DRAFT

MINUTES OF THE
RESEARCH, OUTREACH, AND ECONOMIC DEVELOPMENT COMMITTEE

BOARD OF TRUSTEES
THE UNIVERSITY OF TENNESSEE

March 12, 2008
Chattanooga, Tennessee

The Research, Outreach, and Economic Development Committee of the Board of Trustees of The University of Tennessee met at 8:15 a.m., EDT, March 12, 2008 in the Chattanooga Room of the University Center at The University of Tennessee at Chattanooga.

I. CALL TO ORDER

Mr. James L. "Bucky" Wolford, Chair, called the meeting to order.

II. ROLL CALL

Dr. David Millhorn called the roll, and the following voting members were present, constituting a quorum of voting members:

Mr. George Cates
Mr. Doug Horne
Mr. Jerry Jackson
Ms. Andrea Loughry
Mr. Karl Schledwitz
Dr. Candace White
Ms. Anna York
Mr. James L. "Bucky" Wolford

The following non-voting members were present:

Ms. Brittany McGruder
Mr. Romeo Morrisey
Dr. John Petersen
Dr. John Schommer
Mr. Chuck Shoopman

Acting Commissioner Webb, Commissioner Givens, Dr. Rhoda, Dr. Gourley, Mr. Hart, and Ms. Ridgeway were absent from the meeting.

III. APPROVAL OF MINUTES OF PRIOR MEETING

Chair Wolford called for corrections or additions to the minutes from the November 8, 2007 meeting of the committee. Mr. Jackson asked that the reference under Other Business to the "intersection of Interstate I-69 and Highway 51" be corrected to refer to the construction of Interstate 69, a major, congressionally mandated

interstate highway running from Canada to Mexico along the Highway 51 right-of-way. Mr. Schledwitz asked if it was at this committee that Trustees discussed the composition of the UT Research Foundation board. Ms. Mizell noted that discussion of foundation boards had occurred at the Finance and Administration Committee meeting in November. With Mr. Jackson's correction noted, a motion to approve the minutes of the last meeting was duly made, seconded and carried.

IV. REVIEW OF RESEARCH HIGHLIGHTS

Dr. David Millhorn, Executive Vice President, began by discussing the University's management relationship with the Oak Ridge National Laboratory. He noted that management of the national labs is graded annually by the Department of Energy, and this year UT-Battelle received a score of 97 out of 100, the highest score this year for all national labs. Dr. Millhorn explained that this means UT-Battelle is moving ORNL in the direction DOE wants it moved and that activity is being generated through research and economic development throughout the state as a result of the University's management position in the lab.

Dr. Millhorn then discussed the $65 million supercomputer grant awarded the University from the National Science Foundation, the largest award the University has ever received from NSF. This means NSF is looking to the University to provide computational support for the nation's science programs. Dr. Millhorn announced that a ceremony would be held on April 3 to acknowledge the award and the establishment of the National Institute of Computational Sciences, which will be located in a building that the University and the State of Tennessee built at ORNL. He noted that this investment by the University and the State was a major factor in winning the supercomputer grant. Dr. Millhorn then introduced a video that will be used at the April 3 celebration, to which Trustees will be invited.

Dr. Millhorn then introduced Dr. Thomas Zacharia, Associate Lab Director and Vice President for Science and Technology, who was responsible for putting together the team that won the supercomputer grant. Dr. Zacharia stated that he sees the supercomputer grant as just the beginning of more things to come. He noted that he is working diligently to connect all the campuses of the University through the supercomputer and that the project is attracting highly qualified individuals from other universities who want to be a part of this project. He noted that initially much of the supercomputer will be devoted to climate research.

Dr. Millhorn then recognized Dr. Fred Tompkins to report on activities of the UT Research Foundation. Dr. Tompkins reported that the Foundation recently made 11 awards to researchers or teams of researchers in the University to drive technologies forward toward commercialization. Dr. Tompkins also reported that to date in this fiscal year 63 disclosures have been made by faculty and staff. The

Foundation has been active in filing patents, with the most aggressive action being with respect to some of the medical technologies out of the Health Science Center. Finally, Dr. Tompkins called the committee's attention to the Association of University Technology Managers, which works with academic institutions around the world in looking at the most important innovations coming out of university research programs. Each year, the organization lists the 100 most important technologies coming out of university research, and this year the technology out of the Health Science Center having to do with protecting the body against the effects of radiation is included on the top-100 list. Dr. Tompkins applauded the work of the University's faculty, and noted that the Foundation would continue to invest back into their research in an effort to derive value from their research.

Mr. Schledwitz asked Dr. Tompkins to provide additional information about the 11 awards to researchers, including the amount of the awards, where the money comes from, and how the selection is made. Dr. Tompkins noted that this is the first that UTRF has had an opportunity to invest back into research. UTRF distributed a call across the University for proposals from researchers who need additional funds to better position the technologies they have disclosed for commercial. UTRF received 50 or 60 proposals, and a committee of internal and external reviewers recommended the proposals to be funded. Dr. Tompkins noted that the funding came from UTRF resources and from the campus research offices. The total award to each researcher was approximately $15,000, and external matching funds were obtained in a couple of cases.

Referring to Mr. Schledwitz' earlier question about committee discussion of the composition of the UT Research Foundation Board, Mr. Cates called the committee's attention to the reference in the minutes of the last meeting concerning amendments to the UTRF bylaws changing the composition of the UTRF board to achieve an equal number of internal and external voting directors. Mr. Cates asked Dr. Tompkins to explain those changes. Dr. Tompkins explained that the changes were deemed necessary to enhance UTRF's status as a separate legal entity, particularly as it engages in joint ventures with for-profit entities. A lengthy discussion ensued as to whether the minutes should reflect a determination that Trustees other than the President should serve on each foundation board. Mr. Horne stated that he had raised the issue of Trustees other than the President serving on foundation boards during an Audit Committee meeting, and it was pointed out that the Audit Committee minutes reflected that discussion. Ms. Loughry pointed out that the minutes of the Finance and Administration Committee meeting reflect discussion of Trustee representation on the foundation boards, and she stated her recollection that the consensus was that two Trustees would be the appropriate representation. She stated that in her recollection there was no specific

definition of whether the appropriate representation would be two Trustees in addition to the President or two Trustees including the President. Several other Trustees, including Mr. Cates, Mr. Schledwitz, and Mr. Hall expressed the view that there should be two Trustees in addition to the President on all three foundation boards. Dr. Hurd stated that in her view the Board had not taken a position on this issue. Ms. Loughry suggested that the discussion be continued at the Finance and Administration Committee meeting to determine if the consensus is that that Trustee representation on foundation boards should consist of the President and two additional Trustees or two Trustees, including the President.

V. PRESENTATION ON SIMCENTER: NATIONAL CENTER FOR COMPUTATIONAL ENGINEERING

Mr. Wolford introduced Dr. David Whitfield, Director of the SimCenter, which is now a National Center for Computational Engineering. Mr. Wolford noted that the SimCenter is a great asset to this University, as well as to the city of Chattanooga.

Dr. Whitfield explained that computational engineering has three parts: computational mathematics, advanced supercomputing, and engineering. He noted that the goal of the SimCenter is to be the best computational engineering research and education center in the world. Through a slide presentation, Dr. Whitfield outlined the various areas of SimCenter research, including aerodynamics, climate modeling and atmospherics, hydrodynamics, and alternative energy. Dr. Whitfield also discussed the educational component of the SimCenter, noting that the number of Ph.D. students as exceeded original projections.

Dr. Whitfield then discussed the National Center and the need for additional funding for the Center. He noted that the private sector (foundations and anonymous donors) have contributed over $17 million to the creation of the National Center.

Following the presentation, Mr. Talbott asked about the economic development benefits of the SimCenter and how the University is trying to facilitate economic development. Mr. Wolford responded that SimCenter activities are prompting companies to come to the Chattanooga area. Mr. Talbott asked who is trying to attract business to the area. Dr. Whitfield responded that Paul Brock of the RiverCity Company, who would be making the next presentation, might be able to address that question. Mr. Brock noted that the Chamber of Commerce and local foundations are working very closely with the SimCenter to encourage new businesses to come to Chattanooga. Mr. Talbott then asked about economic development activities arising out of ORNL. Dr. Millhorn responded that the University, UTRF, and ORNL have active programs to encourage venture capitalists and other partners to invest in technologies arising out of University research. Mr. Talbott said it would be helpful for the Board to know about economic development

efforts. Dr. Millhorn responded that the administration will regularly provide that information to the committee through, for example, reports from UTRF about disclosures and through an annual report on economic development activities. President Petersen noted that a separate entity related to UT-Battelle actually does most of the economic development activity arising out of ORNL. He noted that as a non-profit entity, the University's role is not to create entities that it operates for profit. The University's goal is to enhance economic development through its research. Ms. Loughry noted that the University plays an important role in ensuring there is a knowledge-based workforce appropriate for companies that might locate in Tennessee. She noted that the Academic Affairs and Student Success Committee should look at the issue of workforce development.

Dr. Millhorn noted that a study had been commissioned to look at the economic development that had been created from 2000-2005 through the UT-Battelle partnership. The number of companies created was 63, and the actual economy brought into the state was about $3 billion.

Mr. Jackson asked if the economic impact of the SimCenter and ORNL could extend to Northwest Tennessee. Dr. Millhorn responded that a proposal given to the Governor this year was to create a cyberstructure so that the entire state could enjoy the capability of having the world's fastest computer and through that access the capability of creating new business opportunities throughout the state. Mr. Jackson agreed with Ms. Loughry's point that the state must have an educated workforce.

VI. PRESENTATION ON CHATTANOOGA DOWNTOWN RENAISSANCE

Mr. Wolford introduced Mr. Paul Brock, President of the RiverCity Company to make the next presentation. Mr. Wolford noted that for UTC to be an engaged metropolitan university, it must have many partners within the city of Chattanooga, and one of those partners is RiverCity Company. He also noted the amazing transformation that has occurred in the city of Chattanooga since the seventies and stated that the RiverCity Company has been an integral part of that transformation.

Mr. Brock gave a brief history of the RiverCity Company, established in 1986, and its emphasis on quality, engagement, and partnership. He noted that the partnership with UTC is critical to the development of downtown Chattanooga and applauded the UTC administration for its leadership. He then led the committee through a pictorial history of the renaissance of downtown Chattanooga. He described a dramatic transformation that had its beginnings in the 1980's, including a master plan for economic development of the riverfront to reconnect the city with the river.

VII. PRESENTATION ON RAMSeS RESEARCH DATABASE PROGRAM

Due to time constraints, Mr. Wolford announced that the presentation on the RAMSeS Research database Program would be deferred to a subsequent committee meeting.

VIII. PRESENTATION ON INVESTIGATIONS INTO THE CAUSE OF LOW BIRTH WEIGHT INFANTS IN HAMILTON

Mr. Wolford introduced Dr. Sean Richards, UC Foundation Associate Professor, Environmental Sciences. Dr. Richards noted that the city's history of manufacturing had environmental byproducts that have not gone away. He noted that Hamilton County has the highest percentage of infants born with a low birth weight in the state and much higher than the rest of the country. Dr. Richards led the committee through a slide presentation describing his research efforts to determine the cause for the low birth weight in Hamilton County, including building a database of contaminants from examining placentas of low birth weight infants. Dr. Richards explained that his research has revealed that Hamilton County has relatively high total arsenic concentrations, that arsenic may be a contributing factor to low birth weight in Hamilton County, but that there are many confounding factors. He described future directions of his research and efforts to obtain federal funding for the research. Mr. Hall asked how long Dr. Richards expected it to take to make a determination. Dr. Richards responded that he hoped to make substantial progress by the end of the current three-year funding cycle.

VIII. REPORT ON PROGRESS IN THE UT BIOFUELS INITIATIVE

Dr. Millhorn asked Dr. Kelly Tiller, Director of External Operations for the Office of Bioenergy Programs in the Institute of Agriculture, to give the committee an update of the biofuels initiative. Dr. Tiller noted that details of the project are available on the website, utbioenergy.org. Dr. Tiller informed the committee of progress in three major areas, beginning with partnerships necessary to move this project forward. Partners are not only in the science and technology necessary for the conversion of cellulosic material to ethanol, but also in the farm-based supply chain to supply new products to this industry. Dr. Tiller noted that the first round of contracting with farmers to grow approximately 700 acres of switchgrass has just taken place in a 50-mile radius around Vonore, the site of the demonstration facility. Extension personnel are working one-on-one with the farmers, who are being provided the seed as well as a per-acre payment. Dr. Tiller noted that about three times the number of farmers applied to grow switchgrass than could be accommodated due to the lack of seed. This is another opportunity for Tennessee to take the lead, and the

University is working with farmers in West Tennessee to produce switchgrass seed. Dr. Tiller noted that an option on the site in Vonore has been acquired, and engineering and design plans are being finalized for the demonstration facility. She noted that the construction process is expected to take about 18 months.

Ms. Loughry asked how the program is doing in the race to the market. Dr. Tiller responded that the program is in a very good position because of the outstanding funding provided by the State of Tennessee and because the program is not focusing on just a single part of the process. Mr. Wharton asked if the University is working with farmers to ensure the best yield of switchgrass. Dr. Tiller responded that the seed currently takes about three years to produce, but research is ongoing to produce an improved variety that will be more viable for commercial ethanol production. Mr. Wolford asked Dr. Tiller to help the Trustees understand how they should respond to national media articles suggesting that ethanol is not as inexpensive to produce as has been represented. Dr. Tiller said it is critical to distinguish the Tennessee Biofuels Initiative from the corn-to-ethanol process. She explained that the conversion of biomass materials produces a whole range of improvements over corn-based ethanol, noting that for every one unit of energy in to cellulosic ethanol yields between 5 and 10 units of energy out (as compared to 1:1.3 for corn-based ethanol). She noted that while production of ethanol is too costly now to be competitive with gasoline, the demonstration facility will ultimately allow it to be moved out of the laboratory and into commercial production. She stated that the target is a wholesale cost of about $1.50/gallon in about five years. Mr. Talbott asked if Dr. Tiller could equate the wholesale cost to retail, and she responded that adding taxes of about 20 cents would produce a retail cost of approximately $1.70/gallon. As of today, however, the cost of production is at approximately $3.00/gallon. Dr. White asked how Tennessee's timeline compares with other states that are in the cellulosic conversion process. Dr. Tiller responded that while several other states have programs, no other state has made the kind of focused investment Tennessee has. Dr. Millhorn noted that the state's investment has leveraged other research grants. Mr. Cates asked whether switchgrass will grow well in all parts of the state, and Dr. Tiller responded that it does. Mr. Jackson asked whether substantial research preceded the decision to use switchgrass. Dr. Tiller said that about 20 years of bioenergy research had been conducted at ORNL. She noted that over time complementary and additional crops would be introduced. Mr. Wharton asked about the method of harvesting seed, and Dr. Tiller responded that research had led to use of a combine to harvest seed effectively.

X. OTHER BUSINESS

The Chair asked if there was any other business to come before the Committee.

There was none.

XI. ADJOURNMENT

There being no further business to come before the Committee, the meeting was adjourned.

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David E. Millhorn
Executive Vice President