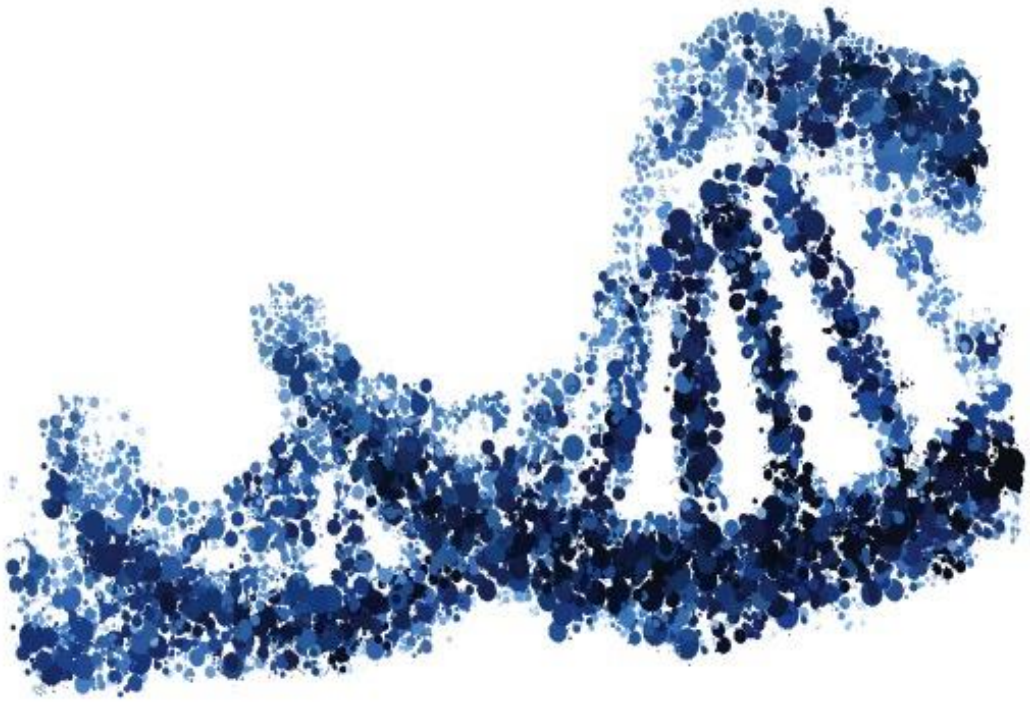
EAST TENNESSEE STATE
UNIVERSITY



STRATEGIC RESEARCH PLAN 2015

Table of Contents

I. Introduction, overview and vision

The ETSU motto states the aim of "Becoming the Best Regional University in the Nation". This inclusive motto should be seen as a lens through which to focus goals, objectives and activities to improve scholarship on campus while being true to the mission of the university.

In 2012-13, ETSU underwent a visioning process to visualize the *"…university's culture and practice of excellence, and quality of life in the region and continued maturation and development of the university as a preeminent institution in the Region."* The aim was to imagine the university in 2037, at 125 years since formation.

Among the plans in the ETSU 125 Visioning Report are numerous references to enhancing research and scholarly activity, including advancing a culture of research, increasing revenues from research and scholarly activity, and expanding infrastructure to support research and scholarly activities.

In 2013 President Noland convened an ad hoc committee of researchers from across campus and charged them with developing a strategic plan for research for the university. The group began meeting in late 2013.

The committee makeup reflected the heterogeneity of the university and had representatives from most Colleges on campus.

Keeping the ETSU 125 Visioning Report in mind, the committee examined the position of the university and its potential in light of the strengths, weaknesses, opportunities and threats that impact the ability of ETSU faculty, staff and students to fulfill the vision of enhancing research and scholarly activity.

In this document the ad hoc committee puts forward a vision for research for the university and several themes and goals relevant to the vision, within which major activities are proposed. The ideas are based on what the committee has seen work at other places balanced with what they believe will work within the culture of ETSU. However, it is important to note that this report does not represent the totality of actions that it will take to move the university forward in research. It is presumed that many additional and distinct efforts will be also undertaken alongside the efforts presented here.

To begin, the committee believes that the vision for research and scholarly activity at ETSU should be to:

"Transform our doctoral research university into a progressive, nationally recognized center for research, scholarship and creative activity that leverages university and regional intellectual, social, cultural, health and economic assets for global impact."

A full understanding of the contents herein requires that research is defined in the context of a complex multi-disciplinary university system. Merriam-Webster online dictionary defines research generally as "studious inquiry or examination". Fundamental qualities of all academic research are scholarship and creativity. A common feature of research in the various disciplines is studious endeavor to produce or create something that has not been previously achieved. The outcome of research in all cases must be documentable and should be shared with society. It is noteworthy that the conduct and outcomes of research vary widely among the disciplines at

ETSU. For example, in the arts the product of research may be a novel artistic method. In the humanities, the product of research may be a publication describing a unique interpretation of historical events. In the sciences, where the term "research" is used most often, the outcome of research may be a discovery of a planet or a novel treatment for a disease. The visibility that results from creative and research works can have great public impact, the value of which may be captured more qualitatively than quantitatively.

The ideas presented in this plan represent the broad consensus of a majority of the committee. Some individuals put forward specific aims and goals while others put forward more general concepts and programs. The committee attempted to be inclusive and to raise a broad umbrella under which all types of scholarship and creative activity can thrive.. It is with this broad understanding of research that the following document addresses the current status of research and develops a plan to facilitate future research at ETSU.

Throughout the rest of the document the committee process, the state of research at the university, some strengths on which we can build and some opportunities for improvement are offered. Following that, seven major thematic areas are put forward with goals and objectives within each respective section. The themes are briefly presented as declarative statements immediately below. Specifically, the committee recommends that the University should:

A. Link research to the educational experience.
B. Foster a research environment to support graduate training.
C. Invest in focused areas that are likely to yield external resources and/or increased reputation of the university.
D. Prioritize focused recruitment and retention of highly productive faculty.
E. Prepare, organize and equip university research services for growth.
F. Prioritize university and college-level fund-raising for research.
G. Partner with the community and industry to create opportunities to impact real needs with inter-disciplinary and translational research.

II. Committee process

The committee first met in December 2013 as a committee of the whole. At this meeting the group made introductions and comments about 1) ETSU strengths and potential for research growth, and 2) opportunities for improvement with respect to the research culture. Notes were taken and summarized. Themes included strengths in collaboration, inter-professional action, teamwork, the region, and local connections. Many opportunities for improvement were noted and formed the basis for much of the discussion in subsequent meetings. The committee membership is provided in Table 1.

Table 1. Committee Membership

Member	Department	College	Subcommittee
Wilsie Bishop	VP for Health Affairs & COO	Academic Health Science Center	-
Russell Brown	Psychology	Arts & Sciences	Implementation
W. Andrew Clark	Nutrition	Clinical & Rehabilitative Health Sciences	Implementation
Bill Duncan	ORSP	Academic Affairs	Vision & Goals
JoEllen Edwards	Nursing	Nursing	Vision & Goals
James Fox	Center for Excellence-ECLD	Education	Vision & Goals
Chris Gregg	Geosciences	Arts & Sciences	Vision & Goals

Nick Hagemeier	Pharmacy Practice	Pharmacy	Implementation
Joel Hillhouse	Community & Behavioral Health	Public Health	Implementation
David Hurley	Pharmaceutical Sciences	Pharmacy	Implementation
Jay Jarmin	Computing	Business & Technology	Vision & Goals
Aruna Kilaru	Biology	Arts & Sciences	Implementation
Owen Murnane	Audiology	VAMC	Implementation
Greg Ordway	Biomedical Sciences	Medicine	Implementation Co-chair
Robert Pack - Chair	Community & Behavioral Health	Public Health	Vision & Goals Co-chair
Jodi Polaha	Psychology	Arts & Sciences	Vision & Goals Co-chair
Kerry Proctor-Williams	Audiology & Speech-Language Pathology	Clinical & Rehabilitative Health Sciences	Vision & Goals
Jeff Ramsdell	Appalachian Energy	Appalachian State	-
Michael Ramsey	Exercise Science	Education	Implementation
Jon Smith	Business & Economics	Business & Technology	Implementation
Charles Stuart	Internal Medicine	Medicine	Implementation Co-chair
Flo Weierbach	Nursing	Nursing	Vision & Goals
John Wheeler	Center for Excellence-ECLD	Education	Implementation
Philip Wilson	History	Arts & Sciences	Implementation

After the committee met again as a whole, it broke up into separate subcommittees: one to work on establishing a vision and goals, and one to examine infrastructure issues. In the subcommittees numerous issues were raised that members felt currently restricted the ability of ETSU to advance and grow its research and scholarly mission. It became evident that additional data was needed to support action on several issues. Hence, the infrastructure subcommittee committed to performing a university-wide survey about barriers to research productivity. That survey was released in Summer 2014 and the results have informed the plan.

Subcommittees met at least fortnightly through February and March 2014. The whole Committee came together to hear from the subcommittees and to view a draft integrated concept paper. The President affirmed the direction of the plan and requested that the plan be released to the university community in Spring 2015. The plan was released in February 2015 and three public fora were held wherein the plan was presented, and faculty, staff and students were invited to offer comments. The comments were accumulated and incorporated into the final plan in April 2015 and the plan was delivered to President Noland in May 2015. The plan will serve as the basis for research element of the 10-year master plan for the university, to be developed in later 2015.

To appreciate the direction, goals and objectives of the plan it is first important to understand the relative position of ETSU with respect to research and scholarly activity. The four sections that follow outline the state of research at ETSU, potential target for extramural funding, some strengths of ETSU that may form the basis for support, and some challenges. Finally, the report outlines a plan to grow scholarship and research at the university, organized within the previously mentioned themes and offers goals and objectives.

III. The state of research at ETSU

ETSU is a public/state-controlled institution of higher education. The University is part of the sixth largest public higher education system in America, the Tennessee Board of Regents

System (TBR). The TBR is made up of six state universities, 13 community colleges and 27 technology centers.

ETSU is a Carnegie-designated Doctoral Research University (DRU) that is nearly unique in that it also has a comprehensive Academic Health Sciences Center (AHSC) that is a member school of the Association of Academic Health Centers (AAHC). The vast majority of Academic Health Centers are at Carnegie-designated research-intensive universities (i.e., DRU-High or DRU-Very High research productivity). Because of this uniqueness, it is hard to identify peers for comparison. Institutions in the DRU category typically have annualized average research & development (R&D) expenditures of about $7.5 million (range: $<1.0-35.0 million) and award about 44 doctorates per year (range: 0-169). For perspective, average R&D expenses at DRU-H and DRU-VH universities are about $59 million (range: $1-265 million) and $365 million (range: $2.5 million-1.67 billion), respectively. The mean number of doctoral degrees awarded at DRU-H and DRU-VH universities per year is 94 and 345, respectively.

A list of institutions that could be viewed as peer institutions has been under debate in the faculty senate. It is one group from which we could begin to identify comparisons with respect to research volume, if not quality. Because of their similar range of health sciences offerings East Carolina University (ECU) and the University of South Alabama (USA) have often been viewed as peer institutions. Several others are emerging as such: Georgia Southern, UNC-Greensboro, Marshall University, Missouri-Kansas City and Old Dominion. Each of these is a regional institution and shares the characteristic of having at least a partial health sciences focus. For example, ECU, USA, Missouri-Kansas City and Marshall are AAHC-member universities.

There are several sources of research data to use for comparison once a list is settled upon. The National Institutes of Health (NIH) Reporter website provides a great amount of detail and the National Science Foundation (NSF) website provides a deep record of projects. However, owing to the health, science and engineering-specific nature of each of those resources it can be difficult to identify all federal and state sources for full R&D expenditures. Research in the arts and humanities, for example, would be under-reported if only those sources were used.

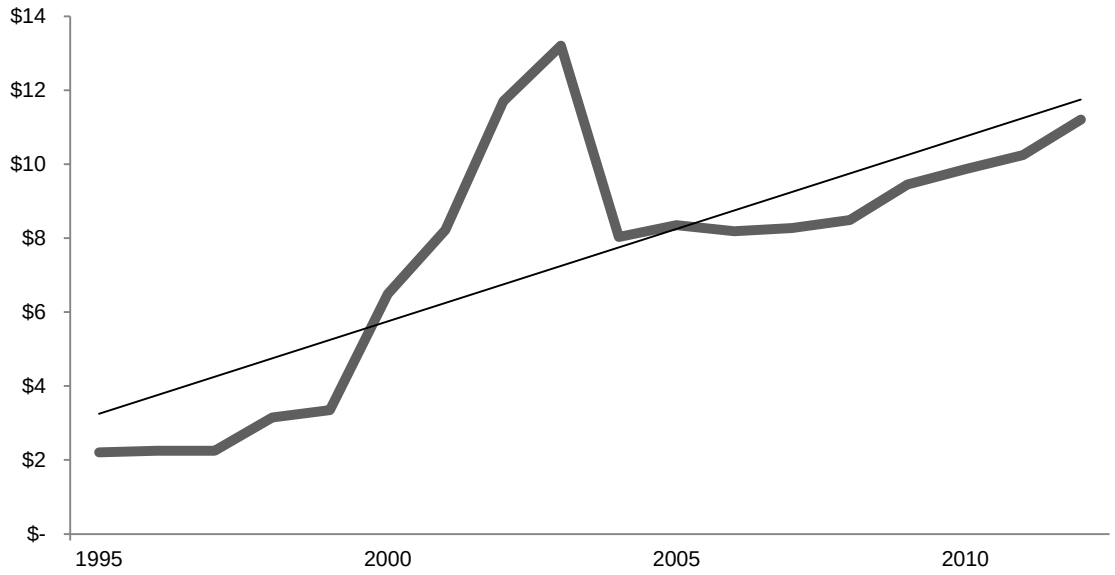
One generally accepted comparison dataset is collected from a standard assessment of over 900 institutions. It is the National Science Foundation's Higher Education Research and Development (HERD) Survey. This annual survey uses key knowledgeable personnel at each institution to complete the instrument. The NSF has been conducting this survey for more than 40 years. Data include annualized funding from federal sources in health, education, science, art, engineering, humanities and others (e.g., NSF, NIH, DOE, CDC, USDA, NEA, NEH, etc.), state and local sources (e.g., TN Depts. of Health, Mental Health, Education and Commerce, etc.) and foundations (e.g., Blue Cross/Blue Shield Foundation, the Scott Niswonger Foundation, etc.). It also includes a survey of earned doctoral degrees, the number of primary research faculty at an institution, the number postdoctoral students and their source of support, etc.

The HERD data, current through 2012, is freely available. In the last version of the report, ETSU ranked 314th of 655 institutions for total R&D expenditures. According to this data, in 2012 the university had $11,213,000 in R&D expenditures. Total extramural resources at the university have approached $50 million for several years, but according to this data only a little more than 20% of that total is for research. Much of the rest is for education (e.g., STEM education), training for the workforce (e.g., the Tennessee Public Health Training Center – LIFEPATH) or facilities (e.g., laboratory renovations).

According to the same data source, over the past decade ETSU R&D funding expenditures have been at about the 45th percentile (currently ranked 314/653 at the 48th percentile) of those 653 universities that purport to do research. Our number of full-time graduate students is at about the 42nd percentile (presently ranked 227/552 at the 42nd percentile) and our number of awarded doctorates has been at the 58th percentile (presently ranked 373/408, or 91st percentile).

Figure 1, below, demonstrates the relative growth in research funding at the university over the past two decades. Piecing together two different reports of total R&D expenditures at the university (1995-2002 and 2003-2012) reveals steady growth over the late nineties, then a dramatic increase in funding in 2002-2003, and reverting back to the original trajectory thereafter.

Figure 1. 1995-2012 ETSU R&D Expenditures by Year (in $millions)



Key research performance data is offered below for each of the "peer" universities that were discussed as such by the faculty senate in AY 2013-14 (Table 2). A similar table is provided for the TBR universities (Table 3). The data are in tables that include Carnegie classification, student population, total research funding a decade ago, current research funding, the percent change over the prior decade and the number of doctoral degrees awarded (sources noted).

Table 2. Peer Universities and Research Outcomes – sorted by R&D expenditures in 2012

	Class*	#Students in 2014*	R&D Expenditure 2003**	R&D Expenditure 2012**	% different 03-12^	HERD Rank**	# Doct. 2011***
Indiana State	DRU	10,534	1,369,000	1,857,000	36%	545	67
Texas Women's	DRU	13,338	2,998,000	4,129,000	37%	421	89
Sam Houston State	DRU	16,772	2,404,000	4,349,000	81%	413	21
Georgia Southern	DRU	19,086	6,748,000	5,719,000	-15%	383	73
Arkansas-LittleRock	DRU	13,132	9,331,000	10,500,000	12%	320	21
Central Michigan	DRU	27,247	2,808,000	10,907,000	288%	316	25
ETSU	***DRU***	***14,421***	***7,100,000#***	***11,213,000***	***58%***	***314***	***79***
Ball State	RU/H	21,401	3,878,000	11,740,000	202%	311	30
Oakland University	DRU	18,918	6,696,000	18,194,000	172%	279	32

Marshall	***Mast-L***	***13,776***	***16,503,000***	***18,908,000***	***14%***	***277***	***12***
UNC-G	RU/H	21,306	16,174,000	19,080,000	18%	276	130
UNC-Charlotte	DRU	24,701	13,718,000	25,141,000	83%	252	88
Missouri-Kan. City	***RU/H***	***14,779***	***34,636,000***	***29,227,000***	***-16%***	***241***	***77***
East Carolina	***DRU***	***27,654***	***12,951,000***	***31,990,000***	***147%***	***233***	***47***
South Alabama	***RU/H***	***14,522***	***19,371,000***	***40,172,000***	***107%***	***212***	***15***
Wright State	RU/H	17,558	34,995,000	46,213,000	32%	205	33
Florida Atlantic	RU/H	27,637	35,904,000	65,377,000	82%	178	74
Southern Illinois	RU/H	20,350	53,314,000	71,097,000	33%	170	143
Old Dominion	RU/H	24,013	34,152,000	104,579,000	206%	145	131

Note: AAHC-member institutions are in ***bold italics.***
*Data from the Carnegie Foundation for the advancement of Teaching; carnegiefoundation.org
**Data from National Science Foundation; ncsesdata.nsf.gov/herd/2012/
***Data from the Center for Measuring University Performance (CMUP); mup.asu.edu/
^ cumulative inflation from 2003-2012 was about 24.8%.
[#] *calculated average; see text for rationale.*

After correcting the baseline for the one-time bolus of funding in 2003 (evident in Figure 1), ETSU research funding has grown over the past decade by 58%. In terms of growth since 2003, that is 8th among peers.

While none of the totals have been adjusted for inflation, they are nonetheless standard between universities, so comparison of percentages may offer some information about performance. An online inflation calculator states that cumulative inflation from 2003-2012 should be roughly 25%. Hence, any growth higher than 25% could be seen as positive. Only five institutions did not outpace inflation in this scenario; Georgia Southern, Arkansas-Little Rock, Marshall (AAHC member), UNC-Greensboro and Missouri-Kansas City (AAHC member). Six institutions more than doubled their R&D expenditures; South Alabama (AAHC member), East Carolina (AAHC member), Oakland University, Ball State, Old Dominion and Central Michigan.

TBR institutions each have a largely unique mission. For example, Tennessee Tech University is a science and engineering focused university, University of Memphis is a growing urban research university and ETSU is the Board of Regents system health sciences flagship. Each has a widely variable profile based on the data presented. Only one TBR institution is in the top 200 by rank of total R&D, and that is the University of Memphis. Memphis is the 5th largest research university/entity in the state after Vanderbilt (34th overall - $560M), UTK (109th, $179M) and UT-Health Sciences (166th, $77M), and UT-Institute for Agriculture (173rd, $68M).

Table 3. TBR Universities and Research Outcomes – sorted by R&D expenditures in 2012

	Class*	#Students in 2014*	R&D Expenditure 2003**	R&D Expenditure 2012**	% change 03-12	HERD Rank**	# Doct. 2011***
APSU	Mast-L	10,188	0	2,124	-	519	0
MTSU	DRU	25,188	2,265,000	7,108,000	213%	364	20
TTU	Mast-L	10,847	9,813,000	10,233,000	4%	331	21
ETSU	DRU	14,421	7,100,000	11,213,000	58%	314	79
TSU	DRU	8,824	15,080,000	15,439,000	2%	294	67
U of Memphis	RU/H	21,424	48,859,000	51,194,000	5%	199	128

*Data from the Carnegie Foundation for the advancement of Teaching; carnegiefoundation.org
**Data from National Science Foundation; ncsesdata.nsf.gov/herd/2012/
***Data from the Center for Measuring University Performance (CMUP); mup.asu.edu/

Third among the TBR institutions in terms of R&D expenditures, ETSU has a bit more than a fifth of Memphis' R&D total and is closing in on Tennessee State in terms of the dollar amount of funding. As a percentage of where we were in 2003, ETSU was the fastest growing TBR institution in terms of research in the last decade.

Clearly, the total volume of extramurally supported research at ETSU should grow. But what is the correct scale of research funding for ETSU?

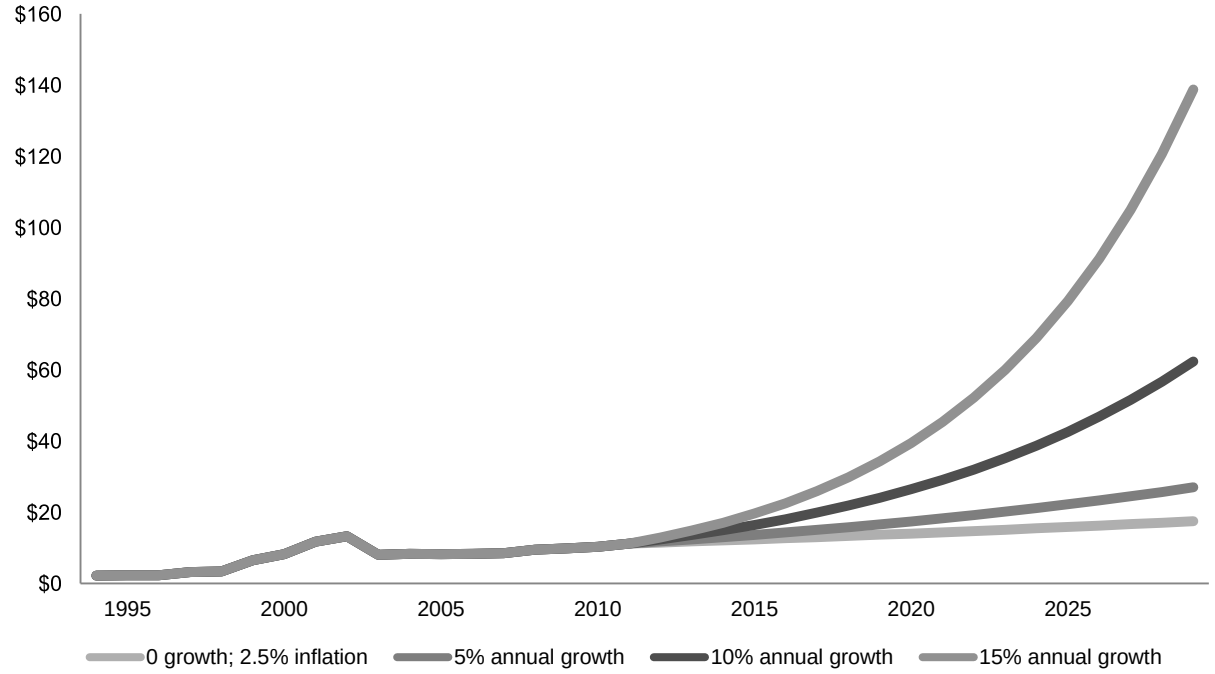
IV. Target

Using R&D funding as a proxy for research, while crude, allows for year on year comparison to establish rate of growth. While extramural resources are not a holistic indicator of research, external grants and contracts do allow for opportunities to save university resources that have been used for unfunded research, to create new jobs and to use indirect cost recovery to make improvements to university research infrastructure.

To identify a target for extramural research funding, the committee modeled four different growth scenarios for the next 15 years, to 2030. The four scenarios assume year on year improvements that average the same rate of increase every year. The scenarios are provided in Figure 2 below.

By just keeping up with 2.5% inflation annually, the university will be in virtually the same relative position as it is now, but at $17.48 million in annualized R&D expenditures. With 5% growth, the figure is $26.98 million. Substantial gains are made with annual increases higher than that. For example, by increasing extramural awards just 10% each year, by 2030 extramural resources for R&D will exceed $62 million. At 15% annual growth, the figure is more than twice that total, at $139 million.

Figure 2. 1995-2030 Growth Models for ETSU R&D Expenditures by Year (in $millions)



For context, Institutions that are presently in the range of funding comparable to values of the 5%, 10% and 15% growth models are offered below in Table 4. These are 2012 figures and are not adjusted for future potential inflation or growth; most all of these institutions will also grow during that timeframe. This is simply a snapshot of peer institutions with R&D at $26 million, $65 million, and $138 million in 2012.

Table 4. Institutions in the range of 5%, 10% and 15% growth targets – 2012 data.

Institution	Class*	HERD Rank**	R&D Expen. 2012*
- 5% annual growth - $26 million			
Boise State University	Mast–L	245	27,920,000
Southern Illinois University	RU/H	246	26,992,000
Louisiana Tech University	RU/H	247	26,546,000
Kent State University	RU/H	248	26,507,000
Miami University – Ohio	RU/H	249	26,411,000
-10% annual growth - $62 million			
University of Wyoming	RU/H	177	65,611,000
Florida Atlantic University	RU/H	178	65,377,000
University of Louisiana, Lafayette	RU/H	179	65,265,000
University of Wisconsin, Milwaukee	RU/H	180	61,771,000
Wichita State University	RU/H	181	61,279,000
-15% annual growth - $139 million			
Clemson University	RU/H	122	142,096,000
University of Nebraska Medical Center	Spec/Med	123	141,619,000
New Mexico State University	RU/H	124	141,151,000
Texas Tech University	RU/H	125	138,026,000
State University of New York (SUNY) – Albany	RU/VH	126	137,758,000

*Data from the Carnegie Foundation for the advancement of Teaching; carnegiefoundation.org
**Data from National Science Foundation; ncsesdata.nsf.gov/herd/2012/

The strategic planning committee recommends that the university target sustained annual funded research growth at a rate of at least 10% and no more than 15%, until 2030. With growth in that range the committee suggests that $65 million in annualized research funding should be the minimum target for the year 2030. That figure does not include the current amount of service and other contracts that amount to around $40 million annually in extramural funds for the university. Assuming that the external service and other contracts will stay static, in total, the university could achieve at least $100 million in extramural funding by 2030, also assuming steady growth and development of research infrastructure.

To achieve this goal, the university administration will need to make iterative, successful improvements in faculty support, university infrastructure, student support, faculty and student recruitment, and retention. It will need to leverage university strengths for research and scholarly work of high impact, and will need to dramatically improve university research processes and procedures. Faculty teams and their student collaborators will be the engine that drives the growth, working best in an environment conducive to creative productivity. Environmental and administrative barriers to that growth should be minimized. The clear message about the target and expectation of gradual, high quality research growth should be clearly delivered from the university senior leadership team, starting with the President.

V. University strengths in research

At the first meeting of the Committee, a list of strengths and opportunities was made by requesting feedback from each member. Consistent themes echoed results from the 125

process: ETSU is good at interdisciplinary work, we collaborate and work well with the community, we are hard working with an inter-professional orientation and openness, and many faculty are anxious to improve research scope and scale at the university. The need for the creation of additional centers was a common theme discussed by members.

ETSU currently has nine (9) Centers and one (1) Institute focused on research and scholarly activities, including: the Center for Community Outreach and Applied Research; the Center for Inflammation and Infectious Disease; the Center for Appalachian Studies and Services; the Center for Nursing Research; the Center for Banking; the Center for Excellence in Paleontology; the Center for Excellence in Sports Science and Coach Education; the Center for Early Childhood Learning, Development; and the Center for Excellence in Mathematics and Science Education and the Institute for Quantitative Biology These centers are based in the Quillen College of Medicine, the Clemmer College of Education, the College of Nursing, the College of Arts and Sciences, the College of Business and Technology, and the Office of Research and Sponsored Programs.

Based on the current research strengths throughout the campus and the level of external funding from NIH and NSF in several broad areas, opportunities for developing new centers of excellence are apparent. Interdisciplinary centers considered ripe for development include:

- Center for the Creative Arts
    - Departments of Art and Design, Appalachian Studies, Mass Communication, Communication and Performance, Engineering Technology, Surveying, Digital Media and Interior Design, Literature and Language, Music, Philosophy, and Humanities.
- Neuro/Behavioral Science
    - Departments of Psychiatry and Behavioral Sciences, Biomedical Sciences, Pharmaceutical Sciences, Pharmacy Practice, Biological Sciences, Internal Medicine, Health Sciences, Community and Behavioral Health, Psychology, Education, Nursing, and Speech and Language Pathology
    - There are several funded investigators in this arena with NIH and other funds.
- Patient-Centered Outcomes Research (PCOR)
    - Departments of Internal Medicine, Family Medicine, Surgery, Psychiatry and Behavioral Sciences, Pharmacy Practice, Biostatistics and Epidemiology, Mathematics, Psychology, Health Services Management and Policy, Education Computing, Community and Behavioral Health, College of Nursing, College of Rehabilitative Health Sciences and College of Business.
    - While the university does not yet have PCOR funding, this opportunity should not be missed. There is considerable strength in this area among several colleges and teams.
    - Comparative effectiveness research (CER) can be a component of PCOR.

Other areas of strength where centers could be cultivated:

- Plant Science
    - Departments of Biological Sciences, Pharmaceutical Science, Family Medicine, Appalachian Studies and Pediatrics
- Cardiovascular and Metabolic Diseases
    - Departments of Internal Medicine, Biomedical Sciences, Surgery, Family Medicine, Sports and Exercise Science, Community and Behavioral Health and College of Nursing.
- Substance Abuse Prevention and Treatment
    - Departments of Community and Behavioral Health, Psychiatry and Behavioral Science, Epidemiology and Biostatistics, Pharmacy Practice, Psychology, Nursing, Speech and Language Pathology, Family Medicine; active NIH/NIDA, TBR and Tennessee Department of Health grants.
- Computational Biology/Data Science
    - Departments of Biomedical Sciences, Mathematics, Biostatistics/Epidemiology, Biological Sciences, Pharmaceutical Sciences and Computing
- Environment, Health and Rural Society
    - Departments of History, Environmental Health, Biology, Philosophy and Humanities and Computing

VI. Opportunities for improvement.

Many opportunities to improve research at ETSU have been identified by members of the committee and others in the university. Most of these relate to infrastructure, faculty time/workload and institutional resources. The infrastructure subcommittee addressed these matters in their discussions and many of their recommendations are included in the plan. In order to learn more about barriers and opportunities for improvement in research infrastructure at the university level, they designed a survey to inform this plan. The aim of the survey was to collect data from research-motivated members of the university community about barriers and facilitators for research success.

Data was released to the committee in Fall 2014 and has been analyzed for themes with respect to barriers and opportunities related to logistics such as pre-award (ie, proposal and research preparation) and post-award processes, roadblocks and potential solutions.

Concerns were focused on the complexity of processes related to proposal submission, managing funded grants, the need for online forms and simplicity in procedures. The relatively small number of research staff was also raised as a concern. Faculty, staff and student development for research proposal writing was also proposed. Recommendations were made

to reorganize the research staff under one office, to streamline payment processes, and increase training and accountability.

The results of the survey have informed the actions proposed herein.

VII. Strategic plan to grow research at ETSU

The committee, through its subcommittees, formed the themes, goals and objectives in the following action plan to grow research at ETSU. The themes are laid out in tables with corresponding goals and objectives. Together, the action steps to accomplish the goals and objectives make up the plan to grow research. The committee believes that implementation of the plan will advance the university toward greater research volume, quality and impact.

To act on the ETSU Research Strategic Planning committee's vision, university leaders should commit to addressing the goals and objectives found in the following thematic sections. III A-G.

A. Link research to the educational experience.

One element that robustly distinguishes ETSU from other educational institutions in the region is a strong faculty engaged in research. Engagement of undergraduate and graduate students in the scholarly and creative activities of university faculty has a proven positive impact on student retention, performance, success after graduation, and ultimately, alumni satisfaction and connectedness with the university. The success of our graduates defines the success of ETSU in accomplishing its primary mission. Hence, a greater emphasis on linking students to research activities of ETSU faculty will make ETSU more competitive among its regional and peer institutions in the recruitment and retention of students, and will result in graduation of students more competitive in the workforce marketplace.

Goal: To leverage ETSU's depth of history and intellectual assets by connecting dedicated teaching faculty with dedicated research faculty for the development of a cutting-edge transformational pedagogy.

Objective: Integrate themes of evidence-based practice and inter-professional education across campus in areas as diverse as art, music, health, humanities and science.

Action	Data Source/System	Responsible Party	Frequency of Monitoring	Targets (for quantitative indicators)	Baseline Data
Creation of inter-professional research awards for Appalachian Student Research Forum	Creation of award	Chair of ASRF	Annual	At least one new award each year for five years, until 2020.	No IP Research awards offered in baseline year.
Objective: Integrate the benefits of research and scholarship, such as publication and presentation, into the student experience to enhance retention and successful completion of undergraduate and graduate degrees.					
Publicize, increase and evaluate departmental goals for research outcomes for faculty and students according to the size of the workload commitment and investment.	Data should be gathered annually on the current support for research and scholarly activity from state dollars.	Deans & VPR	Annual	Each department reports on goals for funded or national level scholarly impact consistent with department's Faculty Activity Plans	In 2015 this data is not yet collected by the VPR. A system for collection is needed.
Objective Expand support for undergraduate and honors research to enhance our ability to recruit highly qualified students from the top high schools in our state and region.					

Establish working group to examine the viability of an Undergraduate Research Office and potential relationship to the Honors College (by 2015)	Establishment of the group.	Deans, VPR, Dean of Honors College	Annual	Establishment of the group by 2015	Group is not established in 2015.
Enhance funding and promotion for Appalachian Student Research Forum and other undergraduate and undergraduate honors research.	Establish baseline of funding and increase by 15% in the first year	VPR	Annual	Evaluate the funding level each year, against participation and quality as evaluated by judges and participants	ASRF has a baseline of funding in 2014 of $12,450.
Barrier: Existing graduate programs are funded at a level that permits their existence, but does not promote their growth **Objective:** Expand support for graduate students to enhance our ability to recruit highly qualified students from across the region, nation and globe.					
Increase stipends for research-degree seeking graduate students (e.g., PhD, DrPH, or research-masters) to a level that meets or exceeds national norms by 2020.	Graduate Studies database has details for average stipend across campus	President, Dean of Graduate Studies	Annual	12-month stipends should be $14,000 for Masters students & $25,000 for non-clinical academic doctoral students (i.e.; PhD in Psychology, DrPH, PhD in Biomedical Sciences, PhD in Exercise Physiology)	In 2015 the masters academic-year GA stipend is $6,000-8,000 plus a tuition waiver, and the doctoral GA stipend is $14,000-21,000 plus a tuition waiver.
Full-time academic degree seeking graduate students should be provided with health insurance.	Graduate Studies database for GAs	President, Dean of Graduate Studies	Annual	By 2015, every full time graduate student that wants health insurance should have it made available.	In 2015 academic program graduate students are not provided with adequate health insurance options.

B. Foster a research environment to support graduate training.

Successful graduate programs at ETSU require strong extramural funding for research and productive scholarship by ETSU faculty. Reciprocally, a healthy environment of funded research and scholarship requires a significant base of graduate programs, which facilitates scholarship.

Goal: Increase the competitiveness of the institution by facilitating a culture where research-focused graduate training programs are valued and cultivated by all faculty

Objective: Identify and prioritize areas of greatest potential for impact for new programs or concentrations for research-focused terminal degree programs by 2016.

Action	Data Source/System	Responsible Party	Frequency of Monitoring	Targets (for quantitative indicators)	Baseline Data
Form committee to prioritize new program proposals	Formation of committee	VPAA; VPR; Research Council, the School of Graduate Studies	Annual	Committee meets biannually to evaluate progress	In 2015 no committee exists to prioritize academic terminal degrees.
Work with Provost to establish new academic doctoral and other terminal degree programs	Provost's Office maintains list of academic doctoral programs	ADAA's in each College, the VPR and the School of Graduate Studies	Annual	Increase the number and quality of nationally benchmarked academic doctoral programs	In 2015, the following doctoral programs are offered by the School of Graduate Studies: - **Audiology (Au.D.)** - **Biomedical Sciences (Ph.D.**; concentrations in Anatomy, Biochemistry, Microbiology, Pharmaceutical Sciences, Pharmacology, Physiology, and Quantitative Biosciences) - **Early Childhood Education (Ph.D.)** - **Educational Leadership (Ed.D.**; with concentrations in Administrative Endorsement, Classroom Leadership, Postsecondary and Private Sector Leadership, and School Leadership) - **Environmental Health Sciences (Ph.D.)** **- Nursing (D.N.P.;** with concentrations in Adult/Gerontological, Executive

					Leadership, Family, and Psychiatric/Mental Health Nurse Practitioner) **- Nursing (Ph.D.)** **- Physical Therapy (D.P.T.)** **- Psychology (Ph.D.;** with concentrations in Clinical & Experimental) **- Public Health (Dr.P.H.**; with concentrations in Community Health & Epidemiology) **- Sport Physiology & Performance (Ph.D.;** with concentrations in Sport Performance and Sport Physiology). **Summary:** The university offers 20 concentrations in the Ed.D., Ph.D. & Dr.P.H. programs; dissertations are required in each. The Au.D., D.N.P., and D.P.T. are clinical doctorates.
Objective: Foster collaboration by aligning research space with the needs of productive teams.					
Research space will be prioritized for funded faculty, followed by new faculty with start-up opportunity. Space will be analyzed on a three-year rolling average.	AD for Finance; COO and VPR maintain list of research space in AHSC campus'	Dean's and the VPHA/COO and VPR make a decision about space utilization	Annual	Chairs and Deans responsible for accounting for three year rolling average of space use in Colleges.	In 2015, no standardized method for accounting for space-level productivity (ie, funding per sq-ft). No method is in place for centralized accounting of research space.

C. Invest in focused areas that are likely to yield external resources or increased reputation of the university.

Focus areas for research bring faculty, students and staff together to work on a set of related problems. Faculty, staff and students that work in effective teams are more competitive for extramural funding and typically work better toward high quality dissemination of their work. Infrastructure to support work in focused areas is needed to cultivate nationally competitive teams for federal funding for large-scale efforts such as NIH Center or Program Project awards. Infrastructure to support teams should follow a well-defined developmental path with periodic monitoring by the VP for Research and advisors. There should be an established protocol with at least two different pathways for creation of new Centers. One should allow for senior administration at the University to identify target areas for growth and investment that are linked to external resources to support the work of teams. For example, it is highly likely that Patient Centered Outcomes Research will be an area of continued growth at the federal level and that there is a growing cadre of researchers on campus that can address the topic. The other pathway for center creation should allow iterative investment in a focus area that cultivates and supports teams while they grow in size and impact. For example, focused investments in successful working groups and labs should be expected to facilitate growth in impact and productivity.

Goal: Establish and cultivate interdisciplinary Centers for research and scholarship in areas of strength that have high potential for extramural funding and meet regional, national and global needs (consistent with 125 and Vision).

Objective: Develop a timeline and implementation plan for five to eight new research Centers on campus

Action	Data Source/System	Responsible Party	Frequency of Monitoring	Targets (for quantitative indicators)	Baseline Data
Develop policy for center development and investment	Analysis of research unit (working group, initiative, lab, etc) productivity collected by VPR analysis of PI and Co-I funding on three year average or demonstrated potential for extramural funding.	URAC; VPR; VPAA; VPHA, President	Three year rolling average	See investment model in Table 3 below.	In 2015 investment decisions are not made on objective assessment of productivity of the research team. No such model is approved. Note: A mechanism for evaluating progress of Centers should be established.
Decide on Centers	VPR collects data on Center proposals	URAC; VPR; VPAA; VPHA, President	Three year rolling average	URAC; VPR; VPAA, VPHA and President critically evaluate the performance of the Centers on a Triennial basis.	In 2015 there is no plan for objective assessment of investment in research initiatives.
Development of	URAC develops plan	URAC; VPR;	Three year	Plan should be in	In 2015 there is no plan for an objective

implementation plan		VPAA; VPHA, President	rolling average	place by Fall 2015	assessment of investment in research initiatives or Centers.
Objective: Increase the visibility of the major research and scholarly programs at ETSU by publicizing stepwise increases in investment and accomplishment of research and scholarly teams.					
Publicize scholarly and creative output such as grant awards, papers in top ten journals, juried art exhibitions and books published	Chair's and Dean's offices keep records	University Relations	Semester	Each type of product such as exhibition, book, grant award and paper in top ten journal in respective field is publicized on university website and local media	No formal mechanism exists to publicize research and scholarship at the university level in 2015.
Objective: Strategically align faculty into interdisciplinary Centers.					
Offer membership in Centers for access to Center infrastructure.	Center Directors keep list of members	Chairs, Center Directors	Semester	Each member of a Center has access to executive aide, space, regular meetings, labs and other Center infrastructure	Volume and quality of Center infrastructure is unknown at baseline. Center membership is unknown at baseline.

Objective: Develop dollar amount for benchmarks for university investment in research infrastructure based on productivity or potential for recognition for the university by Fall 2014. A proposed framework for such investment follows.

Table 3. Center Growth Investment Model.

Research team is called…	**Annual extramural funding required…**	**Investment by the University**	**Source of funds**
Working Group	$10,000-50,000	Need - up to $5,000	Operating
Initiative	$51,000-250,000	Need - up to $25,000	IDC
Lab or other	$251,000-500,000	Need - up to $75,000	IDC
Center	>$500,000 annually	Need- $100,000 or more	IDC and or Development

In this model a priori investments are relatively low risk since the investment is made after successful receipt of extramural funds.

Test model with emerging research initiatives	VPR and Deans keep track of investment with database of investment x productivity	VPR and Deans	Annual	Investment is automatic when the metrics are met	In 2015 investment decisions are not made on objective assessment of productivity of the research team. No such model is presently approved or followed.

D. Prioritize focused recruitment and retention of highly productive faculty.

Recruitment and retention of highly research-productive faculty and staff in research is sorely needed in order to increase the university's regional and national presence in research and scholarship. Centers will facilitate a method to prioritize areas for recruitment.

Goal: Create and implement a plan for research faculty recruitment and retention. Recruit and retain promising research faculty for areas of strength and importance for the university.

Objective: Recruitment of new faculty with significant potential for developing strong, funded, high impact research programs in priority areas.

Action	Data Source/System	Responsible Party	Frequency of Monitoring	Targets (for quantitative indicators)	Baseline Data
National advertisement highlighting research collaborations on campus	HR has data on advertising for each position	Deans & Department staff	Each search	Each search is vetted by the Dean for potential congruence with research Center collaboration	Outside of a few new research Centers, hires are not centrally vetted by Deans for alignment with Center-level priorities.
Pay at 50th percentile or better with a soft money contribution toward salary	HR has data on all salaries	VP for HR; VPAA; VPHA; President	Ongoing	50th percentile for rank based on discipline specific categorizations and guidelines.	The extent to which the new hires are hired at the 50th percentile for rank and discipline is not known in 2015. Retention figures are not kept.

Objective: Support workload plan creation and adherence that protects research time for existing and new faculty with significant potential for developing strong, externally funded research programs.

All departments have published rigorous workload and P&T plans that support research and scholarship that are adhered to by Chairs and Deans	VPAA and VPHA have data on each departmental workload plan	VPAA & VPHA	Annual	Each department revises workload and P&T plans on an annual basis	All departments have workload and P&T plans in 2015. The extent to which they reflect policies that support research growth is unknown.

Objective: Promote department and college awareness of the opportunity to offer a primarily research track for promotion.

Promotion of faculty through research rank	HR has a database of all faculty on campus	Chairs, Center Directors	Annual	Each college and center will evaluate the extent to which the research rank for promotion is used appropriately	There are few research track faculty on campus.
Objective: Focus recruitment to develop strength in areas of high impact.					
Chairs and Deans should prioritize new faculty hires that align with, or are able to, support existing or planned Centers.	Deans of each college keep track of faculty by discipline.	Deans, Chairs & Department staff	Each search	Each search is vetted by the Dean for potential congruence with research Center collaboration	Outside of a few new centers, hires are not typically vetted by Deans for alignment with center-level priorities.
Develop and maintain streamlined procedures for recruiting and hiring of post-doctoral fellows at nationally competitive salaries in areas of focus for the university	HR, Center Directors and Deans keep track of fellows.	HR and Deans facilitate hiring fellows on fixed year contracts.	Annual analysis	Procedure is created and publicized.	In 2015 there are few post doctoral fellows on campus.
Objective: Develop incentives, awards, and events to demonstrate and advertise the accomplishments of faculty, staff and students engaged in research, creative activities and scholarship. This approach will serve to market discoveries in research to the university, local community and alumni, and will also help to boost morale and improve retention of faculty.					
Reinforce the use of institutional mechanisms to provide competitive salaries to faculty that obtain extramural funding.	HR, VPAA, and COO-level analysis of remuneration	VPAA; VPHA/COO; HR	Annual analysis	Each researcher has an opportunity to increase their salary based on externally sponsored salary support or summer salary for 9-month employees	In 2015, the only university-level mechanism that utilizes the soft-money contribution to enhance salary is the at-risk mechanism. The university should benchmark this practice against other health sciences focused institutions, making changes that benefit faculty and staff.
Implement the	Deans; AD for Finance	VPR, Deans	Annual	Annual analysis for	In 2015 there are a variety of plans on

incentive plan for faculty and staff that displace state dollars with extramural funds from grants.	and HR keeps a record of remuneration for faculty			productivity by faculty person considering the incentive award paid to the faculty member. College Deans should be expected to use the incentive plan, with the single exception of financial exigency as defined by TBR.	campus that make use of 1) no incentives, 2) incentives based on soft money contribution to salary, 3) incentives based on displaced state or private funding support, 4) incentives based on IDC and 5) other mechanisms. Deans should also have the flexibility to incentivize those staff members that contribute in meaningful ways to bring external or new funding streams to the university. Further, Deans and Chairs should promote summer research support as an incentive for 9-month faculty.

E. Prepare, organize and equip university research, budget and information technology services for growth.

Restructuring of the organization of research administration is needed at numerous levels. The current organization structure of ETSU research administration has a Vice Provost for Research rather than a Vice President for Research. Peer institutions with research as a stated mission have the senior research administrator at the Vice President (or equivalent) level so that research and scholarship are kept on the university agenda on a weekly if not daily basis. While some colleges have an Associate Dean for Research and associated infrastructure to direct and facilitate the research mission of those colleges, many do not. Hence, every ETSU academic college should have this position.

GOAL: Provide organizational support to facilitate grant-seeking and college-level leadership and resources for research. To facilitate this, ORSPA should offer timely updates to units with respect to: the number of faculty members actively involved in research activities, the number of proposals submitted annually, the number of proposals funded, measures of research related scholarly activity broadly defined so as to include performances and publications, student research activities, and financial measures including philanthropic contributions in support of university research.

Objective: The position of Vice Provost for Research should be transitioned to the position of Vice President for Research, reporting to the President with concomitant access, privilege and responsibility.

Action	Data Source/System	Responsible Party	Frequency of Monitoring	Targets (for quantitative indicators)	Baseline Data
Appointment is made	N/A	President	N/A	N/A	The position presently reports to the Provost.

Barrier: Faculty members with extramural research grants have great difficulty knowing balances of grants on a monthly basis. The current structure of research administration has the post-award accounting managed by a separate department from the Office of Research and the flow of information between these two offices is deficient, making the jobs of individuals in these two respective departments difficult, and making it difficult for the funded investigator to receive timely and accurate data or information.

Objective: The Office of Research and Sponsored Programs should have oversight of pre-award budgeting, grant and post-award accounting to facilitate efficient spending and communication with PIs.

Assign oversight of post-award accounting to VP for Research	N/A	President	N/A	Evaluation of post award accounting for errors and efficiency as evaluated by PIs.	In 2015, post award is held in Grant Accounting, a division of Financial Accounting

Barrier: Payment of research participants is cumbersome, time consuming and done in a manner that makes accounting easier but not research.

Objective: Review of research participant compensation procedures at universities that have made a transition to higher impact work.					
Collect and review payment procedures	Baseline report and peer documents have been collected by the University Research Council	VP for Research or designee	Annually until resolved	Payment procedures that facilitate recruitment over administrative efficiency	In 2015 a URAC subcommittee produced a Research Participant Compensation Report that assessed the compensation policies of all TBR universities, the UT system, all ETSU peer Institutions and the top 25 American research universities and provided recommendations for revising the current TBR policies.
Ascertain mechanism for change of policy at TBR	See baseline report	VP for Research; Provost	Annually until resolved	N/A	In 2015 a restrictive research participant payment system is in place.
Make appeal for policy change	See baseline report	VP for Research; Provost	Annually until resolved	N/A	In 2015 a restrictive research participant payment system is in place.
Objective: Develop College-level infrastructure to support grant development					
Establish an Associate Dean for Research (or equivalent) for each college or other administrative unit.	N/A	Deans	Annual until hired	ADR will be evaluated according to the volume and quality of research proposed from the College.	In 2015, the ADR position is active in COPH, CARHS and CON.
Establish a Research Services Manager position or equivalent for each college to help support pre- and post-award for faculty PIs.	N/A	Deans	Annual until hired	RSM will be evaluated according to the quality of the research proposal administration as evaluated by PIs, and against job description.	In 2015 the RSM position is in place in the COM and COPH.
Objective: Establish additional university level grant-facilitation and research mentorship support					
Provide all faculty and graduate students	Human Resources data for research personnel	VP for Research	Annual until hired	Research support personnel will be	In 2015 minimal formal research proposal facilitation programs are funded and

access to professional assistance with research design, software, computing support, statistical analysis, facilitation, budgeting, and training in the art of research dissemination, including writing results for peer-reviewed publication, professional poster/presentations and other reporting.				evaluated with respect to the volume and quality of the proposals submitted from their units	operational at the university level.
Establish and cultivate a formal research mentoring program wherein funded faculty, endowed professors and other established investigators mentor junior faculty, post-doctoral fellows and senior doctoral students.	Human Resources data for research personnel	VP for Research	Annual until hired	Research support personnel will be evaluated with respect to the volume and quality of the proposals submitted from their units	In 2015 minimal formal research mentoring programs are funded and operational at the university level.

F. Prioritize university and college-level fund-raising for research

Fund-raising is needed to support the continued improvement and expansion of research infrastructure, as well as to provide funds for other initiatives described above. Philanthropy could facilitate expansion of research activities in a number of areas, including the development and partnership/naming of research infrastructure such as research buildings or wings, core facilities, and endowed professorships. Named endowed professorships are a particularly crucial need because there are very few sufficiently senior, nationally recognized scholars at ETSU that have the potential to attract large extramural center funding. Hence, recruitment of faculty with active scholarship in key areas to endowed professorships would facilitate center development. That is, these individuals would serve as magnets and mentors, spurring recruitment of other funded faculty members into select areas. Endowed chairs would have protected time (minimum 50%) from teaching and service to conduct research and build teams. Within this the theme of fundraising, both philanthropy and grant writing focused on infrastructure enhancement are important routes to success in enhancing the research mission at ETSU.

Goal: Coordinated fundraising for research infrastructure is a university priority. Increase the activities of University Advancement in raising private funds to provide infrastructure support for high priority research activities.

Objective: New university advancement personnel should be hired to focus on research development, because ETSU Development is not sufficiently staffed presently to address philanthropy in the area of research development.

Action	Data Source/System	Responsible Party	Frequency of Monitoring	Targets (for quantitative indicators)	Baseline Data
Research Development Officer hired to support existing Centers; coordinates with VPR	Evaluation of the development officer outcomes in each year	VP for Advancement through development officer	Annual	Salary of the development officer covered in first year; targets for yearly development are developed with Center directors	There are no development officers for Centers in 2015.
Research Development Officer hired to support new Centers and other research; coordinates with VPR	Evaluation of the development officer outcomes in each year	VP for Advancement through development officer	Annual	Salary of the development officer covered in first year; targets for yearly development are developed with Center directors	There are no development officers for Centers in 2015.

Objective: Establish endowed chairs or scholars (presumably named).

Resources for endowed chairs are sought by the development officers	Minimum gift level for endowed chair is established at $500,000	VP for Advancement	Annual	Evaluated each year	TBD
Promotional information such as a one-pager or other consumable information for each research initiative	Creation of information in collaboration with ETSU marketing and branding initiative	Center Directors, Chairs and Deans	Annual and as needed	Revised each year	Information about the Centers and research labs are not centrally held in 2015.
Meetings with potential donors for research activities	Evaluation of the development officer outcomes in each year	VP for Advancement through development officer	Annual	Targets for yearly development are developed with Center directors	Aside from one in the College of Business, there are no development officers for Colleges, Departments or Centers in 2015.
Objective: University Advancement will seek funds for student research scholarships, tuition, stipends, fees, and travel.					
Development office holds fundraisers for stated aim	Evaluation of the development officer outcomes in each year	VP for Advancement	Annual	Targets for yearly development are developed with Deans. Chairs and Center directors	Aside from one in the College of Business, there are no development officers for Colleges, Departments or Centers in 2015.

G. Partner with the community and industry to create opportunities to impact real needs with inter-disciplinary and translational research.

The ETSU 125 Visioning Report specifically proposes that there will be a focus on trans-disciplinary, inter-professional and translational research. To achieve a high level of inter-disciplinary and translational work, centers and teams should engage with community stakeholders frequently and in a systematic manner.

Goal: Establish regional needs through frequent and ongoing conversation and partnership with external stakeholders in the community.

Objective: Identify formal quarterly listening opportunities to engage with the stakeholders from regional intellectual, social, cultural, health and economic resources that will inform and support research collaboration.

Action	Data Source/System	Responsible Party	Frequency of Monitoring	Targets (for quantitative indicators)	Baseline Data
Hold annual regional conference on research and economic development	Creation of the conference planning committee	VPR & conference planning committee	Evaluation will drive conference need.	Attendance and evaluation metrics will be created by the conference	No conference held in 2015.
Objective: Establish and cultivate mutually beneficial research partnerships with healthcare, education, social services and industry such as the the ETSU Innovation Lab, Mountain Home Veterans Medical Center, Eastman Chemical, Mountain States Health Alliance, other health systems, the Tennessee Departments of Health, Mental Health, Conservation, Education and Commerce and First Tennessee Human Resource Agency. Students will also benefit from these partnerships through increased access to internships and employment opportunities.					
Establish one 5/8ths position with VA each semester for three years	College faculty headcount; VA headcount	VP Health Sciences & VPR; Deans	Each semester for 9 semesters	9 5/8ths positions with the VA by January 2018	No new shared research positions in 2015
Provide adjunct appointments with some library benefits to community research partners such as Eastman scientists	Library staff; new list of adjuncts with access	Dean of libraries	Annual	At least 10 new adjuncts with privileges each year	No new adjuncts with library privileges in 2015.
Establish leadership council of Deans, the VPR and industry leaders in the region to	Minutes from meetings with action items and follow up.	VP Health Sciences & VPR; Deans	Annual	Biannual meetings	No new leadership council in 2015.

foster research growth and impact.					