

THE UNIVERSITY OF TENNESSEE  
BOARD OF TRUSTEES

MINUTES OF THE RESEARCH, OUTREACH, AND ECONOMIC DEVELOPMENT  
COMMITTEE

February 28, 2013  
Chattanooga, Tennessee

The Research, Outreach, and Economic Development Committee of the Board of Trustees of The University of Tennessee met at 1:00 p.m. EDT, Thursday, February 28, 2013, in the Tennessee Room at the University Center on the campus of The University of Tennessee at Chattanooga.

**I. CALL TO ORDER**

George E. Cates, Chair, called the meeting to order.

**II. ROLL CALL**

Executive Vice President David Millhorn called the roll, and the following members of the Research, Outreach, and Economic Development Committee were present:

George E. Cates  
Tim L. Cross  
Joseph A. DiPietro  
J. Brian Ferguson  
Teresa K. Fowler  
Vicky B. Gregg  
Raja J. Jubran  
Shalin N. Shah  
Don C. Stansberry, Jr.  
Victoria S. Steinberg  
Janet M. Wilbert

Monice Moore Hagler, Kevin S. Huffman, Julius T. Johnson, Richard G. Rhoda, Marty Spears, and David M. Stern were not present at the meeting.

Dr. Millhorn announced the presence of a quorum of the Committee. Other Trustees, members of the administrative staff, representatives of the media, and members of the public were also present.

### III. MINUTES OF LAST MEETING

Chair Cates asked for any corrections to the minutes of the November 8, 2012 meeting of the Committee. Hearing none, the Chair called for a motion. Trustee Stansberry moved approval of the minutes as presented in the meeting materials. The motion was seconded by Trustee Gregg and carried unanimously.

Chair Cates noted there were a number of reports and presentations to be given and asked Dr. Millhorn to begin the presentations.

### IV. LAUNCH TN

Dr. Millhorn introduced Mr. Charles Brock, new President and CEO of Launch Tennessee, a public-private organization whose mission is to make companies successful and to build the economic base of the State of Tennessee. Mr. Brock presented a PowerPoint presentation of a five-year strategic plan to make Tennessee a national innovation leader (Exhibit 1). Mr. Brock highlighted four core areas of the LaunchTN mission: entrepreneurship, commercialization, capital formation and outreach. Featured within its outreach scope, LaunchTN was #1 in the country for the number of stakeholders and partners at Global Entrepreneurship Week, and plans for its Southland 2013 Conference are underway. The organization, he noted, has a year-old \$30M INCITE Co-Investment Fund from the Haslam administration, a third of which has been invested to date (leveraging over \$18M in venture capital firms across the Southeast). Mr. Brock presented LaunchTN goals and metrics for jobs created, the increase of venture capital investment and the promotion of technologies, with the primary goal of making Tennessee the #1 place in the Southeast to start and grow a business. Mr. Brock noted the LaunchTN board and committee members, as well as its commercialization staff members. Mr. Brock gave highlights of key recent technology transfer developments in 2012, among which UT Research Foundation (UTRF), he said, had a 40 percent increase in the number of disclosures (now at an all-time high of 144), a startup of 9 companies with licenses from UTRF, and had conducted more licensing deals than ever before in UTRF history. In addition, numbers are significantly up within technology transfer across the state and LaunchTN will work to ensure this growth continues in the numbers of startups, patent applications, patents issued, and licenses and options.

Mr. Brock asked for any questions from the group, and he was asked by Trustee Cates to elaborate on the relationship between LaunchTN and UTRF. Mr. Brock noted the principal point of contact working with both UTRF and Oak Ridge National Laboratory is Jill Van Beke, who works to strengthen communication among the organizations and supports efforts that over time increase the volume of commercialization activity among these and other partners across the state. Asked about the INCITE fund investment by Trustee Foy, Mr. Brock noted this program was funded by the U.S. Treasury and hopes are for the continuation of this three-year program, especially in view of the leverage enabled with the investment, deals in the pipeline, and the interest shown in general for the program.

Chair Cates thanked Mr. Brock for his informative presentation.

**V. "BREAKING THE MOLD: THE UNIVERSITY OF TENNESSEE, BATTELLE, AND THE RESURGENCE OF OAK RIDGE NATIONAL LABORATORY"**

Dr. Millhorn provided to board members a new publication, "Breaking the Mold: The University of Tennessee, Battelle, and the Resurgence of Oak Ridge National Laboratory." Dr. Millhorn noted the book was the story from UT's perspective of the management by UT and Battelle of Oak Ridge National Laboratory for the last twelve years (2000-2012). He used PowerPoint slides to show before-and-after scenes of many of the buildings on the ORNL campus (Exhibit 2). It is important to document the many significant changes, Dr. Millhorn said, that have taken place during UT-Battelle management of ORNL, and this publication certainly illustrates this transformation very well, both in story and picture form. ORNL was literally on the chopping block, Dr. Millhorn stated, when UT-Battelle began its management, and the Lab now is considered the premier national laboratory in the country. Dr. Millhorn noted in particular that the state of Tennessee and UT had built three new buildings at ORNL during the last twelve years: the Joint Institute for Biological Sciences, the Joint Institute for Computational Sciences, and the Joint Institute of Neutron Sciences. These buildings are occupied by both UT and ORNL scientists working together on many exciting initiatives. Dr. Millhorn noted the fourth Joint Institute, the Joint Institute for Advanced Materials, is in the process of being built on the Cherokee Farm Innovation Campus in Knoxville.

## VI. NATIONAL ACADEMIES REPORT: "RESEARCH UNIVERSITIES AND THE FUTURE OF AMERICA"

Dr. Millhorn provided a PowerPoint presentation on Research Universities and the Future of America (Exhibit 3) featuring the report "Ten breakthrough actions vital to our nation's prosperity and security" released by the National Academy of Science (NAS) in June 2012, and highlights of the "Challenges and Opportunities" Conference of the National Research Council (NRC) at Vanderbilt University in January 2013.

Dr. Millhorn noted that, collectively, America's research universities have long been the most abundant source of innovation in the world. Innovation provides a solid foundation of economic growth leading to good jobs, prosperity, health and the security of our nation. Recently, Dr. Millhorn said, members of Congress expressed the concern our nation's universities are at risk and, consequently, Congress commissioned the National Academy of Science (NAS) to assess the competitive position of America's research universities. The NAS was asked to identify ten actions Congress, the federal and state governments, and industry should take to assure the long-term viability of our research universities.

The National Research Council of the National Academies' summary publication of the ten breakthrough actions and the full book of the report were distributed to board members. The publications give good insight, Dr. Millhorn said, as to what our universities are accomplishing and what they must do to stay ahead in a most competitive environment.

Currently, Dr. Millhorn said, American research universities are recognized as the best in the world (with the ability to innovate across a broad spectrum of science and engineering; outstanding talent—48 percent (330) of Nobel Prize awards in science; and national laboratories providing "big science" capabilities); however, there are great challenges for remaining the best in the world. These challenges include long-term federal funding for research; creating and sustaining productive partnerships with government and industry; educating, recruiting and retaining talented scientists and engineers; and intense global competition.

Dr. Millhorn noted Tennessee's elected officials, including Senators Alexander and Corker, have been highly supportive of higher education, research and the national laboratories. Senator Alexander and Rep. Bart Gordon were sponsors of a NAS study, "Rising Above the Gathering Storm," which led to the America

Competes Act (authorized in 2007 and reauthorized in 2010 but not funded). The America Competes Act focused on investing in innovation through research and development (R&D) to improve the competitiveness of the U.S.

Dr. Millhorn noted the impact of the last 150 years of innovation in the U.S. through viable partnerships of research universities and the federal government (with the Morrill Act of 1862, Post World War II initiatives, and 21<sup>st</sup> century knowledge-and-information-based science). During the last half century the primary sponsor for university research was the federal government and to a lesser extent state government and industry. The next wave of innovation, Dr. Millhorn believes, will be applying “big data” with extremely fast computers to simulate real-life activity in areas such as automobile manufacturing, climate control and cancer cause-and-effect models. America must stay ahead in this arena of innovation. Dr. Millhorn presented charts of R&D (1953-2007) regarding federal spending on defense and nondefense, trends in nondefense by function (space in 1960s, health and medicine from mid-1980s to present), colleges and universities by source of funds and other factors. Funding by industry is growing three times that of federal-level support, Dr. Millhorn said. Universities must compete for this funding and align themselves with the needs of industry, which is relying increasingly upon universities to assist with its research activities. Dr. Millhorn noted he believed UT was well-positioned for leadership in this research activity and partnerships are critical for this success.

A video from the National Research Council was shown highlighting statements of private- and public-sector leaders on the importance of strong research universities for the continuing well-being of the country and world.

Dr. Millhorn concluded his presentation with discussion of the ten recommendations given in the NRC report to members of Congress, the importance of recruiting and retaining top talent for research universities, and the funding sources necessary for research and sponsored programs.

## **VII. CHEROKEE FARM UPDATE**

Dr. Millhorn recognized Cliff Hawks, President and CEO of Cherokee Farm Development Corporation (CFDC), to give an update on Cherokee Farm Innovation Campus. Dr. Millhorn noted the importance of Cherokee Farm to the future of The University of Tennessee. It is being built to promote partnerships with private companies to enhance the University’s research position significantly and to change the perception of the area and state to a high-tech

entity engaged with research technology and innovation. Dr. Millhorn noted Mr. Hawks began work in November 2012, with a primary focus to manage the recruitment of companies to Cherokee Farm Innovation Campus. Mr. Hawks stated a key goal was to do everything possible to raise awareness around the project. At CFDC's first board meeting (held on February 26, 2013), matters such as the approval of the bylaws were transacted. Most importantly in his new role, Mr. Hawks noted, he wanted to begin the process of identifying the companies CFDC would want to approach and partner with at Cherokee Farm Innovation Campus.

Mr. Hawks gave a PowerPoint presentation showing aerial views of Cherokee Farm Innovation Campus (Exhibit 4) (noting the infrastructure was virtually complete except for some roadwork underway). He noted the first building now going up on the property, the Joint Institute for Advanced Materials, a 140,000 square foot construction, is a tremendous sales tool for marketing and touting the actual presence of both UT and ORNL on the property. Raising awareness to state and city government officials and community leaders will be, Mr. Hawk believes, key to success of the project. Mr. Hawks has now met with Knoxville Mayor Rogero and her staff, individually with each city council member, Chamber and Innovation Valley leaders, Deputy to the Governor Claude Ramsey, and other officials. Lt. Gov. Ron Ramsey and ECD Commissioner Hagerty and his senior staff have recently toured the site. These state and city leaders and officials clearly see the positive impact of the project, Mr. Hawks stated, for the University, community and region. Mr. Hawks noted he has received excellent support from the University and ORNL as he has begun to identify companies for partnership at Cherokee Farm Innovation Campus.

Mr. Hawks gave a demonstration of the newly-designed, soon-to-be launched interactive website for Cherokee Farm Innovation Campus. Plans are for an approximate mid-March replacement of this website for the current website of Cherokee Farm hosted by UT. The website is just a part of the marketing process. At the end of the day, Mr. Hawks said, what is critical for success is the dialogue begun by CFDC and companies invested in the University and ORNL.

Mr. Hawks concluded his presentation and stated he is excited to be a part of the Cherokee Farm Innovation Campus project. Mr. Cates remarked that this excitement came through loud and clear during the presentation. Trustee Horne asked about the bidding process for the Joint Institute of Advanced Materials' building. Dr. Millhorn noted this building was a TDOT \$60M grant won by Blaine Construction. Mr. Cates asked Mr. Hawks if the economic recession is a

major challenge in marketing the project. Mr. Hawks said such a time is opportune for companies to partner with a university and leverage the assets they have to offer.

Chair Cates thanked Mr. Hawks for his excellent presentation.

## **VIII. CHATTANOOGA'S SMART GRID PROJECT**

Dr. Millhorn introduced Mr. Harold DePriest, President and CEO of the Electric Power Board of Chattanooga, to make a presentation on the EPB Smart Grid project. Mr. DePriest began his presentation (Exhibit 5) with a view back to Chattanooga 20 years prior, at that time situated in a stagnant economy and EPB recognizing an aging electric system. The concept developed to consolidate and resolve these problems with the creation of a highly-capable communications network. This solution would modernize the electric system, stimulate economic growth in the community, and create commercial products available to sell to finance the venture. Mr. DePriest described the steps enabling this concept and the challenges faced in the process, including installation of 8,000 miles of fiber and \$36M of intelligent switches. Due to Smart Grid improvements, outage time and customer impacts have been significantly decreased. The Department of Energy and the TVA systems quantify value saved by outage preventions is \$50-\$80M annually by Chattanooga businesses. Mr. DePriest recounted the incredible response time and monetary savings with Smart Grid technology during recent January storms. The real payoff, Mr. DePriest said, for Smart Grid technology is in jobs. Keeping the power on or restoring it quickly is a tremendous reliability sales point for keeping and for bringing industry to Chattanooga.

Mr. DePriest concluded his presentation and asked if anyone had questions. He was asked by Trustee Wharton about underground utilities and noted the cost for installing them is approximately three times the cost of overhead utilities. Chattanooga now has about 15 percent of its utilities underground. Mr. DePriest was asked by Trustee Horne to compare Tennessee industrial-commercial power rates to those of Georgia Power and other utilities. Georgia Power, Mr. DePriest answered, frequently has confidentiality agreements with large industry and their rates are kept private. As a general statement, Mr. DePriest said, Tennessee has low residential utility rates, but it has among the highest industrial rates in the Southeast (and even more so than Northern states such as Ohio and Indiana). This is a big issue for Tennessee economic development, it was noted. Mr. DePriest was asked by Trustee Foy to remark upon EPB success in bringing fiber

to residential areas in Chattanooga. The initial expectation was that this technological improvement would help to pay for the Smart Grid system; however, Mr. DePriest said, the residential fiber process will in fact pay for the system and bring significant additional income to EPB (commercial sales of \$80M revenue for this year will be seen). These technologies are giving Chattanooga a strong competitive edge in its operations as well as making its Internet enterprise the fastest in North and South America and in most parts of the world. A short discussion was held concerning Chattanooga's reputation as "America's First Gig City," referring to Chattanooga's metropolitan gigabit Ethernet capabilities and the tremendous applications and advantages for the area.

Chair Cates thanked Mr. DePriest for his excellent presentation.

## **IX. UTC'S WHITE HOUSE US IGNITE INITIATIVE**

Dr. Millhorn welcomed Dr. Henry McDonald, Distinguished Professor and Director of the Center of Excellence in Applied Computational Science and Engineering (CEACSE) at the University of Tennessee at Chattanooga (UTC). In association with staff of the SimCenter, a center within the UTC Graduate School at the College of Engineering and Computer Science and SimCenter Enterprises (a 501(c)(3) nonprofit supporting the SimCenter), Dr. McDonald made a presentation (Exhibit 6) on the White House-inspired public-private initiative "US Ignite" grant and what the award means for UT and the Chattanooga community. Dr. McDonald noted the award was greatly facilitated by the Smart Grid vision of Harold DePriest and his colleagues at EPB and its resulting ultra-fast broadband technology; indeed, Dr. McDonald said, Chattanooga's Smart Grid has been viewed as "poster child" for such a national enterprise. Announced in June 2012, the US Ignite initiative had been given prior careful review by leaders and partners in industry, academia and government in its program formation to identify and share best practices and resources to foster creation of next-generation Internet applications for transformative public benefits.

Dr. McDonald discussed the significant applications the US Ignite program promotes in Chattanooga—such as the Mesh Network with city police, fire and traffic WiFi connecting over EPB fiber; traffic sensors for adaptive traffic signal control; real-time traffic sensors for traffic volume; and actively-controlled LED street lights—and the six US Ignite priority areas of advanced manufacturing, health information technology, transportation, education and workforce development, clean energy, and emergency preparedness and public safety. Dr. McDonald highlighted other Chattanooga assets the US Ignite team found



impressive such as the SimCenter, UTC's National Center for Computational Engineering (and its high-performance computer system), SimCenter Enterprises (a nonprofit company dedicated to supporting the SimCenter through commercialization of SimCenter intellectual property), the National Science Foundation (NSF) node allowing access to their Global Environment for Network Innovation (GENI), and the 10 gigabit fiber optic connection with UT/Oak Ridge National Laboratory and the National Institute for Computational Sciences (NICS).

Dr. McDonald discussed SimCenter support-tool applications in the context of the 2011 Fukushima Daiichi nuclear plant devastation in Japan and in a 2004 chemical plant explosion in Conyers, Georgia. Dr. McDonald explained rapid evacuation deployment models for a large metropolitan area such as Los Angeles and he noted the critical difference resulting in the use of these sophisticated emergency mitigation systems in the number of lives saved during the occurrence of public-safety disasters.

SimCenter Enterprises received a \$300,000 NSF Eager grant in 2012 for its charter leadership in exploratory research, awarded to help jumpstart a pilot demonstration of the Disaster Mitigation System in the City of Chattanooga, Dr. McDonald noted. NSF is the public component of US Ignite and part of the US Ignite program was in fact facilitated by a Chattanooga team through its work on Emergency Preparedness and Public Safety. Dr. McDonald noted the tremendous support by the City, the Electric Power Board and other important resources in Chattanooga for the US Ignite initiative.

Dr. McDonald concluded his presentation with a discussion of the next steps and with a summary of the US Ignite program. He noted UTC and UT now have a great opportunity to lead in Smart Grid/Smart City research and to join other GENI elite research universities (MIT, Stanford, etc.) in looking at next-generation Internet capabilities.

Mr. Cates thanked Dr. McDonald for his excellent report and, in the interest of time, asked for any questions to be waived until after the conclusion of the meeting.

## **X. UTC SERVICE LEARNING PRESENTATION**

Dr. Millhorn recognized Dr. Chris Smith, Interim Director of the UTC School of Nursing. Dr. Smith introduced fifth-semester senior Nursing students Craig

Dockery and Adam Leland, who, she said, are involved, along with other UTC faculty and staff, in a program within the School of Nursing (SON) which works to meet the needs of the homeless population in the City of Chattanooga. Dr. Smith presented a video and power-point presentation (Exhibit 7), "UTC Faculty and Students Shattering the Stereotype in the Chattanooga Community," depicting the many needs of the homeless and the outreach programs, partnerships and clinics dedicated to help this population. Featured in the presentation were the Chattanooga Community Kitchen and Foot Clinic Today and helpers Brother Ron Fender, Dr. Chris Seglar and Dr. Lisa Muirhead. These outreach enterprises combine medical and spiritual equity, Dr. Smith stated, for one of the most vulnerable segments of the Chattanooga population. UTC community nursing students staff the Foot Clinic three days a week. Dr. Smith noted UTC has \$5M in Health Resources and Services (HRSA) grants for the current year and other proposals and grants are pending. Dr. Smith highlighted the work taking place through the UTC SON's Get Healthy Grant and the wide range of hands-on benefits and experience for students and staff at all levels in UTC SON community outreach programs.

Dr. Smith described UTC SON Nurse course 4520 and 4530, Community Concepts and Practicum, where students learn in the classroom and then go into the community to implement what they are learning through evidence-based and best-practices' concepts. Dr. Smith concluded her comments with a statement by Antoine De Saint-Exupery: "If you want to build a ship, don't drum up the men to gather wood, divide the work and give orders; but, rather, teach them to yearn for the endless immensity of the sea." The UTC SON students never forget their experiences with the Chattanooga homeless population, Dr. Smith stated.

SON students Adam Leland and Craig Dockery spoke about the inspiring experiences gained through their involvement in the SON community outreach programs with Chattanooga's homeless population. Putting a face to and creating relationships with these individuals have given them life-changing perspectives on the homeless population, they said, and the programs have provided an entry point into health care for people who don't have many entry points.

Chair Cates thanked Dr. Smith, Mr. Dockery and Mr. Leland for their excellent presentation.

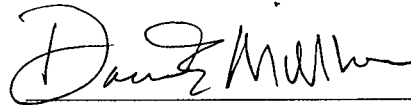
**XI. OTHER BUSINESS**

Dr. Millhorn was asked by Trustee Wharton if there was an update concerning Vonore and UT's biofuels initiative. Dr. Millhorn noted he had recently talked with Dr. Kelly Tiller (President, Genera Energy Inc.), and she and other staff are in the process making presentations to potential capital investment sources. Genera Energy Inc. continues its relationship with DuPont and is also exploring other relationships within the industry. Dr. Millhorn stated he had received the general impression from Dr. Tiller that progress is being made and Genera Energy Inc. anticipates having private funding by the fall of this year.

**XII. ADJOURNMENT**

There being no further business for action by the Committee, Chair Cates adjourned the meeting.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "David E. Millhorn", written over a horizontal line.

David E. Millhorn, Ph.D.