

Minutes\*

**Senate Committee on Finance and Planning**  
**Tuesday, February 15, 2011**  
**2:00 – 3:45**  
**238A Morrill Hall**

Present: Russell Luepker (chair), Jon Binks, Will Durfee, Steen Erikson, Lincoln Kallsen, Lyndel King, Judith Martin, Fred Morrison, Kathleen O'Brien, Paul Olin, Richard Pfitzenreuter, Gwen Rudney, Michael Rollefson, S. Charles Schulz, Jeremy Todd, Lori-Anne Williams, Aks Zaheer

Absent: Devin Driscoll, Kara Kersteter, Shruti Patil, Terry Roe, Karen Seashore, Mandy Stahre, Thomas Stinson, Michael Volna, Michael Volna,

Guests: Associate Vice President Michael Berthelsen, Jerome Malmquist (Facilities Management); Julie Tonneson (Office of Budget and Finance)

[In these minutes: (1) energy management update; (2) update on the Central Corridor Light Rail project; (3) budget update]

**1. Energy Management Update**

Professor Luepker convened the meeting at 2:00 and welcomed Vice President O'Brien, Associate Vice President Berthelsen, and Mr. Malmquist to provide an update on energy management.

Vice President O'Brien noted that it is their practice to report to the Board of Regents every February on energy management, and they also report to this Committee on the same matter. Two years ago they focused on the energy master plan; a year ago they focused on conservation. Mr. Berthelsen said that this year they report on all activities in energy management with a focus on utilities and efforts to meet commitments of the climate action plan; Vice President O'Brien said they also focus on the energy master plan, conservation, and cost savings.

Mr. Berthelsen distributed copies of a set of slides and walked Committee members through them.

The principles that guide their decisions are sustainability, reliability, and cost-efficiency.

The energy budgets for the campuses are as follows (data for Rochester were not available):

83,031,000	Twin Cities
6,030,000	Duluth
1,335,000	Morris
739,000	Crookston
91,135,000	Total

In response to questions, Mr. Berthelsen affirmed that the numbers do include the hospital and that this is a gross total that includes sales to the hospital, Housing and Residential Life, and so on.

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The FY10 actual year-end utility costs for the Twin Cities campus were these:

38,523,000	Steam
31,631,000	Electricity
5,854,000	Chilled Water
5,711,000	Water and Sewer
1,312,000	Gas

Mr. Berthelsen next noted a graph of budgeted steam and electricity costs for the Twin Cities campus since 2003. Steam costs rose and fell through 2009, spiked in 2010, and are projected to drop again during 2011 and 2012. He noted that the costs were not adjusted for size, but over the last ten years the amount of space campus has grown by about 2.5 million square feet. So, Professor Martin observed, the cost per-square-foot has actually declined. The cost of electricity consumption has grown at a rapid pace, Mr. Berthelsen noted. So they have managed the steam budget—which the University controls—reasonably well, but not the electricity costs—which it does not (Xcel Energy does).

Mr. Berthelsen reviewed the costs of utilities on the other campuses. He noted that while biomass produces only 2% of the energy used on the Morris campus, they expect that to grow. Committee members inquired about the windmills at Morris (one functioning and one to be built). The information included a cost for electricity which represents the internal costs of producing the wind (maintenance, debt service, etc. which is still must be accounted for), Mr. Berthelsen said, but the one windmill in place does mitigate costs. It produces 60% of the electricity used on the campus now, Vice President O'Brien added.

Mr. Malmquist next explained reliability issues. He said that when dealing with research, heat and power are critical so that research is not interrupted. They count problems by incident: If ANY power is lost for any one customer (even, for example, if the lights flicker in this meeting room), they count it, and they also look at the amount of time the power is out until it is fully restored. The incident counts have been relatively flat since 2003 but the number of hours power has been out has increased a little. The "severity index" has remained quite low.

They also look at who is responsible for steam incidents, Mr. Malmquist. In 2003 and 2004 especially, the company that built and operates the steam plant for the University was responsible for most of the incidents; the University put the company on a performance contract (where incentives would not be paid unless performance improved). Ever since then the company has not been responsible for many of the incidents. Most of the incidents in the last few years have either been caused by the University itself or occurred for a variety of reasons not attributable to either organization.

In terms of electrical power incidents, the number of hours has dropped significantly since 2003, Mr. Malmquist reported, and the severity index has been consistently low.

As with steam power incidents, they also looked at the responsible party for electrical incidents, Mr. Malmquist related. Most of the time the incidents are caused by Xcel Energy. At one point they had thought about outsourcing electricity delivery to Xcel, but on the basis of the record over the last few years, decided that would not be a good idea. (Some energy incidents can be caused by a squirrel or a snake or a contractor accidentally cutting a power line.)

Mr. Malmquist turned to sustainability. Last year they set a goal of reducing energy costs by 5%, which they met. They set the same goal for this year (which would save \$2 million) and as of January had achieved \$798,000 in savings. They look at the data every month and believe they will achieve the

goal by the end of the fiscal year. Some ask why they bother with little efforts, but they find that even the small things get people in the right frame of mind about conserving energy.

They looked at the energy savings achieved as a result of the furlough over the holidays last December. Energy consumption declined on the holidays—Christmas and New Year's—but the consumption during the furlough was about the same as a non-holiday weekend. That says a lot about the place as a research university, Mr. Malmquist commented—it still takes power even on breaks. They tried to save as much energy as possible; the University saved about \$120,000 in energy costs as a result of the furlough; the goal was \$160,000.

Professor Martin related that she came in to her office twice during the furlough and found one building very warm and the usual heat on in another. How are buildings controlled, she asked? They received many questions about the furlough, Mr. Berthelsen said, and it got a lot of public attention. The amount of control they have varies by building; in some cases, they can control it very well while in others (such as Morrill Hall), energy consumption depends entirely on whether the people in the individual offices turned down their radiators. They have every imaginable kind of "building intelligence," and they are always looking to see where they can upgrade control. In some cases, there is little they can do short of a complete remodel (e.g., Morrill). Mr. Malmquist said that they were also concerned about closing the campus for eleven days, which had never been done before, so they did turn the heat on every fourth day to avoid frozen pipes. Their experience suggests, however, that if there were another furlough, it would not be necessary to do that again.

Mr. Malmquist next reviewed CO<sub>2</sub> emissions for the campus. For steam generation, the number of metric tons emitted declined from about 240,000 metric tons in 1998 to about 160,000 in 2009. For electricity the number of metric tons has fluctuated from year to year. The campus total has also fluctuated, but is now at the lowest point since 1998, and the decline is due both to conservation as well as the mix of fuels used to generate steam. These reductions have occurred during a period when the campus added 3.5 million square feet of space.

They work with the coordinate campuses, Mr. Malmquist reported, and he reviewed activities on the several campuses. He commented that University commissioning staff do buildings around the state and work with the building staff to be sure they know how to maintain the conservation measures. Mr. Rollefson asked if they had investigated geothermal heat. They have, Mr. Malmquist said, including at Itasca and at the Twin Cities campus for the new cardio-cancer facility and the football stadium. The cost simply was not justifiable, and it is not clear that a geothermal system is cheaper to operate. The Net Present Value analyses could not produce the right numbers. For the cardio-cancer facility they would have had to drill 200 300-foot-deep wells—in ground that is contaminated. Mr. Berthelsen said that are a lot of variations to consider, including scaling and tax credits (for which individuals qualify but which do not help the University). But they continue to look at geothermal heating as an option.

Mr. Rollefson asked if energy-management people will be visiting if one has a window air conditioner. Mr. Berthelsen said there are three categories of buildings: (1) buildings with window units and no central HVAC system; (2) buildings with their own central air conditioning; and (3) buildings that receive their air conditioning from chilled water produced in a "district" plant serving multiple buildings. They are getting rid of buildings in category (2) by putting in large chillers that serve many buildings—so when they renovate a building, they add it to the chiller loop, which saves utility costs and saves a considerable amount in building renovation.

Professor Martin asked if they had an opportunity to make improvements as a result of work that is being done in preparation for the Central Corridor light-rail train. They are in good shape on the West

Bank, in the AHC, and on the rest of the East Bank, but they did push up significant improvements in electrical distribution because the East River Road was being torn up for other reasons. (They needed to route more power from the 4th Street substation to the Fulton Street station so they can fully and reliably handle the power demands of the AHC now and when any new ambulatory-care clinic is built).

One thing that was kind of fun, Mr. Malmquist told the Committee, was that one of the University's projects, replacement of nearly-100-year-old storm water drop shaft (which required drilling down 100 feet just outside Walter Library), was selected as one of the "2011 Seven Wonders of Engineering" by the Minnesota Society of Professional Engineers. They had to dig the hole to put in the drop shaft without allowing a corner of Walter Library to fall down.

Mr. Berthelsen reviewed photos of the large steam pipes that run underneath the campus from the power plant. They are spending millions of dollars to enhance steam and chilled-water capacity across the campus. They have installed a 300-ton chiller on the St. Paul campus that now serves almost all buildings on that campus and have moved away from separate systems in each building. This system is more reliable, involves fewer machines, and saves about \$2 million per year in reduced energy and maintenance. These projects have been funded totally from HEAPR funds, Vice President O'Brien pointed out, so do not add to cost-pool charges to the colleges.

Mr. Berthelsen reviewed the status and capacity of the boilers at the steam plant on the Minneapolis campus explained that the industry standard is to have "firm capacity," which means to meet all needs assuming the largest piece of equipment is not working. The projected peak demand for the next several years is right at the edge of their firm capacity. The question is how to hold down the projected peak demand; with the new Recreational Sports facility and the cardio-cancer building, they need to have a plan for firm capacity so that projected peaks are not outside it. They have looked at the possibility of not burning coal in the power plant, Mr. Berthelsen said, but when they look at the option from the perspectives of cost, reliability, and sustainability, there are significant challenges both in terms of cost (difference in fuel costs) and in Facilities Management's ability to provide reliable heating to campus. To do so would mean they would be unable to meet the necessary firm capacity in the event that the University's natural gas supply were to be curtailed. With the aging of one of the current boilers, Facilities Management is looking at options to meet the firm capacity while giving the University more options for fuel use. Professor Morrison observed that even if the one boiler that is scheduled for retirement in 2015 were retained, they would still have trouble with the projected demand. Mr. Berthelsen said there are things they can do to reduce peak demand for short periods of time, and if all the boilers work, the campus is fine. This is related to the plan to take buildings offline and cut consumption, Vice President O'Brien said, and thus push back the date it will be necessary to add a new boiler. But they will need a plan to replace capacity, Mr. Berthelsen said.

How much time would it take to put in a new boiler, Professor Morrison asked? Mr. Berthelsen said they assume 2-3 years for permitting and 1-2 years for purchase and installation, so they are at the point now when a decision needs to be made. They also have a team looking at how to shed load during peak periods but without the customer noticing, Mr. Malmquist reported.

Mr. Berthelsen noted that they have metering of utility use and one can look on the web at the data for almost every building on campus. MCB (built in 2002) and MBB (built in 2007) are very similar buildings, with many labs, but MCB uses a lot more energy because, since it was built, the profession has gotten a lot smarter about reducing energy use.

As part of the Climate Action Plan, they have evaluated a number of projects, such as geothermal heating, photovoltaic, hydro power, biofuels, wind energy, and combined heat and power. The criteria they use to judge them include: the impact on CO<sub>2</sub>, net present value, first cost, return on investment,

and reliability. They are trying to develop metrics so that they can compare projects, Mr. Berthelsen said. (The University joined ACUPCC [American College & University Presidents' Climate Commitment] in 2008 and developed a plan in 2010, prepared by the Twin Cities Sustainability Committee, that has the goal of climate neutrality by 2050. Each campus has such a plan, Vice President O'Brien said, and they are being reviewed.

Professor Schulz asked if global warming has an impact on the work they see or the projects they are planning and how they are doing on conservation. Mr. Malmquist that the "It All Adds Up" program is about conservation. They are also doing a second round of lighting upgrades, and LED lights make sense in some cases (e.g., when the lights are 30-40 feet above the floor and one does not want to have to change them very often). Vice President O'Brien said that not all buildings have been recommissioned and that they are going building by building to assess energy use and what could be changed. The University saved \$2.5 million by resetting fans, etc. When they recommission a building, they have an energy fair for the occupants and explain what they are doing in order to try to influence the behavior of energy use in it. The goal is to do 40 buildings per year, Mr. Malmquist said; and to get to every building every five years, Mr. Berthelsen added.

As far as global warming is concerned, the number of heating-degree days (HDDs) is up two of the last three years (10% and 11% colder) with the third year being close to normal (2% warmer), Mr. Malmquist said. For this year it is expected that the number of HDDs will again be above normal. The six years prior were warmer than normal. The current developing weather pattern on a heating-degree basis is one where the population-adjusted HDD's developed by Stephen Smith Energy Associates are running 7.2% above normal—so it will probably remain a colder-than-normal winter for the rest of this season. The recent run of above-normal temps and the upcoming forecasts may begin to reduce that percentage. More HDDs days means that more energy will be consumed to keep things warm. Cooling-degree days, on the other hand, have been above normal for seven of the past ten years, normal one year, and below normal the other two, including FY10. As the number of cooling-degree days increases, more energy is needed to keep the indoor environments cool. Professor Schulz related that he has lived in Minnesota for 11 years and hears stories about months where the temperature never got above zero degrees and there were huge snow piles. Mr. Malmquist reported on the work of a faculty member at Iowa State, Ellwynn Taylor, who has looked at highs and lows over a period of 79 years from 1930 to 2009; he found that temperatures recently have not been as cold or as hot as they were in the past—the highs are trending down and the lows are trending up. There is a "funnel" being created by the highs not being as high and lows not being as low, and that funnel is tipping downward. In other words, it would appear that the temperatures are actually cooling—but the extremes are not as extreme, "so we are warming but also cooling."

Professor Luepker extended thanks to Vice President O'Brien, Mr. Berthelsen, and Mr. Malmquist for their work. The Committee has received these reports for a number of years and they deserve congratulations for being able to cut costs and improve the University's carbon footprint.

## **2. Update on the Central Corridor Light Rail Project**

Professor Luepker asked Vice President O'Brien about the potential impact of Congressional budget discussions on funding for the Central Corridor. Vice President O'Brien said that Congress is acting now on this year's budget (not the one the Obama administration just sent), and they may cut back transportation funding, which could have an impact on the project. She said she believed that was fairly improbable because the Senate would not likely concur. \$160 million has been spent on the project, all from local and state sales taxes, out of a total of about \$957 million, and the project is now awaiting federal funding.

What happens if they do not receive the federal funding, Professor Luepker asked? The project will be delayed, Vice President O'Brien said. For the project to proceed, additional funds at the state or local level would need to be allocated. They will not tear up Washington Avenue before the funding is in hand.

### **3. Budget Update**

Professor Luepker now welcomed Vice President Pfutzenreuter and Ms. Tonneson to the meeting to provide a budget update and a report on cost pools.

Vice President Pfutzenreuter began by reporting on the University's reaction to the Governor's budget proposal. The proposal would allow the University to hold tuition increases to a very modest level for Minnesota residents. His budget would still require cuts and there would still be a need for a salary freeze in the first year of the biennium, and there is no guarantee that this budget will hold.

The discussion turned next to the cost pools. Ms. Tonneson reviewed the FY12 budget framework, which includes presumptions about increases in tuition revenue, internal reallocation, cost increases, and a decreased state appropriation. It is expected the unit budgets funded through the cost pools will be reduced by 5% on average (for a total of about \$15.9 million); after the framework cost increases are factored in to the budget projections (e.g., fringe benefits, utilities, debt service, some investments etc.), the net reduction in the cost-pools will be about \$6.4 million or 1.3%, money the academic units will not have to spend. The academic units will face internal reallocation of about \$59.1 million.

Professor Luepker noted that "internal reallocation" is a euphemism for "cut." The support units will be cut 5%, academic units \$59 million, and there would be about \$37 million in new revenue. Professor Zaheer asked if these numbers had any relationship to the Governor's budget numbers. If the Governor's budget were adopted, Mr. Pfutzenreuter said, tuition would need to go up by less than they project and the internal reallocation would be substantially less. The 5% cuts would not be required, although smaller cuts still would be.

Professor Morrison asked about the reduction in the state appropriation. Mr. Pfutzenreuter explained that they are basing the projection on a relatively pessimistic assumption about what the state will do.

Ms. Tonneson provided data on cost pools showing the changes from FY11 to FY12 (as the FY12 budget proposals now stand). Some of the cost pools will decrease (e.g., system-wide support units, Facilities Management, research support, utilities) and some will see increases (e.g., student services, classrooms, debt). The net result of the increases and decreases is the \$6.4 million savings that Ms. Tonneson mentioned earlier.

Professor Martin inquired about the reduction in graduate student services; is that a result of the reorganization of the Graduate School? Part of it is, Ms. Tonneson said, and part is due to a reduction in matching funds for the 21st Century fellowship because not as much money was needed as had been expected.

Professor Luepker noted that the Committee has had several discussions about the effect of tuition increases on the financial aid cost pool; is that reflected in the increases in one of the student services cost pools? Past increases are included in the base, but there are no increases for FY12. Ms. Tonneson said. In the future, student aid will be a separate cost pool so changes in funding will be more transparent. Professor Luepker also asked about the reduction in graduate student services; he said he

heard that 25 people have been laid off. There have been changes, Mr. Rollefson said; there is a very frugal outlook in the Graduate School, with positions not filled; the savings will be a multi-year process. The Graduate School lost approximately \$400,000 in FY11 and \$600,000 in FY12, Ms. Tonneson said. The money has not been shifted to graduate fellowships, Mr. Rollefson observed; responsibilities have been shifted down to departments, Professor Luepker added.

Ms. Tonneson provided Committee members with a more detailed listing of the cost-pool changes. Committee members inquired about some of the details.

Professor Luepker said he appreciated the fact that they were trying to allocate money in more appropriate ways, but the tables of data tend to obfuscate the point. The net result of the support-unit cuts is a reduction of 1.3% in the cost pools, after all the increases and decreases, but they have talked about a 5% cut. If they present these data to the deans, how will they reconcile those two figures? The 1.3% (the \$6.4 million) is the savings after unavoidable cost increases, Ms. Tonneson said. They cut the units an average of 5% and then added back costs, Mr. Pfutzenreuter said. One could increase the cuts to the support units, he pointed out.

Mr. Rollefson asked if this is the first time that the cost-pool charges have gone down since the adoption of the budget model. It is, Ms. Tonneson said. Mr. Pfutzenreuter noted that last year's cost-pool budgets were down except for a significant increase in financial aid. In the future, there will be a separate cost pool for undergraduate financial aid. That will affect colleges differently, Professor Martin observed. They will keep it budget-neutral for the year of the change, Ms. Tonneson said, but she agreed that future changes would affect colleges differentially. Mr. Pfutzenreuter said he also surmised that some of the numbers could change during the year and that budgets for support units could decrease.

Ms. King said she has heard that the budget model could change, and commented that it seems so complicated. If one were devising a budget model from scratch, would this be it? It would, Mr. Pfutzenreuter said. He said he has been at the University long enough that he has seen the other side, where all the budgets are controlled centrally. And there was no transparency with that system, Professor Martin commented.

Professor Luepker said that the Committee will revisit the issue of student fees. One way that is seen to increase tuition is to raise fees. The Faculty Consultative Committee is concerned about fees; if there are plans to change the pricing model (e.g., differential undergraduate tuition), the matter deserves discussion. Professor Martin recalled that the students on this Committee in recent years were vocal in expressing the view that they wanted tuition and fees together so it is clear what their costs are; that means there would be differences across colleges because there are different costs. Mr. Pfutzenreuter agreed that differential tuition needed discussion; there are concerns about it, especially when it is compared to the private institutions, which have one charge for all students. But he cautioned that the fee study is separate from differential tuition pricing; that is an institutional policy choice. But they are intertwined, Professor Luepker said, because some colleges have high fees. Mr. Pfutzenreuter said that one should not lose sight of the policy language, but there already is differential pricing through fees; the question is how much of that should be permitted.

Professor Luepker thanked Mr. Pfutzenreuter and Ms. Tonneson for their report and adjourned the meeting at 3:50.

-- Gary Engstrand