

THE UNIVERSITY OF TENNESSEE BOARD OF TRUSTEES
MINUTES OF THE
RESEARCH, OUTREACH, AND ECONOMIC DEVELOPMENT COMMITTEE

March 31, 2016

Martin, Tennessee

The Research, Outreach, and Economic Development Committee of the Board of Trustees of The University of Tennessee met at 1:30 p.m. CDT, Thursday, March 31, 2016 in the Boling University Center Ballroom, on the UT Martin campus in Martin, Tennessee.

I. CALL TO ORDER

Chair Bill Evans called the meeting to order.

II. ROLL CALL

Dr. Evans asked Dr. David Millhorn, UT Executive Vice President, to call the roll. The following members of the Research, Outreach, and Economic Development Committee were present:

William E. Evans, Chair
George E. Cates
Tim L. Cross
Joseph A. DiPietro
Jefferson S. Rogers
Jalen K. Blue
David A. Golden
Julius Johnson
Raja J. Jubran
Rhedona Rose
Miranda N. Rutan
John D. Tickle

Russ Deaton, Candice McQueen, Margaret A. Norris and David M. Stern were not present at the meeting.

Dr. Millhorn welcomed Jefferson Rogers, who is replacing Dr. Brian Donovan as a non-voting faculty member, to the ROED Committee as well as to the UT Board of Trustees.

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

III. MINUTES OF LAST MEETING

Chair Bill Evans asked for any corrections to the minutes of the October 8, 2015, meeting of the Committee. Hearing none, the Chair called for a motion to approve the minutes as written. The motion was made, seconded, and carried unanimously.

IV. UPDATE ON JOINT INSTITUTE FOR NEUTRON SCIENCES

Dr. Taylor Eighmy, UTK Vice Chancellor for Research and Engagement, showed a power-point presentation (Exhibit 1) providing an update on the Joint Institute for Neutron Sciences (JINS). He thanked board members for accommodating the change in the agenda order due to his travel schedule and apologized for having to leave for Boston to attend another event. Dr. Eighmy gave an overview of the Research and Development Foundation and stressed the importance of what we do with ORNL and how it is critical to becoming a top 25 university. He stated the joint institute for neutron sciences is one of five joint institutes and explained the role of neutrons and how they are being used as vital tools in research. If you can create neutrons you can use them to characterize all kinds of things on different scales. Neutrons are produced out of a fusion reaction. Two of the best facilities in the world for neutron sources are located at ORNL. These facilities are very important to this science. Combined with the expansion of the joint institute, it will be the best in the world. ORNL expects the second target station to come online in 2025. Our new director, Dr. Alan Tennant, along with Associate Lab Director, Dr. Paul Langan, work closely together to prepare and grow the institute for its future. The JINS building was completed in 2010. The 30,000 square foot facility is operated jointly by UT Knoxville and ORNL. It contains 8 labs, 60 offices as well as seminar and meeting rooms. We would like to recognize the collaborative work that E.O. Wollan and C. Shull pioneered in the 1950's in the field of neutron diffraction when they were employees of Clinton Engineer Works at ORNL by renaming the facility. Clifford Shull received the Nobel Prize in Physics in 1994 for his work. We are requesting your approval for a formal name change to the Sholl Wollan Center. If you approve, the families would attend a center workshop later in the summer to be recognized.

Dr. Eighmy opened the floor for questions. Committee members asked the following:

- How might we leverage the use of neutrons in precision medicine to increase our ability to attract leading faculty members in the area?
 - Neutrons can react on the atomic molecular scale in real time. The opportunity to apply neutron science is vast and available to the world. Meetings are already taking place with National Institutes of Health in how

- can we collaborate to use this technique/facility to full potential.
- Protons have clinical applications from the standpoint of treating disease conditions. Do neutrons have the same possibilities?
 - Not to Dr. Eighmy's knowledge. Neutrons are chargeless particles. Protons are not. Neutrons react with hydrogen. There is not an equivalent to a proton knife or proton gun, etc.
- Can you speculate if they can be used for diagnostics?
 - Dr. Eighmy feels like that is a possibility in the future.
- Could neutrons be used to diagnose if a tumor is malignant?
 - Dr. Eighmy state the question was out of his league but he feels like these are the kind of things that will come in the future.

Chair Evans summarized by stating the proposal to rename the center for two former employees of the lab speaks to the unique relationship we have with the lab and the ability, through this center, to grow, cultivate and attract the top in the field to come to this area. We have all the right ingredients. He asked committee members to vote if they were in support of renaming the JINS center. Committee members unanimously endorsed renaming of the JINS center to the Shull Wollan Center.

V. UT MARTIN ECONOMIC IMPACT STUDY

Interim Chancellor Robert Smith welcomed committee members to UT Martin. He acknowledged Randy Brundige, Mayor of Martin, and Brad Thompson, Director of Economic and Community Development, for their support of UTM. He informed committee members that they would find extensive documents in their materials about UTM and the impact on this region. He noted that all of the university's presentations were "building blocks" so that each adds to the big picture of what UTM means to west Tennessee, its aspirations, how the faculty educate our students, and how the mission is fulfilled (Exhibit 2). He explained to members that UTM is a product of the demographics of west Tennessee – 21 counties that comprise everything west of the river. Those demographics are challenging for an educational institution. The university operates within an environment that has a weak education foundation in the school, some of the highest unemployment rates in Tennessee, and since 2010, has experienced a general decline in population. The region is plagued by low income and a lack of general wealth. An example of the educational environment as it relates to K-12 is that only seven counties in western Tennessee have average ACT scores at or above the level of the state of Tennessee. There are no counties in the western part of the state whose average ACT is equal to or greater than the national level. What UTM means to west Tennessee defines the mission. UTM is a nationally ranked public institution with a focus on undergraduate education, serving 6,827 students focused primarily on undergraduate education. The university's work comprises 95% undergraduates, 92% of whom are from in-state. Dr. Smith noted the university is very mission specific to serving West Tennessee. It operates the only centers of education that are off of a main campus from the University of Tennessee (Selmer, Ripley, Parsons, Jackson and hopefully Summerville

soon). Twenty-four percent of students are enrolled at centers or on-line, 20% are over 25 years of age, 37% are first generation students, 75% receive financial support and 20% graduate in 4 years. High quality and high value. The average net price of tuition is \$1,759. For 39% of our students, UTM is free. Interim Chancellor Smith introduced Ms. Hannah Robertson, an organic chemistry major on the UTM campus who also is Miss Tennessee, to describe what a new STEM building would mean to UTM as well as the state of Tennessee.

Ms. Robertson shared with committee members how, as Miss Tennessee, she gets the unique opportunity to travel the entire state and be Governor Haslam's spokesperson for character education. She speaks to over 50,000 students in Tennessee specifically about the responsibility they have towards their education and how important it is to further their education in STEM. Her favorite thing to share with them is where she goes to school and her love for being part of the UT system and especially the UTM family. Out of the west Tennessee schools she has visited, there are no STEM students. A STEM building on this campus would help advance STEM in this area and younger children could discover their love for STEM at an earlier age. As a UTM student, she sees a need for this building and as Miss Tennessee, she sees how students from the state would advance. She encouraged committee members to support the proposed Engineering and Science building on the University of Tennessee Martin campus.

Interim Chancellor Smith opened the floor for questions. Committee members asked the following:

- What percentage of students who qualify for a Pell grant have their financial aid diminish after their second year because their GPA falls below the requirement?
 - Dr. Smith responded he did not have sophomore level data.
- On the 18% return – in calculating the net present value – what rate did you use?
 - Dr. Smith assumes they used what the average rates over the period of time they studied in which they are basing their findings. Trustee Charles Wharton requested Dr. Smith let him know the rate because that makes a huge difference in the outcome. Interim Chancellor Smith also stated to attendees there is a 64-page analysis on the region report and a 32-page analysis on the STEM building that he used for most of this data that he will make available to board members. [Although the rate changes over time, the study essentially used a 4% interest rate]
- A committee member mentioned information shared at a previous meeting regarding ACT scores and unemployment rates in the area. She asked if that information could be shared again with board members since it speaks to UTM's critical position in the state.

VI. INSTITUTE FOR PUBLIC SERVICE

Dr. Herb Byrd III, Vice President of the Institute for Public Service, addressed committee members. Dr. Byrd gave members an overview of the Institute for Public Service (IPS) using a power-point presentation with video interviews (Exhibit 3). IPS is one of two institutes of the UT System. Many people have their first interaction with us as the front door of UT through outreach programs. It is therefore, incumbent to us to provide first class programs to the public because the flip side is we can make a negative impact as well. There are a few things that make IPS unique. We don't have students like the campuses, but in actuality we do have students -- attendees of our programs. In our funding model we receive no funding through tuition dollars which requires us to make salary increases, etc. in-house or through state appropriations since we don't have flexibility to raise tuition. And finally, it's our job to take the research base and knowledge of UT and put it into practice to solve problems for people across our state as part of our outreach. We are a statewide organization. In 2015 we had over 28,336 requests for assistance across the state. IPS has been around for a while. The Municipal Technical Assistance Service (MTAS) was established in 1949, the Center for Industrial Services (CIS) in 1963, the County Technical Assistance Service (CTAS) in 1973, the Law Enforcement Innovation Center (LEIC) in 1997 and the Naifeh Center for Effective Leadership was established in 2008 to provide leadership for state elected officials. In looking forward we will be working on a new IPS strategic plan, as well as, continuing to work on our needs assessment, development and consultant studies. We want to have greater administrative transparency, engender a service/collaborative environment and roll out new and improved programs. Dr. Byrd closed by thanking committee members for what they do for UT.

VII. BIOFUELS AND BIOPRODUCTS

Dr. Stacey Patterson, Associate Vice President for Research, gave an update on Biofuels and Bioproducts in Tennessee (Exhibit 4). She stated the biofuels initiative was initiated in 2007-2008 when the United States was facing a national crisis and oil prices were reaching an all-time high. The state asked UT to propose a solution. UT proposed a comprehensive program consisting of four components; 1) The development of energy crops and supply chain; 2) Development of demonstration scale biorefinery; 3) Development of world class research and development capacity for the state; and 4) Create a foundation for commercial industry in Tennessee. Several technical questions needed to be answered to know if cellulosic biofuels were a viable industry for Tennessee. To help answer these questions, we contracted with local farmers to stand up 5,100 acres of switchgrass as our chosen bioenergy crop. We learned how to establish, handle and process switchgrass at industry scales. We also chose strategically to not only study fuel as the sole end product, but also develop higher value end products. Simultaneously, we partnered with DuPont to build a facility to demonstrate large scale cellulosic conversion and advanced biofuels production. Throughout, our research capacity has been paramount. TennEra is developing materials from renewable biomass including carbon

fiber composite, ABS biopolymer, and molded fiber packaging. These products are being developed from the “waste” of biofuels production. Several other opportunities have resulted from the UT Biofuels Initiative (UTBI) including the Bioenergy Center (BESC) which was a \$260 million investment from the Department of Energy (DOE), an additional \$30M in competitive federal grants through the UT Institute of Agriculture, and approximately a \$112M investment in Vonore by DuPont. The final part of our plan was to lay a foundation for a commercial industry in Tennessee for biofuels. The technical difficulties have been overcome. Our partnership with DuPont has been and remains positive. DuPont is committed to Tennessee when the economic climate is favorable for this industry to seek future opportunities. Perhaps a less obvious outcome is the fact that the UTBI laid the foundation and structure for UT and ORNL to go out and compete for and win the IACMI award. It also helped to build rural wealth in a hard economic time. The UTBI has resulted in approximately a 9.4 to 1 return on the initial state investment to date and has enabled UT to be competitive in winning other awards. These programs help recruit industry in Tennessee and when we speak to research funding – they create jobs and help support faculty, staff and students.

Dr. Patterson opened the floor for questions. Committee members asked the following:

- Without subsidies or tax incentives what is the cost of a gallon of ethanol as we produce it and what happened to the 5,000 acres we planted of switchgrass and the folks we encouraged to plant it?
 - Dr. Patterson responded that we can produce ethanol competitively when oil is \$70 a barrel. We’re not competitive today with the cost being \$30 a barrel. Some farmers have gone back to row crops but about half are still producing switchgrass for biomass or forage crops, etc. There is a market for biomass and it will continue to grow.

VIII. CHEROKEE FARM

Cliff Hawks, President and CEO of Cherokee Farm Development Corporation (CFDC), updated committee members on the status of Cherokee Farm. He informed committee members that earlier this month CFDC and Partners executed agreements on the next building on the Cherokee campus. A 42,000 square foot facility will be built on lot 18. The anchor tenant will be Civil and Environmental Consultants, Inc. (CEC), a company located in Pittsburgh, PA. This company saw tremendous value in locating at Cherokee Farm. They will begin with a student intern program with the College of Engineering and they will occupy the entire first floor of this facility. The second floor of this building will be home to Arkis Biosciences which is a medical devices company founded in 2011 and born out of the UTRF Business Incubator. Also, the UT Medical Center will have space on the second floor as well as Hitachi.

Researchers, faculty and equipment are being moved into the JIAMS facility as we speak. A grand opening celebration is planned for this summer. Mr. Hawks showed a PowerPoint presentation of pictures of the completed JIAMS building (Exhibit 5).

At the last board meeting we talked about the two phase Microgrid Study. Four stakeholders part of Microgrid Research Platform (TVA, KUB, UT and ORNL). The first phase of the study has been completed and serves as the business plan and the organizational structure around the Microgrid project at the Cherokee Farm Innovation campus. TVA has briefed us on where they want to move next with the Microgrid project. Their next step is to bring together senior economic development leadership at TVA to determine the best way to market the Microgrid opportunity as they work to recruit companies to East Tennessee.

Our next steps are 1) to make absolutely certain the process in hiring a governor's chair in Microgrid technologies is moving forward which it is. We have a list of highly qualified candidates and two of those candidates will be on campus the end of this month. 2) Begin planning the Microgrid center of excellence. The Center will be a clearinghouse for private sector companies in the area of renewable energy and microgrid technologies to come to a live microgrid environment to engage in research. The goal is to continue to bring more microgrid companies to Cherokee campus. And 3) Hitachi will be coming back to CFDC for a proposal and design for the Microgrid. They'll be working closely with KUB on that proposal, and I'll be eager to come back to the Board of Trustees with that plan. I really believe we are entering into a very exciting time for the Cherokee campus and our community.

Mr. Hawks closed by telling attendees he looked forward to an opportunity for them to tour and see first-hand the exciting progress being made on the Cherokee Farm campus.

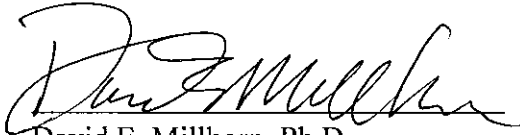
IX. OTHER BUSINESS

None.

X. ADJOURNMENT

There being no other business, Dr. Evans adjourned the meeting at 3:05 p.m.

Respectfully submitted,



David E. Millhorn, Ph.D.