Minutes of the UW System Board of Regents
Education Committee

December 4, 2014

Committee Actions

Regent Whitburn convened the meeting of the Education Committee at 1:05 p.m. Regents Evers, Purath, Manydeeds, Vasquez, and Petersen were present. Regent Whitburn noted that there was a quorum. Regent Delgado attended the meeting as a guest.

Consent Agenda:

The Education Committee unanimously approved the Minutes of the October 9, 2014 meeting, as well as the following three resolutions, which were considered separately:

Resolution I.1.a.(2), approving UW-Stout's Bachelor of Fine Arts in Game Design and Development-Art.

Provost Jackie Weissenburger reported that the existing B.S. in Game Design and Development with a STEM concentration had to be offered as a career-focused B.F.A. in Art in order to maintain accreditation by NASAD. In response to Regent Whitburn's question whether UW-Stout would be adding staff in the second year of operation, the Provost responded that the hiring of more faculty was planned as enrollment permitted.

Moved by Regent Evers and seconded by Regent Manydeeds , the motion passed unanimously.

Resolution I.1.a.(3), approving revisions to Regent Policy Document 14-10, Nondiscrimination on the Basis of Disability.

Regent Whitburn introduced the resolution and summarized that the rationale behind the revisions is a systematical updating to square the Regent policy with federal rules. General Counsel Tom Stafford confirmed that there were no significant changes to the existing RPD.

Moved by Regent Manydeeds and seconded by Regent Petersen, the motion passed unanimously.

Resolution I.1.a.(4), approving revisions to Regent Policy Document 14-1, Recording of Lectures.

Asked by Regent Whitburn to talk about the background leading to the revision, Tom Stafford, General Counsel, and Paige Reed, Senior System Legal Counsel, elaborated on the intent and the scope of the policy, which incorporates recent federal changes in the law and best practices to serve people with disabilities at UW institutions. According to General Counsel Stafford and legal counsel Paige Reed, there are no substantive changes to the policy, which has existed since 1977 as a brief policy addressing faculty rights and the needs of disabled students. Constituent groups at the UW campuses had requested that the policy be reviewed. The revised

policy no longer restricts recording to outdated technologies, such as tape recording. Students with disabilities are permitted to record lectures with available technological means or copy materials.

Regent Whitburn inquired whether the policy was to be implemented at all institutions within the System, which Stafford confirmed. Regent Whitburn further asked legal counsel to take a position on whether the UW System needs to have such a policy and whether there had been legal contesting of this kind of policy nationally. There has been no significant legal or student government contestation of this type of policy nationwide, and it is consistent with Big 10 regulations, explained Reed, adding that the policy is intended to protect faculty intellectual property and nothing in the protections has been changed significantly. The policy, she said, represents best practices and is in general utilization countrywide.

Regent Vasquez asked whether this revised policy would permit recording by a disabled student even if the faculty member would not want to permit it. Answering Regent Vasquez's additional question about whether the law for disabled students would prevail, Reed confirmed that disabled students have a right to record materials. UW System student government has also not raised any objections. Stafford added that once an accommodation is granted, it usually will be provided, even if it is an interpretative issue.

Regent Delgado, who attended the Education Committee as a guest, elucidated his point of view that the proposed policy in its entirety seemed counterproductive because of advances in the use of technological devices in society and in teaching. He proposed that the right to record lectures should be fully utilized by all students without restrictions. He said he supported the proposed changes but not the policy itself, as times had changed. Regent Delgado elaborated that "we have to realize that we are at some level all "disabled" by something and learn in different ways. Technology, he explained, is there to help all students, not just students identified as disabled. Regent Delgado continued with his impression that the policy would be "impeding the progress of technology in the classroom." Technology enhances the learning process for all and should be utilized.

Narrating his own experience of feeling at times fatigued in late-day lecture classes, he said he would want to record all that is said in class. With most students owning a phone, they would all be able to use it. Even students who are not recognized as disabled, or labeled disabled, would profit from technology, and recording would enhance the learning process for any student. "Let them use their wits...and everything they can," Delgado continued. Even if other Big 10 universities have similar policies, this university system stands for the use of technology." Reed concluded by reaffirming that the policy does allow faculty to determine for educational reasons some restrictions to the permission of recording.

Moved by Regent Vasquez and seconded by Regent Petersen, the motion passed unanimously.

Full Agenda:

Moved by Regent Evers and seconded by Regent Petersen, the Committee unanimously passed:

Resolution I.1.b, approving an addendum to UW-Green Bay's Mission statement.

Chancellor Gary Miller explained that the revision added a paragraph describing the degrees and programs UW-Green Bay offers, as required by state statute.

Discussion of Baccalaureate Engineering Program Needs

Regent Whitburn set the stage for the discussion by referring to the presentation by General Electric CEO Jeff Immelt during the previous academic year, who asserted that the state needed twice as many engineers as were available, also pointing to the Chinese who produce new engineers in much greater numbers. UWSA staff, Whitburn said, had looked at engineering needs in the state, the array on campuses, and the real world needs of the economy. He continued pointing out that the UW System produced around 2,300 engineering degrees in 2013-14 and that a gender gap seemed to be apparent in the graduation rates of female engineering students, with 13.3 % of the engineering undergraduate degrees handed to females. The major engineering programs, he said, were housed at UW-Madison, with significant programs at UW-Milwaukee and UW-Platteville, followed by UW-Stout. Today's goal, according to Whitburn, was to "get under the hood" around this issue. He added that he was interested in the relationship of engineering to the STEM disciplines, which are broader than engineering.

Further, Regent Whitburn noted that it was crucial to understand whether System engineering graduates are staying in the state. According to a UW-Madison correspondence he cited, 46% of the graduates are placed right out of school in positions within the state, whereas 54% leave, which is not surprising or alarming, Regent Whitburn noted, but certainly important in this consideration of the array and strategies for business communities. Regent Whitburn concluded that he saw a need for enhanced engineering activity across System campuses because of the national role of the UW System.

After announcing that several chancellors would also be given opportunity to speak, Regent Whitburn turned to Interim Senior Vice President for Academic and Student Affairs David J. Ward. Dr. Ward provided some background on the October 2014 Report from the National Center for Higher Education Management Systems (NCHEMS). This report had been commissioned by UW System Administration largely because, in 2013, four comprehensive UW institutions proposed eight new baccalaureate-level engineering programs. This, he said, was a fairly sizeable request for engineering. Prior to the current study, the UW System had studied engineering needs many times, featuring a long history from right after system merger through the mid-eighties, and to 2007. If there is a demand for engineering, Ward asked, in what disciplines and in what regions is it? Would there be enough of a student pipeline, i.e., students who have taken high school concentrations in science and mathematics? And if there is an additional need, what is the most cost-efficient way to meet it? Does adding engineering programs actually increase the talent base?

He noted that UW-Stout, UW-River Falls, and UW-Eau Claire proposed to form the Northwest Wisconsin Engineering Consortium to deliver B.S. degrees in Mechanical, Electrical, Chemical, Environmental, and Agricultural Engineering as well as Materials Science and Engineering.

Ward proceeded by giving a summary of the main findings of the NCHEMS Report. The report presents interpretations of data on supply and demand for engineers in Wisconsin as well as recommendations on how to efficiently and appropriately expand the UW System array in engineering. Findings include that Wisconsin is a net exporter of engineers, that retirements are not expected to create acute shortages of engineers in the state, and that engineering wages in Wisconsin are lower than in bordering states and nationally. Ward noted, however, that one has to be careful when looking at wages nationally because one has to look at cost of living as well. If the national data is concentrated in California, for instance, where higher wages prevail, particularly in the San Francisco area, that does not mean that wages are not higher everywhere nationally.

The report identifies five engineering fields in which there is a need in the state of Wisconsin: civil, mechanical, electrical, industrial, and chemical. For the purpose of determining regional supply and demand for engineers, NCHEMS divided the state into seven regions. Ward determined that the NCHEMS Report does a nice job in dividing the state into regions and explained that the demand identified by the organization was based on job postings by Burning Glass in 2013.

Regent Vasquez inquired how the NCHEMS Report defines "net exporter of engineers." "Who are we exporting," he asked. "Is it students who initially come here from other states and just stay for their studies, but then leave and go back home?" Ward responded that to his knowledge, the majority of those students are from other states, not from Wisconsin originally.

Among the shortcomings of the methodology included that there were no local interviews on campuses. Regarding decision options, Ward explained that the plan was to come back in February 2015 to the Education Committee in order to revisit the discussion in the context of the overall program array report.

Ward summarized that the NCHEMS Report includes four recommendations on meeting regional demand for engineers:

(1) Due to lack of demand to justify the investment in new engineering programs in Regions 1 (Western Wisconsin/Minneapolis metropolitan area), Region 2 (Northern Wisconsin), Region 3 (Wausau) and Region 4 (Western Wisconsin from north of La Crosse to Platteville), not add programs in those regions;
(2) Expand existing capacity at UW-Madison (Region 6) and UW-Milwaukee (Region 7) rather than creating new capacity at other institutions;
(3) Determine whether UW-Milwaukee should add a chemical engineering program or whether priority should be given to expanding capacity for civil, electrical, industrial, and mechanical programs; and

(4) Create a collaborative engineering program in Region 5 at UW-Green Bay and/or UW-Oshkosh as a joint activity involving UW-Madison and/or UW-Milwaukee.

Regent Whitburn commented that now that the consultants have completed the work, and some critical flaws were discovered, was UWSA receiving any major pushback to the report? Ward acknowledged that some pushback and worthy criticism was received. He elaborated that it seemed to be a "current status approach." Ward posed the question whether the UW System can attract new engineering talent in a region without an engineering program that will stay in that region. Ward said that he would be attending the New North Summit the following week, and he was aware of three new research facilities to be established in the New North region, which would likely increase demand for STEM graduates.

Ward then summarized the responses received from UW institutions, which fall roughly into two main camps. In the first camp are institutions that are largely supportive of the NCHEMS findings and who agree with the recommendations that additional employer and state demand should be satisfied through articulation agreements and satellite programs, collaborative programs, and the leveraging of existing capacity at a comparatively low cost to the UW System.

In the second camp are institutions that questioned the data analysis and applicability of the NCHEMS recommendations and data interpretations to their own measurements of employer and student demand in the regions they serve. Critics of the NCHEMS Report extolled existing faculty expertise and resources and cited the reallocation of existing resources and employer interest in helping to cover the costs of launching and maintaining new engineering programs.

In Ward's analysis, the key array management issues to consider are: Is there proven state demand for engineers? And if so, in which engineering disciplines and in which geographic areas of the state does this demand manifest itself? It is also important to determine if there is indeed a sufficient pipeline of qualified students to sustain the proposed new engineering program. Ward discussed several options for moving forward with decision-making:

1. No New Programs Will Be Authorized.;
2. Build on the Existing Program Array at Institutions Currently Operating Successful Engineering Programs; or
3. Grant Additional Engineering Program Authorizations for:
    - Stand-Alone Programs
    - Consortial Programs
    - Partnerships with Existing Programs
    - Stepwise Growth

Regent Vasquez inquired about more detail regarding the net exporting of engineers because of higher wages elsewhere. Do we have any sense about the reasons behind lower wages in the state? Has industry come to the realization that wages could be too low, or is industry saying we do not care what others are paying? Ward responded that he has no scientific answer to this question but could voice his opinion. This issue would need further investigation. Labor economics uses wages as a key measure, but median wages may not reflect additional profit sharing schemes in smaller companies in the manufacturing sector, which could be part of

wages. Median wages, he asserted, were not necessarily a good proxy as they are not capturing everything. Comparison nationally could also be difficult. The nature of the industry makes a difference. The overall level of wages must be analyzed per type of degree, he added.

The Committee then heard points of view from UW-Platteville Chancellor Dennis Shields, UW-Stout Chancellor Bob Meyer, and UW-Stevens Point Chancellor Bernie Patterson.

Chancellor Meyer commenced by contesting the NCHEMS interpretation of regional supply demand, citing significant demand for additional engineers from northwest Wisconsin employers. He offered to the Regents supportive employer responses and distributed them in hard copy. His presentation included different interpretations of the Burning Glass data used by NCHEMS, citing a much higher increase in job postings for employees with engineering skills and a higher decline of the supply in the Northwest.

The proposed Northwest Wisconsin Engineering Consortium, he explained, plans to increase the engineering capacity in northwest Wisconsin by offering students a core of shared courses and by pooling partner resources so that these consortial programs can be offered as revenue-neutral as possible. Students will take common courses in their first couple of semesters before they choose a discipline. Depending on their location, they would have different entry points and through career pathway advising they could find out what suits them best. The consortium would also seek partnerships with technical colleges and offer credit transfer of core courses. Chancellor Meyer further cited substantive industry and donor support, including a multi-million dollar pledge and a major capital campaign, which attracted ten million to match another ten million if raised. Chancellor Meyer indicated that partnerships with K-12 institutions in the region would be formed to secure sufficient student interest. In the short-term, the Consortium is asking for permission to proceed with mechanical engineering at UW-Stout, materials science engineering at UW-Eau Claire, and agricultural and environmental engineering at UW-River Falls. In the long term, it is asking for permission to proceed with the two other UW-Stout proposals.

Chris Conger, Director of Technology Development at Phillips-Medisize Corporation, and Steve Jahn, President and CEO of Momentum West, expressed their support for the consortial engineering proposal based on current and future needs of their companies and apparent growth in the manufacturing sector in Wisconsin.

Conger said that his company had been in business for 50 years primarily dealing with plastics and injection molding. The company was bought by a private equity firm and has 3,500 employees on a global basis, with 13 buildings in western and northern parts of Wisconsin. The company employs 250 engineers in these facilities. Currently, the company has 26 open positions and expects that retirements will necessitate further hiring. It plans to expand to several locations in Wisconsin and to create 500 new jobs. It has received tax credits to expand from its plastics component to medical industrial design and mechanical engineering.

Conger summarized that his company could take advantage of a regional engineering school and would help to retain recruits in smaller cities. He said that he found it quite hard to recruit engineers from UW-Madison and the University of Minnesota as they place their

graduates nationally and many graduates attended graduate school rather than seek immediate employment. Conger explained that his company has regular training needs, and will be able to offer students technical practice and substantial other assistance. Commenting that in Price County, Conger's company was an employer of choice and was looking for engineers, Conger added that the company brings in engineer journeymen at high hourly wages to meet needs but that this practice did not provide a stable basis for growth.

Steve Jahn from Momentum West also reported an expansion in manufacturing growth and says that supply has not kept pace with growth. In particular, he sees lack of engineering talent which causes a restraint on the economy with a ripple effect on supply companies. While talent may be available, many leave the area and are not coming back. Students even choose alternate degree paths because they want to remain in the region, but they may not be able to effectively pursue a degree of their choice. Offering resident engineering programs in the northwestern part of the state would help simplify things. His company would offer students internships and help them pursue advanced degrees while working in their chosen industry. This would impact the region in the far north of Wisconsin as well, and would produce a win-win situation.

Regent Petersen found the presentation compelling. As a proponent of collaboration, he was pleased to hear that the plan was to do more with less. The proposed addition of engineering programs will be extensive and will present a challenge for the budget, he concluded. Asking Conger what kind of investment the business community is willing to make as part of a partnership, Regent Petersen expressed the need for extensive support. Conger responded that industry will stand ready to support the proposed programs and would be willing to offer internship programs and advanced training options. The money would be available.

Further, Regent Petersen inquired what challenges the System would face regarding the situation of UW-Milwaukee, UW-Madison, and UW-Platteville. Would resources for the three schools be diluted? Chancellor Meyer responded that the consortium's recruitment strategies would "raise the waters," for instance, "by attracting more girls to engineering programs, based on existing UW-Stout pre-college programs with seventh grade girls in the region." It will benefit but present no threat to UW-Madison, Chancellor Meyer asserted. As an example, when UW-Stout was authorized to offer computer engineering, it did not affect UW-Madison's and UW-Milwaukee's computer engineering programs.

Regent Manydeeds commented that he also appreciated the need. His questions were: What is the ability and aptitude of students in area high schools for engineering? From where do we get the students? Chancellor Meyer responded that partnerships will need to be developed but his current engagements with K-12 districts tell him that the consortium will not have an issue attracting students.

Regent Whitburn thanked all for their comments and invited Chancellor Shields to present his point of view.

Chancellor Shields introduced Interim Dean of the College of Engineering, Mathematics, and Science, Dr. Mesut Muslu. Chancellor Shields shared his impression that it felt like the

previous presenters and the NCHEMS did not sufficiently acknowledge the role of UW-Platteville in Wisconsin's engineering education. Chancellor Shields raised three questions for analysis:

1. Is there a sustained engineering demand that cannot be met with existing programs?;
2. Since engineering education is expensive, how will new engineering programs be paid for now and in the long term; and
3. In the current climate of funding challenges, it becomes very important to ensure funding for existing programs. How would existing programs be protected?

As an example of resource needs, Chancellor Shields mentioned engineering buildings. UW-Platteville is already in need of additional engineering building. For their latest construction, 60% came directly from the campus, including from its Foundation. Chancellor Shields further pointed out that UW-Platteville stands ready to continue its mission to meet state demand for engineering graduates. For nearly 150 years, he emphasized, engineering has been at the core mission of UW-Platteville and the University has made substantial investments into state-of-the art facilities and its engineering infrastructure.

Chancellor Shields presented a framework of analysis which questioned any perceived sustainable demand for engineers in Wisconsin that could not be met by existing programs. Indicating the high cost of engineering education, he questioned how the UW System would finance this array expansion in the long term and how it would solve general higher education funding challenges so that existing engineering programs would continue to receive the support they needed. The NCHEMS Report and the perspectives of institutions proposing new engineering programs, he said, did not sufficiently capture UW-Platteville's ability to increase capacity as needed to meet state demand.

Chancellor Shields did not support the notion that a sufficient pipeline of new engineering students will materialize if additional programs are established in other regions of the state. He added that he found the 50-mile radius theory for student recruitment dubious. "The stronger a student's ACT score, the more likely the student is to drive some distance to get good training. There is no evidence that a well spring of qualified high schools exists." Based on his experience, students travel outside their immediate area to get their degree, as evidenced by Platteville students.

Further, Chancellor Shields and Dean Muslu informed the committee that UW-Platteville recruited students from across the state and served place-bound students through collaborative programs, for instance, in the Fox Valley. Students tend to stay in the region after graduation. In sum, Chancellor Shields concluded that currently a balance of supply and demand for engineering graduates currently exists in the state.

Regent Whitburn asked how many of the 407 degrees conferred by UW-Platteville were earned by Wisconsin residents. Muslu responded that about 75 percent of the students come from Green Bay, Sheboygan, Oshkosh, Milwaukee, Madison, and Janesville. The majority of the UW-Platteville students do not come from southern Wisconsin but from across the state.

Responding to Regent Whitburn's question whether UW-Platteville is drawing students from northern and northwest Wisconsin, Chancellor Shields responded that part of recruitment is driven by the preparation of students themselves. In fall 2014, Muslu added, 4.1% of the students came from Region 1, 2% from Region 2, 6.7% from Region 3, 11% from Region 4, 23.3 %from Region 5, 22.2 % from Region 6, and 30% from Madison and Kenosha. The range of students is from across the state, and a significant rise in enrollment is not likely to develop in the northwest region, he concluded.

Chancellor Shields proposed that any expansion should start with established programs at established engineering schools. UW-Platteville would be happy to work with everyone perceiving a need in any region. Muslu concluded that demand and supply are currently working; enrollment in engineering at UW-Madison, Milwaukee and Platteville is growing steadily. Applications are up significantly. He encouraged the Committee to make data-driven decision making.

Chancellor Patterson emphasized that UW-Stevens Point has offered an Accreditation Board for Engineering and Technology (ABET)-accredited engineering program in paper science for 40 years, and has already reallocated resources to faculty in engineering disciplines and to investments in facilities that are integral to the proposed two degrees in chemical and environmental engineering. The NCHEMS Report did not recognize, he said, that adding chemical engineering would only need the addition of very few courses. He recounted that the ABET review team, looking at their paper science program, was surprised that UW-Stevens Point was not providing chemical engineering.

Chancellor Patterson also cited investments of several million dollars resulting in a biodigester and composting laboratories. The University has reassigned resources and, through program prioritization started in engineering faculty, redirected three more faculty positions. Chancellor Patterson further indicated that the curriculum was already in place to offer both the chemical and environmental engineering majors without the need for any additional resources. With regard to environmental engineering, he explained that emphases in this discipline differ vastly, depending on the local flavor; at UW-Stevens Point, environmental engineering will be concentrating on chemical pollutions and a variety of different fields. He further asserted that UW-Stevens Point could double and triple enrollment since the engineering program was already operational. The issue, Patterson said, was not a territorial one as UW-Stevens Point wants to serve the region and not reduce the supply for others as new students would be recruited. In sum, he saw no duplication issues because the foci of the proposed engineering degrees were sufficiently different from existing programs.

Regent Vasquez noted that there would be more discussion later where additional questions might be addressed. It was his understanding, however, that engineering was an expensive program, both at the start-up phase and in future growth. It was good to be mindful about how to plan expansion of the array. What specifically, he asked, does the term "place-bound students" mean? Are there criteria or metrics to guide the Regents? Is a student place-bound because he/she lives 2 miles away? Should we add new locations because a student finds that an appropriate program is a few miles away from home? Vasquez added that one cannot make the assumption that over half of the students in rural areas will go into engineering, as

campuses are already recruiting from these smaller rural areas for many other competing degree programs. He added his impression that engineering as a profession is evolving and that the Regents will not know what the state's future needs are and if the expense is warranted. "How can we as Regents balance that when we don't even know what the jobs will look like?"

Chancellor Patterson responded that these concerns are valid, and they would be vital questions if UW-Stevens Point had to begin from scratch, building laboratories, facilities, and hire 6-8 more faculty but here the difference was that the University already had everything in place. The state has asked us to do more with less, and that's what we do; we stand on our own two feet and we do it with our own resources asserted Patterson. Acknowledging that even place-bound students may need to travel and should not expect to find all programs right outside their door, the findings from the Healthy Communities Initiative in Wisconsin is that there is a much better chance of retaining rural students when they can remain in their rural areas.

Asked to provide closing comments by Regent Whitburn, President Cross noted that the UW System's need to act expeditiously in response to state demand for engineers and that moving forward with a decision on the proposal would fully explore and engage the collaborative process. In order to meet state demand without significant additional cost, and without jeopardizing the quality of an engineering degree as part of the UW System brand, UW System Administration would submit for review to the Education Committee and the Full Board by February 2015 a recommendation on the proposed expansion of the engineering program array. At that point, the Regents would decide on individual engineering programs and/or consortial programs and/or collaborative partnerships in the context of the efficient management of System resources. Cross said we need to do it rather quickly, so that some programs can be started in the fall. We have to explore this a bit more, with concrete solutions.

Regent Whitburn announced that in his presentation to the Full Board on Friday, he would call on Senior Vice President Ward to summarize the engineering requests so that all Regents could fully understand the importance and significance for campuses and the UW System. The three chancellors would also be present to respond to questions.

Regent Petersen offered his reaction to President Cross and Chancellor Shields, and said that he had every respect for the existing engineering schools and what they have done. One should not dilute their effectiveness in the current speed to getting this matter resolved. We cannot over study this issue, said Petersen. The demand is clear but the supply is unclear. He concluded with the following remarks: "We may not succeed but I am willing to take the risk, as we know the private sector has interest. Let's not stand in the way of progress. We get criticized for not being collaborative. Here is our opportunity to do this. "

Report of the Senior Vice President

There was no Report of the Senior Vice President because time restrictions did not permit the completion of the agenda. The meeting adjourned at 2:40 p.m.

Respectfully submitted by the Secretary of the Education Committee,
Dr. Carmen Faymonville