek (1/18/13, 2/1/13)
- Feedback from Cabinet retreat (1/31/13)
- Feedback from Top 25 ITL (2/15/13)
- Seeking feedback from Top 25 Research Advisory Committee (2/20/13)
- Seeking feedback from SMT (2/20/13)
- Will seek further feedback from Cabinet (3/4/13)
- Will seek feedback from others, as appropriate

Top 25 Research Advisory Committee

Original Members (when Dr. Wes Hines was Chair):

Susan Ballentine, Chris Boake, Chris Cimino, Bill Dunne, Paul Montgomery, Margie Nichols, Greg Reed, Carol Tenopir, Dave Washburn

New Additional Members:

Bill Brown, Marc Gibson, Lee Han, Dave Irvine, Tom King, Tony Mezzacappa, Sally Morris, Stacey Patterson, Bob Porter, Charlie Senn, Melissa Shivers, John Zomchick

Some Critical Questions

- Working with our current primary metrics (especially research expenditures) and goals, how do we identify appropriate and accountable action items that can be measured over time that actually grow these metrics?
- Are there ***secondary*** metrics, goals and action items that are also needed that help build research reputation and the research enterprise; especially those common measures of quality?
- How do we integrate, as appropriate, these with the prior two years of excellent work?
- How to align, as appropriate, with UT System metrics?

From *Tennessee Today*, November 14, 2012

“US News focuses solely on undergraduate education. Our goals for this university ***are broader and include research and graduate education*** which are core to making us a better university overall,” Cheek said. “They are also critical to the state’s economy, job growth, and are needed for a more educated workforce.”

From *VOL Vision: The Pursuit of Top 25*, January 19, 2011

“Implementation plans in support of each strategic priority include detailed goals, objectives, tactics, and assessment plans. Throughout the strategic planning process, focus will remain on closing the “gaps” between UTK and Top 25 institutions. The key metrics that will be targeted for closing these gaps are listed below, although ***additional metrics will be considered, where appropriate, to target broader goals.***”

Background

- Appendix A contains a description of the 12 current research action items
- Appendix B contains a detailed examination of research university ranking metrics
- Appendix C contains a careful analysis of peer research university rankings using many metrics
- Further analyses are underway and will inform this effort; especially with respect to 2023 goals
- Mapping prior efforts (the current 12 action items) to this evolving effort is not fully complete

Current Top 25 Research-Related Metrics and Goals (primary)

Existing Area Of Focus	Existing Primary Metric	Original Goal 2010	2012	Original Goal 2015	Original Goal 2020
Grad Ed	Ph.D.s Graduated	277	270	360	486
Grad Ed	MS & Professional Graduated	1,845	1,726	2,000	2,130
Research	FRE, \$M	70	109	105	182
Research	TRE, \$M	165	208 (170)	247 (?)	427 (?)
Faculty	Undergraduates/Faculty	20	20	?	?
Faculty	Awards	10	10	?	32
Resources & Infrastructure	T&SE/Student	16,100	17,698	?	25,898
Resources & Infrastructure	Endowment/Student	14,380	16,250	?	40,250

Possible New Approach

Existing Area Of Focus	Primary Metric (Existing or New)	Secondary Metric (Existing or New)	New Action Items	Goals as a Function of Time	Will It Map to Current Action Items?
Research	Increase TRE (E)	<ul style="list-style-type: none"> - Federal (N) - State & Local (N) - Business (N) - Institution (N) - Not-for-Profit (N) 	Many possible	Yes, annually, 2014-2025, with primary responsibilities assigned	R4, R5, R6
Research	Increase FRE (E)	<ul style="list-style-type: none"> - NSF (N) - DOE (N) - DOD (N) - Other agencies (DHS, NIST, DOT) (N) - HHS (N) - NASA (N) - USDA (N) 	Many possible	Yes, annually, 2014-2025, with primary responsibilities assigned	R5, R6

Possible New Approach

Existing Area Of Focus	Primary Metric (Existing or New)	Secondary Metric (Existing or New)	New Action Items	Goals as a Function of Time	Will It Map to Current Action Items?
Research	Space (N)	Research space (N)	Many possible	Yes, annually, 2014-2025, with primary responsibilities assigned	R11
Research	Facilities (N)	Core Facilities (N)	Many possible	Yes, annually, 2014-2025, with primary responsibilities assigned	R10, R12
Research	Infrastructure (N)	Enterprise Systems (N)	Many possible	Yes, annually, 2014-2025, with primary responsibilities assigned	R10, R12

Possible New Approach

Area Of Focus	Primary Metric (Existing or New)	Secondary Metric (Existing or New)	New Action Items	Goals as a Function of Time	Will It Map to Current Action Items?
Faculty	Increase Awards (E)	<ul style="list-style-type: none"> - CAREER (N) - Fulbrights (N) - NEH Fellows (N) - Guggenheims (N) - AAAS (N) 	Many possible	Yes, annually, 2014-2025, with primary responsibilities assigned	See T25 Faculty
Faculty	Increase FTE (N)	<ul style="list-style-type: none"> - GCs (N) - New Hires in COE (N) - National Academy members (N) 	Many possible	Yes, annually, 2014-2025, with primary responsibilities assigned	See Top25 Faculty
Faculty	Professional Development (N)	<ul style="list-style-type: none"> - Development Training (N) - Transdisciplinary (N) - Engaging DC (N) - Celebrating Excellence (N) 	Many possible	Yes, annually, 2014-2025, with primary responsibilities assigned	R1, R2, R3, R9

Possible New Approach

Area Of Focus	Primary Metric (Existing or New)	Secondary Metric (Existing or New)	New Action Items	Goals as a Function of Time	Will It Map to Current Action Items?
Graduate Education	Ph.D.s graduates (E)	Number of RAs supported externally	Many possible	Yes, annually, 2014-2025, with primary responsibilities assigned	See T25 Grad Education
Other TBD	?	- ?	?	?	?

Thoughts?

All input is welcome!

Appendix A

Current Top 25 Research Action Items

UTK Action Items for Research Within the Plan

Action Item	Initiative (Lead)	R1 Specific Action Plan Steps
R1	Research Services (G. Reed)	<ul style="list-style-type: none"> (a) Formalize funding for search engine (b) Prepare more faculty with advanced proposal writing skills (c) Formalize funding for Director of Foundation and Corporate Relations position (d) Establish and publish performance metrics

UTK Action Items for Research Within the Plan

Action Item	Initiative (Lead)	R2 Specific Action Plan Steps
R2	Communications (G. Reed, M. Nichols)	<ul style="list-style-type: none"> (a) Identify key external audiences and target messages (b) Advertise in targeted publications (c) Increase support for professional design and content creation for research web sites (d) Enhance UTK's image at high profile conferences through branding (e) Build on the power of social media and continue relationships with traditional media (f) Implement a "research success awareness" campaign

UTK Action Items for Research Within the Plan

Action Item	Initiative (Lead)	R3 Specific Action Plan Steps
R3	Government Relations (W. Hines, P. Montgomery)	(a) Develop policy to connect researchers with UTK's GR firm (b) Arrange visits in DC for discussions with agency program officers (c) Assist with appointments to agency advisory boards

UTK Action Items for Research Within the Plan

Action Item	Initiative (Lead)	R4 Specific Action Plan Steps
R4	IP and Innovation (D. Washburn and A. Miller)	<ul style="list-style-type: none"> (a) Form a task force of the UT System, UTRF and the campus to evaluate alternatives and adopt a model for T2 (b) Build close ties among OR, UTRF, the Anderson Center, and other entities (c) Identify and adopt best practices for patent application and business incubation (d) Identify practices to track and report related data through the STAR metrics program

UTK Action Items for Research Within the Plan

Action Item	Initiative (Lead)	R5 Specific Action Plan Steps
R5	Partnerships (W. Hines, P. Montgomery, S. Ballentine)	<ul style="list-style-type: none"> (a) Identify potential partnerships with local companies and federal agencies (b) Identify potential strategic partners and recruit them to Cherokee Farm (c) Develop basic ordering agreements and joint appointment agreements with new partners

UTK Action Items for Research Within the Plan

Action Item	Initiative	R6 Specific Action Plan Steps
R6	Multi-disciplinary Research (B. Dunne, Top 25 Team)	<ul style="list-style-type: none"> (a) Revise UTK distribution of institutional resources (e.g., ORU) (b) Institute faculty hiring practices where appropriate (c) Revise faculty performance and promotion review (d) Revise academic program review criteria and metrics (e) Institute a Chancellor's Award for Research

UTK Action Items for Research Within the Plan

Action Item	Initiative	R7 Specific Action Plan Steps
R7	F&A Distribution (W. Hines, C. Cimino)	<ul style="list-style-type: none"> (a) Developing F&A policies for University-level centers and institutes (b) Remove the three-year rolling average for RIF (F&A) return (c) Disburse F&A quarterly for high growth cases (d) Revise RIF (F&A) carry over policy to increase flexibility (e) Implement a plan to increase Office of Research distribution as F&A grows

UTK Action Items for Research Within the Plan

Action Item	Initiative	R8 Specific Action Plan Steps
R8	Administrative Efficiency (C. Tenopir, C. Cimino)	(a) Task force to review procedures and recommend changes (b) Staff members assigned responsibility to streamline research procedures with legal constraints (c) Initiate streamlined procedures

UTK Action Items for Research Within the Plan

Action Item	Initiative	R9 Specific Action Plan Steps
R9	Research Incentives (W. Hines, B. Dunne)	<ul style="list-style-type: none"> (a) Implement research incentive plan (b) Institute a Chancellor's Award for Multidisciplinary Research (c) Coordinate with Communications Team to highlight faculty research success stories

UTK Action Items for Research Within the Plan

Action Item	Initiative	R10 Specific Action Plan Steps
R10	Infrastructure - Core Facilities (C. Boake, Core facilities Committee)	<ul style="list-style-type: none"> (a) Establish a standing core facilities committee, including a responsible chair (b) Conduct an inventory of current core facilities and other expensive multi-user equipment (c) Work to evaluate business models for core facilities at peer institutions (d) Develop business models that include organizational and funding considerations (coordinate between VCR and VCFA) (e) Develop written procedures for creating, funding, and closing core facilities

UTK Action Items for Research Within the Plan

Action Item	Initiative	R11 Specific Action Plan Steps
R11	Infrastructure-Space (W. Hines, C. Cimino)	(a) UTK Space Committee includes research leadership (b) Plan for research space on Cherokee Farm Campus for collaboration with private and government entities

UTK Action Items for Research Within the Plan

Action Item	Initiative	R12 Specific Action Plan Steps
R12	Research Information Technologies (W. Hines, Top 25 Infrastructure Team)	<ul style="list-style-type: none"> (a) Coordinate with Faculty Implementation Team on metrics and data gathering needs related to research productivity (see Faculty Plan) (b) Engage OIT in a review of current state of research enterprise software support, including TERA

Appendix B

Metrics Used in University Ranking

Ranking Methodologies

(Italics indicates research-related)

- **NSF HERD Annual Survey of 741 Institutions: Strict Rank Order by:**
 - *Total research expenditures (TREs)*
 - *Plus components like federal, state and local, industrial, institutional, and not-for-profit*
 - *Federal Research Expenditures (FREs)*
 - *Plus components like DOD, DOE, HHS, USDA, NSF and All Other Federal Agencies*
- **Carnegie Foundation Doctoral-Granting Universities of 297 Institutions as RU/VH (108), RU/H (99), DRU (90): Unranked, but ca. tertiles using:**
 - *TREs*
 - *Research doctorates awarded*
 - *Number or research-focused faculty*
 - *Other factors*

Ranking Methodologies (continued)

(Italics indicates research-related)

- **CMUP of Top 200 Research Universities: Strict Rank Order by:**
 - *TREs, FREs, TRE by discipline (from NSF HERD), \$*
 - *Endowment Assets, \$*
 - *Annual Giving, \$*
 - *Number of National Academy Membership*
 - *Number of Faculty Awards (Annual)*
 - *Number of Doctorates Awarded*
 - *Number of Postdoctoral Appointees*
 - SAT Scores
 - Number of National Merit and Achievement Scholars

Ranking Methodologies (continued)

(Italics indicates research-related)

- **AAU Selection of 62 Leading Public and Private Research Universities using algorithms involving:**
 - Phase 1:
 - *FREs (especially NSF, NIH) (from NSF HERD)*
 - *National Academy Members (from CMUP)*
 - *NRC Faculty Quality Rankings (but...)*
 - *Faculty Annual Awards (from CMUP)*
 - *U.S. University Science Indicator citations*
 - Phase 2:
 - *USDA, state, industrial (from NSF HERD)*
 - *Doctorates granted (from CMUP)*
 - *Post docs appointed (from CMUP)*
 - Quality and diversity of undergraduate educational programs

Ranking Methodologies (continued)

(Italics indicates research-related)

- **USN&WR Ranking of 262 Doctoral Granting Universities using data from peer assessment, CDS and other sources:**
 - 15%- *Undergraduate Academic Reputation (peer assessment survey of Chancellors, Provosts, deans of admission; e.g., distinguished, strong, good, adequate, marginal, don't know)*
 - 7.5% Guidance Counselor Assessment
 - 15%- Student Selectivity for Fall Entering Class (acceptance rate, HS top 25%, SAT and ACT CR and Math scores)
 - 20%- Faculty Resources (compensation, % top terminal degrees, % full time, S/F, class size < 19, class size > 50)
 - 20%- Graduation and Retention Rates (avg. grad rate, avg. freshman retention rate)
 - 7.5%- Graduation Rate Performance
 - 10%- Financial Resources per Student
 - 5%- Alumni Giving (alumni giving rate)

Ranking Methodologies (continued)

■ USN&WR Ranking of National Universities: Effects on Peer Assessment

- Bastedo & Bowman (2010) U.S. News & World Report College Rankings: Modeling Institutional Effects on Organizational Reputation, *Am. J. of Ed. Published rankings affect future peer assessment scores*
- Hobby & Granato (2008) Statistical Analysis of University Rankings, University Center for Public Policy *CMUP rankings (especially Top 25) are directly correlated to peer assessment scores*
- Sweitzer, Volkwein & Kulikowich (2009) Shifting Reputations: Analyzing Change Over Time in The Peer Assessment Ratings. 49th Annual Forum of the Association for Institutional Research. *Change in peer assessment most strongly correlated to admissions selectivity (Top 25 % in high school class)*
- Mulholland, Tomic, & Sholander (2010) The Faculty Flutie Factor: Does Football Performance Affect a University's US News and World Report Peer Assessment? MRPA Paper 26443, University Library of Munich. *Peer assessment scores are correlated to rankings in the AP and Coaches Poll*

Appendix C

Detailed Benchmarking Against Peer Institutions Using 2011 NSF HERD Survey Data, 2011 CMUP data

Public Benchmark Institutions

Institution	Top 25 "Target Group"	USNWR 2012 Public University Ranking	Carnegie RU/VH	AAU	National Lab Partner	Land Grant	Med School
U. Georgia	Y	21	Y	N	N	Y	N
Purdue U. WL	Y	22	Y	Y	N	Y	N
TAMU	Y	23	Y	Y	N	Y	N
Clemson U.	Y	24	N	N	N	Y	N
Rutgers U. NB	Y	25	Y	Y	N	Y	N
Indiana U. Bloomington	Y	33	Y	Y	N	N	N
Stony Brook U.	N	36	Y	Y	Y	N	Y
UTK	-	47	Y (?)	N	Y	N	N



 Top 25 Public

Total Research Expenditures

Institution	FY11 TRE as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
TAMU	705.7	14
Purdue U. WL	578.2	18
Rutgers U. NB	432.3	26
U. Georgia	245.1	45
Stony Brook U.	211.3	53
Indiana U. Bloomington	184.0	58
UTK	167.4	61
Clemson U.	166.3	62

TRE Component: Federal Research Expenditures

Institution	FY11 FRE as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
TAMU	291.8	21
Purdue U. WL	259.9	25
Rutgers U. NB	239.9	29
U. Georgia	137.3	45
Stony Brook U.	125.1	49
UTK	111.9	54
Indiana U. Bloomington	74.1	65
Clemson U.	52.9	71

TRE Component: State and Local Government

Institution	FY11 S&LE as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
TAMU	131.9	1
Purdue U. WL	59.5	13
Rutgers U. NB	59.2	14
U. Georgia	30.1	28
UTK	15.4	38
Clemson U.	4.3	58
Stony Brook U.	3.9	59
Indiana U. Bloomington	2.6	66

TRE Component: Business (formerly Industry)

Institution	FY011 Industry Expenditures as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
TAMU	54.8	6
Purdue U. WL	28.6	14
Rutgers U. NB	15.1	30
Clemson U.	11.3	40
UTK	5.8	58
Indiana U. Bloomington	5.5	60
Stony Brook U.	4.7	63
U. Georgia	4.6	64

TRE Component: Institution Funds

Institution	FY11 Institutional Expenditures as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
Purdue U. WL	190.4	5
TAMU	186.5	7
Clemson U.	91.6	36
Rutgers U. NB	85.5	38
Indiana U. Bloomington	75.4	43
Stony Brook U.	66.9	45
U. Georgia	50.0	52
UTK	32.1	63

TRE Component: All Other Sources (e.g., not-for-profit)

Institution	FY11 All Other Expenditures as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
Purdue U. WL	35.8	11
TAMU	37.7	12
Indiana U. Bloomington	26.2	19
Rutgers U. NB	19.9	26
U. Georgia	19.2	28
Stony Brook U.	4.8	58
Clemson U.	2.2	64
UTK	2.0	65

FRE Component: DOD

Institution	FY011 DOD Expenditures as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
TAMU	36.1	13
Purdue U. WL	32.6	17
Rutgers U. NB	26.0	21
UTK	17.6	35
Stony Brook U.	8.2	58
Indiana U. Bloomington	5.2	66
U. Georgia	2.9	71
Clemson U.	2.1	73

FRE Component: DOE

Institution	FY11 DOE Expenditures as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
UTK	32.4	6
TAMU	28.4	8
Purdue U. WL	27.4	9
U. Georgia	14.8	22
Stony Brook U.	12.8	27
Rutgers U. NB	9.1	40
Indiana U. Bloomington	4.6	60
Clemson U.	3.5	66

FRE Component: HHS (includes NIH)

Institution	FY11 HHS Expenditures as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
Rutgers U. NB	96.1	30
Stony Brook U.	74.8	33
U. Georgia	61.3	36
Purdue U. WL	58.6	38
Indiana U. Bloomington	33.5	50
TAMU	31.9	52
Clemson U.	7.4	70
UTK	7.2	71

FRE Component: NASA

Institution	FY11 NASA Expenditures as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
Purdue U. WL	5.97	19
TAMU	5.38	24
Stony Brook U.	3.99	30
Rutgers U. NB	3.54	32
UTK	2.59	41
U. Georgia	1.16	58
Indiana U. Bloomington	0.86	59
Clemson U.	0.75	62

FRE Component: USDA

Institution	FY11 USDA Expenditures as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
TAMU	30.7	2
Purdue U. WL	23.5	8
U. Georgia	20.9	13
Rutgers U. NB	14.4	18
Clemson U.	3.8	38
Stony Brook U.	0.96	43
UTK	0.85	44
Indiana U. Bloomington	0.22	61

FRE Component: NSF

Institution	FY11 NSF Expenditures as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
TAMU	107.0	3
Purdue	87.0	7
Rutgers U.	49.8	21
UTK	37.1	29
Indiana U. Bloomington	26.2	38
U. Georgia	25.3	39
Stony Brook U.	18.9	50
Clemson	10.5	60

FRE Component: All Other Federal Agencies Reported

Institution	FY11 All Other Agency Expenditures as Reported in 2011 NSFHERD, \$M	National Rank Among USNWR Publics
TAMU	52.0	8
Rutgers U. NB	40.6	14
Purdue U. WL	24.6	15
Clemson	24.6	16
UTK	13.9	35
U. Georgia	10.6	41
Stony Brook U.	5.1	71
Indiana U. Bloomington	3.3	74

Endowment

Institution	FY09 Value as Reported in 2011 CMUP Report, \$M	National Rank Among USNWR Publics
TAMU	5,224	3
Purdue U. WL	1,633	14
Indiana U. Bloomington	769	25
U. Georgia	625	31
Rutgers U. NB	554	34
UTK	509	36
Clemson U	382	47
Stony Brook U.	125	66

Annual Giving

Institution	FY09 Value as Reported in 2011 CMUP Report, \$M	National Rank Among USNWR Publics
TAMU	211.9	11
Purdue U. WL	191.7	13
Indiana U. Bloomington	184.3	14
UTK	95.5	31
Rutgers U. NB	74.2	43
U. Georgia	69.4	45
Stony Brook U.	66.3	48
Clemson U.	33.1	63

National Academy Members

Institution	FY10 Value as Reported in 2011 CMUP Report	National Rank Among USNWR Publics
Rutgers U. NB	36	12
Purdue U. WL	24	23
TAMU	22	26
Stony Brook U.	12	32
Indiana U. Bloomington	10	34
U. Georgia	7	43
UTK	1	63
Clemson U.	1	64

Doctorates Granted

Institution	FY10 Value as Reported in 2011 CMUP Report	National Rank Among USNWR Publics
Purdue U. WL	618	13
TAMU	578	15
Indiana U. Bloomington	443	22
Rutgers U. NB	424	23
U. Georgia	417	25
UTK	397	30
Stony Brook U.	283	40
Clemson U.	178	61

Faculty Awards

Institution	FY10 Value as Reported in 2011 CMUP Report	National Rank Among USNWR Publics
Rutgers U. NB	18	19
TAMU	17	20
Purdue U. WL	13	29
U. Georgia	9	41
UTK	9	45
Indiana U. Bloomington	8	51
Stony Brook U.	7	55
Clemson U.	6	61

Postdoctoral Appointees

Institution	FY09 Value as Reported in 2011 CMUP Report	National Rank Among USNWR Publics
Purdue U. WL	334	23
TAMU	324	25
U. Georgia	232	38
Rutgers U. NB	217	41
Stony Brook U.	168	49
UTK	156	52
Indiana U. Bloomington	143	55
Clemson U.	49	71