

# **Task Force on the Research Culture and Environment at UMBC**

## **Final Report**

May 31, 2000

UMBC is emerging as a research university with incredible rapidity. One--but only one--measure of our research growth is the speed with which we have met the current requirements for designation as a Research II university. President Hrabowski has made clear that he wishes to consolidate our standing as an RII university, and to move towards meeting the current standards for RI universities. Since there are only two requirements for being defined as an RII or RI university--numbers of doctoral degrees awarded yearly and numbers of grant dollars brought to campus through a highly selective and restricted set of federal grant programs--there is a pressing need for some improvements to UMBC's research infrastructure that would allow UMBC to meet these federal grant and doctoral program requirements as quickly and efficiently as possible. Since the major engine of UMBC's emergence as a Research II university has been the track record in acquiring external funding of our College of Engineering, our sciences departments, and our Institutes and Centers, it is crucial that their most pressing needs be addressed immediately. Many of these most crucial needs also apply to academic units outside engineering and science.

At the same time, it is also vital that UMBC's emergence as a research university be balanced across academic programs. More general understandings within academe of what constitutes a "research university" and UMBC's national reputation must and will rest on more than the reputation of its engineering and science programs. Accordingly, attention must be paid to improving the infrastructure relevant to the research component of ALL departments' missions. Moreover, improvements made to the campus research infrastructure should enhance--and certainly not come at the expense of--the quality of undergraduate and graduate education and of the quality of student life.

As part of our deliberations this year, members of the Task Force undertook three site visits to observe practices at possible role model research universities. The three universities visited were the University of Delaware, Georgia Institute of Technology ("Georgia Tech"), and the University of Pennsylvania ("Penn").

These research universities employ very different administrative models from UMBC. Commonalities include active research support from Federal sources and strong support from research foundation monies. All three universities appear to support their libraries in a substantially stronger fashion than does UMBC; Task Force members were especially impressed by the ability of Georgia Tech to focus on customer service.<sup>1</sup> Differences among the three site-

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<sup>1</sup>For a comparison of library resources at the site visited universities with UMBC please see Appendix 1.

visited universities included the level of administration which controls resources supporting the research agenda, with Pennsylvania having the most decentralized model and Delaware the least decentralized. All three universities are more decentralized than the UMBC system, which has control of resources generally at the highest level of management.

Clearly, the capacity to support research with a strong research foundation is something to which UMBC should aspire. However, reality leads us not to predict a \$100,000,000 research foundation account any time in the near future. This will preclude UMBC from taking some initiatives that the visited universities could offer. It should be pointed out that the financial return from the research investment is not large; the resource costs of research projects often cost more than is covered by grants or contracts. At the University of Pennsylvania, it was said that "Research is an intellectual enterprise. It costs you money". Their experience with Medical research required substantial reorganization of their way of doing business when they ran into financial problems.

At UMBC, we view our growth in research funding as a way to success. As we bring in more Federal research dollars, matching state funding will to a point be beneficial to our academic endeavor. However, it should be clear that there is a cost to enhancing the research enterprise in terms of faculty lines, capital infrastructure, maintenance, and sustainability that UMBC is now beginning to recognize. Some of the recommendations below address these additional costs of being a Research II or I university.

Based on our deliberations and on impressions gained from observing other universities, we propose a number of changes or modifications to the way that "business is done" here at UMBC. Many of these recommendations are concerned with improving the flow of communication between researchers at UMBC, who are primarily in academic departments, and administrators. Some recommendations involve changes in process with minimal budgetary impact, while others require allocations of money. We will also outline a number of topics that need further discussion by a successor group to this Task Force before specific proposals can be made.

## **Recommendations**

### **1. Creation of a Research Council**

A major complaint identified by members of the Task Force is that all too often it has been very difficult for UMBC faculty to communicate their needs to the UMBC administration, and, once these needs have been communicated, to have these needs taken sufficiently seriously that they are addressed. Part of the problem may well be that UMBC simply has not had the money to address many of the needs of the research faculty, but as we solidify our RII standing, the additional state support and overhead monies that we receive should help loosen the budgetary constraints, and make it easier for the administration to meet the needs of research faculty.

**Recommendation 1A: The Task Force recommends that, effective Fall semester 2000, UMBC establish a Research Council.**

It is proposed that a UMBC Research Council be established as a University-wide committee to serve as the major advisory unit to the University in decisions regarding research policy at UMBC. The sustained growth in externally-supported research, the growing complexity of issues of intellectual property in a digital age, decisions concerning commercialization of faculty generated technologies and the extent of university involvement, the expansion of research centers and institutes, facility and research support needs, and the overall expansion of scholarly literature and engagement, have fostered the need for a coordinated body for policy review for faculty dialogue and analysis.

Presently, UMBC has numerous committees and task forces involved with the research enterprise. Current decisions regarding policies that affect these activities are made independently, however interdependent they may actually be. Existing standing committees include: the Institutional Animal Care and Use Committee (IACUC), the Institutional Review Board (IRB), the Conflict of Interest Review and Management Committee (COIRMC), the DRIF Research and Summer Faculty Fellowship Awards Committee, the Library Committee, the Information Technology (IT) Committee, and the Research Park Advisory Committee. Issues have emerged recently which have not had an opportunity for sustained and systematic informed discussion on campus. They include intellectual property associated with faculty developed courseware, campus scientific misconduct policy, pre-award and post-award grants management and administrative structure, academic policies regarding conflict of interest and conflict of commitment, laboratory safety issues, graduate assistantship levels, maintenance of campus research facilities, computer support systems for research, financial resources for faculty start-up costs, DRIF departmental distribution, faculty library support, and evaluation and review of campus Centers and Institutes. The Research Council would be the faculty unit which would coordinate existing activities and bring issues forward for faculty discussion associated with the research environment at UMBC.

Additional detail regarding the mission, membership, and functions of the proposed Research Council are summarized in Appendix 2.

**Recommendation 1B: We recommend that the Research Council begin a discussion of decentralization of research support, using models found during the site visits, and present a model of “best practice” to the Faculty Senate for review by April 2001.** Specific discussions of DRIF reallocation and departmental support should be addressed.

**Budgetary Implications:**

The Research Council will require the services of an administrative assistant to contact members with regard to meeting times, photocopy and distribute materials, and take notes. It is estimated that the time involved would require two full days per month, 10 months per year, for a total of 20 work days per year. If the person selected for this position is reassigned from other duties, then there is no change in UMBC budget outlays, but there may be a reassignment of budget codes from existing codes. It is estimated that the funds diverted from other uses would be the yearly compensation (including benefits) of an administrative assistant, divided by 2000 hours, times 160 hours. If the yearly compensation of an administrative assistant is \$40,000, then the budget reallocation is approximately \$3200. Materials costs would be minimal, perhaps \$200 for the year.

## 2. Post Awards Grant Management

At the same time that UMBC's success in attracting externally funded grants and contracts has grown exponentially, so has the need for principal investigators to be able to appropriately manage their budgets grown exponentially. However, the resources available to principal investigators (or, in some cases, business managers) to monitor the flow of expenditures and receipts on a daily basis simply do not exist uniformly across campus. This inability to track the flow of budgetary dollars across categories has many implications: it can result in overspending of budget so that the campus must make good the shortfall by diverting funds from other components of its overall budget, it can result in underspending of budget so that monies are unnecessarily returned to the awarding agency, it can enhance the length and difficulty of audits, and it can harm UMBC's reputation within the agencies that fund grants and contracts. And, it can divert far too much of the principal investigator's time and attention from his primary mission, which should be to complete the promised research and explore future initiatives. Moreover, the budget processing requirements will change dramatically as new financial reporting systems are installed on campus over the next two years or so. ***Without question the single highest priority of the majority of the members of the Research Task Force is to solve the post awards grant management problem, which is perceived by many as a crisis.*** Many members of the Task Force feel that the grant management problem must be dealt with immediately.

Accordingly, the Task Force spent considerable time examining alternative means for improving the post awards grant management flow of information. Persons at UMBC who were not on the Task Force itself but who were knowledgeable about the computing, accounting, or other process issues involved were invited to participate in meetings of the Subcommittee on the Research Infrastructure. In considering this issue, several fundamental principles or beliefs became clear:

1. The best long-term solution to the grants management problem is to purchase and install an integrated suite of business applications that would link Finance, Human Resources, the Student Information System, and Grants Management. UMBC plans an integrated system that would link the first three of these components; it is

vital that Grants Management capability be linkable to these other management information systems as well. However, the implementation of a fully linkable integrated system is probably five years away.

2. In the short run, we can make great improvements to the current post-award grants (and contracts) management system. AwardTrak and EShadow are the two most viable short term solutions. AwardTrak is the software already being used within the UMBC College of Engineering, while EShadow is a software package from the Helmsman Corporation which is currently being beta-tested by the College of Engineering at UMCP.
3. In order to maximize service to faculty across the UMBC campus, we need a comprehensive solution based on a standard set of software tools. All principal investigators or their business managers should use the same software, and all should receive comprehensive training in the use of the standard package. Two products that are now being beta-tested at UMBC, FinanceWeb and ProCard Web, will be critical to maximizing the efficiency and efficacy of whatever grants management tools are installed in the short run.

As suggested above, it could take several years for UMBC to choose, beta-test, install and make linkable the new information management systems for Finance, Student Information Services, Human Resources, and Grants Management. However, members of the Task Force, particularly those in the College in Arts and Sciences and the Centers and Institutes, are impatient that improvements to their grant management capabilities be made immediately. Accordingly, there was much discussion of the advantages and disadvantages of AwardTrak and EShadow. A summary of the strengths and weaknesses of each system, as they are currently understood, is provided in Appendix 3.

As Appendix 3 suggests, the two systems are quite close in overall evaluations. However, a majority of members of the Task Force were convinced that since AwardTrak is already being used successfully within the College of Engineering at UMBC, while EShadow is only now in the early stages of beta-testing at the College of Engineering at the University of Maryland College Park, AwardTrak was the superior choice for immediate implementation at UMBC. There was considerable sentiment that a system was needed immediately at UMBC, and there was concern that it would not be possible to acquire EShadow without going through a time-consuming RFP process. (Some members of the Task Force thought it might be possible to acquire EShadow through a sole source contract, but that is not what we were advised by the Office of Procurement.) Moreover, there was considerable sentiment that UMBC should not become a beta site for the testing of EShadow and that we should be absolutely certain that EShadow would work flawlessly before we could recommend that it be acquired for our campus.

Even if the decision is made to move forward with rapid campus-wide implementation of AwardTrak, there are a number of modifications to AwardTrak that

would need to be made. For example, the existing AwardTrak software would have to be enhanced to allow it to link to FinanceWeb and ProCardWeb, which are currently deployed or being beta-tested at UMBC. Another modification is that AwardTrak is designed to work on PCs, but there are still faculty and other researchers at UMBC who use Macintoshes. While in principal the VirtualPC feature of Macintosh computers should allow AwardTrak to work on Macintoshes, Mac users often find VirtualPC to be problematic. Still another desirable enhancement to AwardTrak would be to build in a capability to generate a history of past expenditures on individual grants and contracts by category, going back perhaps six months, so that principal investigators or business managers can review expenditure flows over time.

Accordingly, in order to improve the ability of principal investigators and business managers to manage their grants and contracts both immediately and in the medium term, we make the following recommendations:

**Recommendation 2: We recommend that the University provide an electronic grant budgeting and tracking system, based in the short term on AwardTrak, with sufficient training and support to be implemented within the first three months of FY2001.** This requires the following more detailed recommendations:

**Recommendation 2A: UMBC should develop a hierarchy of support for grants management so that communication across Academic and Administrative Affairs units are clear and that lines of communication flow directly from central grants administration to the academic units and vice versa.** At the base level are the business managers and staff performing grants accounting at the department level; these are the staff working directly with faculty. These staff will need to be supported through their respective Dean's Office, primarily John Brooks or Tim Sparklin. Supporting the Dean's Office for post-award activity will be the Manager of Grants Accounting and for pre-award activity the Assistant Provost for Sponsored Programs. In order to provide the best level of support across campus it is critical that we establish standards and responsibilities. One possible model for such a hierarchy is provided in Appendix 4.

**Recommendation 2B: We recommend that UMBC should immediately begin to develop a comprehensive training program for staff performing grants management.** The responsibility for training will lie with the hierarchy developed in Recommendation 2A. This training would include basic computer training in Microsoft Office and Netscape, FinanceWeb, ProCard Web, and AwardTrak. We recommend that the training on these packages be made available to those faculty, business managers, and others who desire it as close to July 1, 2000 as possible.

**Recommendation 2C: We recommend that all staff performing grants management should have a modern desktop computer (Pentium 233 or greater, with at least 128MB of RAM) capable of running the latest version of Microsoft Office and Netscape.** All UMBC staff involved in managing grants and contracts that do not have a

modern desktop computer should apply for computer replacement through the UMBC Computer Replacement Initiative. We estimate that this will necessitate a startup cost in the range of \$10,000-\$15,000.

**Recommendation 2D: We recommend that the University Computing Center establish a six month contract with Rebecca Barber of BecTec Solutions, the developer of AwardTrak, to produce enhancements to AwardTrak.** Specifically, we recommend that Ms. Barber be asked to provide the initial training on AwardTrak and add support for utilizing FinanceWeb to automate the reconciliation of expenses in AwardTrak. We also recommend that other enhancements identified above be supported.

**Recommendation 2E: UMBC should add to the UCS a new position that will provide support for grants management software within the context of our Financial Systems group.** The person hired into this position would be responsible for both pre- and post-award systems. Once the position is established and a person hired (or reassigned) into it, we should bring up the COEUS pre-award system for the Office of Sponsored Programs and extend access to both COEUS and AwardTrak to the Grants Management section within Accounting. An additional responsibility of the person hired into this new staff position will be to work on enhancing the post-award accounting system, especially beyond the six month contract with Ms. Barber.

**Recommendation 2F: The hierarchy established under Recommendation 2A will be responsible for monitoring the success of the deployment of AwardTrak across the UMBC campus and the success of the implementation of EShadow at College Park. By February 2001, this group should determine if, as we begin to implement the new financial, human resources, and student information reporting systems at UMBC, it would be more sensible to continue developing AwardTrak or move to another system such as EShadow for Fiscal Year 2002.<sup>2</sup> A report should be issued to the**

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<sup>2</sup>An ad hoc group comprising Michael Breton, James Milani, Janice Schwartz, Rob Smith, Tim Sparklin, Jack Suess, and Michael Summers was instrumental in developing the knowledge base summarized in Appendix 3. The oversight group suggested in Recommendation 2F should include grants/contracts-oriented faculty from Humanities/Fine Arts/Social Sciences, as well as sciences and engineering.

**Research Council on the progress and status of the post-award grants management activities by March 2001.**

**Budgetary Implications:**

We estimate that the following funds should be made available immediately, for deployment in Fiscal Year 2000-2001:

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| 1. | Six month contract for Rebecca Barber: | \$15,000  |
| b. | New line in UCS:                       | \$65,000 (including benefits) (since this is a permanent line, the outlay will be a continuing one in future years) |
| 3. | Materials                              | \$ 5,000  |
| 4. | New PCs (recommendation 2C):           | not known to Task Force, guesstimated at \$15,000.  |

Total immediate budget outlays:      \$100,000.

Note: It is estimated that other training and implementation costs will involve only opportunity costs, not actual budget outlays.

3. Facilities maintenance and management

**Statement of the Problem**

Several campus infrastructure maintenance and repair processes must be corrected. During the recent period of phenomenal growth in research, the number of skilled technical people required to service the new buildings coming on-line, while maintaining the older core of the University, has become insufficient. While the vast majority of craftsmen at UMBC are individually excellent, there is a pervasive lack of communication and feedback and a lack of “ownership” of systems in the research facilities and buildings. We propose a system of accountability for research infrastructure which deals with these systems and technologies differently than the standard plumbing, electrical, heating and cooling issues addressed day-to-day by the Physical Plant.

• **Preventive Maintenance**

Many departments, centers, and institutes—e.g., engineering, science, geography-- have numerous pieces of specialized equipment that require expert maintenance and/or installation into the integral systems of the building. While preventive maintenance of

these items may fall outside the scope of the Physical Plant's expertise, many instruments are attached to central systems which need to be maintained by Physical Plant. When these items are purchased and installed, a clear identification of the boundaries of responsibilities must be recorded. With regard to the performance of maintenance, faculty members may be content to maintain their equipment themselves, wherever possible. Ideally, Physical plant would provide routine maintenance, such as replacement of particle filters on house water running into chillers, condensation traps in compressors and air filters in the mixing boxes, on a regular schedule. Pieces of equipment that augment a system, such as booster pumps, would be checked regularly. These simple procedures and the manpower needed to complete these tasks would surely pay for themselves in a reduction of expensive service calls and repairs. In addition, responsibility for continuation of service contracts must be identified.

- **Use of Contractors**

With the rapid expansion of facilities, the funding and manpower available to Physical Plant seems to have become overburdened and the University has had to depend more heavily on the use of contractors. This has caused numerous problems; a lack of documentation of system updates, work not being performed up to University design standards, and simple work order requests such as the installation of light fixtures or installing shelves being delayed by months or indefinitely.

- **Customer Service and Feedback**

Generally, the work order requests to the service center are handled in a courteous and professional manner. Problems arise, however, when problems fall into "gray areas" such as pumps or wiring installed by contractors or installed by university personnel that are attached to equipment that handles a specialized function or is covered under an outside vendor's contract. Another problem is the narrowly defined responsibilities of groups. For example, the maintenance of fume hoods (repair and replacement of exhaust fans on the roof and in the rooms) is covered by the HVAC department. The ductwork, which can be noisy or poorly installed and connects the two fans, is not. The policy governing this type of problem must be reviewed. The lack of feedback on the progress made on work order requests is a continuing source of frustration.

- **New Construction and Renovation**

Given the massive amount of renovation and new construction taking place at UMBC, both facilities management and capital construction need additional resources to improve the campus's ability to plan and carry out these projects. Problems with new construction and renovation of existing buildings, especially in the Sciences, need not be documented, as they are well known on campus. Had additional resources been available, many problems might have been avoided.

## **Suggestions and Solutions**

**Recommendation 3A: UMBC Should in FY 2001 Hire A Qualified Person to Supervise the “Research Physical Plant”, including Construction and Renovation of Facilities.**

The volume and complexity of the construction and renovation on campus demand that we have engineering support for our research endeavor. It is no longer appropriate for UMBC to depend solely on UM,B for supervision of these projects. Facilities Planning should be given a new line with which to hire a person with expertise in engineering and architecture who is experienced in the building of laboratories to work with the current UMBC staff. This person should be the main point of contact for Physical Plant to consult when prioritizing work on research facilities. This person should actively represent the science and engineering faculties in discussions with UM,B regarding new construction and modifications to existing buildings.

**Recommendation 3B: Physical Plant should, as soon as possible, receive a new line with which to hire a technically sophisticated person who would be the focal point for receiving all requests for all repairs needed in the science and engineering labs.** This person would have the funding and authority to deploy resources from UMBC or hired from the outside, to fix whatever needs to be fixed.

**Recommendation 3C: A Guidebook Explaining Physical Plant Policies Should be Written.**

The Physical Plant should publish by May 2001, both in hard copy and on line formats, a guidebook on the types of repairs that can be expected to be completed in-house, as well as a time-frame chart for various types of repairs so that departments would know when to expect repairs to be completed. This way, if a problem is beyond the scope of the Physical Plant’s capabilities, time and money will both be saved. Avoiding misunderstandings also will avert frustration among students, faculty, administration and the shops.

**Recommendation 3D: A System for Adequately Monitoring and Tracking Repairs Must be Implemented Immediately.**

Physical Plant has already begun to implement an initiative to improve the work control process; this new initiative should be supported and must be further developed. It is imperative that a system be designed and implemented that enables triaging, so that high priority items receive immediate attention. There should be one contact person within each department, institute, or center who can deal directly with a specific person in Physical Plant. Since complex problems need a mix of skills for their solution, that person in Physical Plant must then “take ownership” of the problem and make sure that it is rectified as soon as possible.

A system to assign identification numbers to problems, which has been proposed by Physical Plant, needs to be implemented. Once a problem is registered, it should be tracked throughout the repair process. This process is used by the Computer Helpdesk, works quite well, and could be appropriate for the Physical Plant.

**Recommendation 3E: Inspection and Documentation of Systems Installed by Outside Contractors Must Be Mandatory.**

This would allow for UMBC inspection and acceptance of such things as wiring, drain lines, water pipes, and chillers, and transfer of responsibility for these systems to Physical Plant. These systems are often undocumented by the project managers and the various shops are unaware of the existence of many of these items, some which have been in the buildings for years. All work should be inspected to assure that it complies with UMBC design or safety standards. Entire rooms built for lasers, spectrometers, compressors or the like have never had Physical Plant personnel inspect the facility. At the same time, Physical Plant groups may not even be notified of these changes or additions. Project managers need to understand a project's scope, impact and deadlines. They should be an asset to the departments and a resource for the university. Project managers who lack detail orientation become a hindrance to project completion. Some are largely responsible for the lack of information flowing between the research buildings and the Physical Plant. These project managers must be able to manage a project, communicate honestly and effectively between departments and must realize that the faculty, administration and staff requesting and ultimately paying for the work are the customers they serve, not the contractors.

**Recommendation 3F: A Technical Point of Contact Should be Established for Each Building or Group of Buildings.**

In each building on campus, it should be clear that one person has responsibility for ensuring that systems are operating properly and be able to aid Physical Plant in prioritizing calls to the maintenance system. In the Science Buildings, such a person may be a departmental technician who is aware of the requirements for faculty research. In most cases, such a technical person can authoritatively represent the department's needs to Physical Plant and to the Administration. In other academic buildings, this person may be a Physical Plant employee whose role would be to service the Departmental clients within that building. In all cases, faculty within the building in which they work, teach or do research should have one person to go to to make things happen.

This position can be envisioned as a mix of project manager (for jobs under \$100,000) and maintenance man. Each technician or other point of contact would have responsibility for all integral systems in a building. He or she would change air and water filters, change vacuum pump oil and check fume hood exhaust fan belts, fill items that need liquid nitrogen or helium, swap out water polishing cartridges, do minor electrical (lights) and carpentry (shelves, ceiling tiles) work, etc., or arrange for others to do this work. The person(s) occupying this position would keep the Physical Plant informed of

changes in the facility to incorporate into the Computer-Aided Design Drawings system (CADD). This person would also be able to identify potential problems to the appropriate physical plant shop prior to crises developing.

**Recommendation 3G: An Adequate Number of Technicians Must be Provided to Physical Plant to Make Sure that Prompt Service Is Provided.**

**Recommendation 3H: The support network in satellite facilities must be improved.**

The three deans should establish faculty committees of stakeholders in buildings such as TRC that are primarily devoted to research. Because support resources at UMBC are assigned on a departmental basis, buildings such as TRC have very few support personnel present and get less attention when it comes to dealing with issues of space assignment and maintenance. Departments or college committees may not deal with these issues satisfactorily if they are preoccupied by issues that take place in the main building of the department or college. A committee of faculty and staff based in a building such as TRC would fill this gap and would allow them to deal effectively with the inter-departmental issues that necessarily arise.

**Budgetary Implications:**

Recommendations 3C, 3D, 3E and 3H can be done within the current budgetary framework. Other recommendations require hiring of new personnel. The Task Force recommends that the first priority be to hire a new person for Facilities Planning (Recommendation 3A). This is crucial so that UMBC can gain more control over its own construction. The cost estimate for this position is \$100,000 per year. The next priority is to hire new personnel for Physical Plant to enable a timely and efficient response to requests for maintenance (Recommendations 3B and 3G). Recommendation 3B should cost about \$80,000 per year, while the cost of Recommendation 3G depends on the number of new technicians that are deemed necessary. The budget requirement for Recommendation 3F is subsumed within the budget requests for Recommendations 3B and 3G.

Over time, responsibility for maintaining the labs may devolve to individual departments, if later incarnations of the Task Force (viz, the Research Council) should recommend this on the basis of "best practice" at site-visited institutions, and should the administration agree.

4. The Library: The Albin O. Kuhn Library as a Research Facility

The UMBC Library is the only research facility at UMBC that touches every faculty member and every student. It is a primary research tool in many disciplines, particularly in the Humanities and Social Sciences. And it serves as an indispensable repository of secondary information in every academic research area. The UMBC Library

is a vital component of UMBC's research mission, and it will need to be adequately resourced if UMBC is to become a truly first-rate, top-ranked research university.

The UMBC Library is currently funded at a level that is significantly below that of our designated national peer institutions, as of FY 1996, when compared on a per-student FTE basis.<sup>3</sup> In order to achieve rough parity with designated peer institutions, Library staff estimate that approximately \$700,000 would be needed in new annual funding support, allocated between new personnel, materials, operating budget, and the Library Information and Management System (LIMS).

The Task Force on the Research Culture and Environment feels strongly that the UMBC Library should have funding and resources comparable to our peer institutions. Presumably a multi-year plan will be needed to phase in additional Library resources, and the Task Force has great confidence that the UMBC Library Administration and Library Policy Committee will allocate these additional funds in a way that makes the most efficient and cost-effective use of the available resources.

The Task Force fully supports the Library's current efforts to intensify the conversion to online location, evaluation and delivery of article length information resources. The online research process takes place in half the time, or less, than it would take to work with paper resources in the Library building. For materials not owned by UMBC, delivery times are collapsed from weeks to days, or even to seconds when resources are fully online. The efficiency of online methods, compared to past methods, is tremendous. Researchers who are empowered and educated to work this way will experience significant competitive advantages, due to their time saved and assignable to other tasks, over researchers who use paper resources.

The Library's priorities should fully support the online research paradigm as quickly as financial constraints permit. Since many resources continue to be represented only in print, the Library should continue to support print resources as well.

### **Recommendations and Budgetary Implications:**

To bring the UMBC library up to the median per-student spending level of our Research II peers will require the infusion each year of at least an additional \$400,000 in funds for materials, plus an additional \$300,000 in funds to hire personnel, over and above current spending and staffing levels.<sup>4</sup> We recommend that UMBC undertake

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<sup>3</sup>Available from the Library staff are detailed comparisons of the UMBC Library with the libraries at each peer institution. Appendix 1 provides a direct comparison of the UMBC Library with the libraries at the site-visited universities, one of which (the University of Delaware) is also a peer institution.

<sup>4</sup>These estimates were provided by Library staff.

investments in the library such that it is funded at the median level of our R-II peers by FY 2006. In order to accomplish this goal, we recommend the following budget allocations:

**Recommendation 4A: The Task Force recommends that for Fiscal Year 2001, the library's budget be augmented by an additional \$100,000 for materials and staffing, over and above what is needed to continue the current level of staffing, subscriptions, and book and monograph acquisitions.**

**Recommendation 4B: That in each year between FY 2002 and FY 2007, the library's base funding be augmented by additional increments of \$100,000 per year, over and above what is needed to cover inflationary cost increases.** That is, funding for the library would increase by the following increments (net of inflation):

\$200,000 in FY 2002 (relative to FY 2000)  
\$300,000 in FY 2003 (relative to FY 2000)  
\$400,000 in FY 2004 (relative to FY 2000)  
\$500,000 in FY 2005 (relative to FY 2000)  
\$600,000 in FY 2006 (relative to FY 2000)  
\$700,000 in FY 2007 (relative to FY 2000)

In this way, UMBC would catch up to the median level of per-student spending of our R-II peers within the next seven years. This plan is very conservative, because it assumes that other R-II universities do not raise their level of per-student funding over the same time period (that is, they remain static after adjusting for inflation). Our RII peers may themselves invest in their own libraries, so that the median itself could rise over time, in which case even our modest proposal would probably not achieve median levels as they exist in academic year 2006/2007. Should this happen, our plan may need even more aggressive funding, as UMBC tries to catch up to a moving target.

## 5. Faculty Development

The Task Force believes strongly that several enhancements to university policy in addition to more generous funding of the Library are needed in order give research faculty--particularly those outside the laboratory sciences and engineering--improved capability to produce research. These needs are most especially compelling in the case of small departments where both resources and the availability of senior faculty mentors are limited, in the case of departments for which access to external funding sources is very limited, and for junior faculty. Accordingly, we suggest several recommendations that begin to address faculty development and other research issues in these departments and for these types of faculty:

### 1. Faculty Access to Computers for Research

**Computers in Faculty Research:** Faculty access to desktop and laptop computers capable of running current software packages is essential to UMBC's mission as a research university. Much current research in the humanities and social sciences involves extensive use of web-based information sources, and many faculty in these fields are engaged in quantitative research that requires statistical analysis on a desktop computer. Moreover, the presentation of data in graphical formats, the analysis and manipulation of visual images, and the increasing prominence of online publishing and PowerPoint presentations in the dissemination of research results, often requires that faculty have access to computers that are faster and more powerful than the "basic" 233 MHz desktop configuration specified under the Summer 2000 Computer Replacement Initiative. Many faculty also need direct access to peripherals such as scanners, printers, zip drives, and other I/O devices that are not included in the "basic" computer package. Finally, laptop computers are becoming increasingly essential to faculty research in the humanities and social sciences; for example, much primary research in the humanities and social sciences is presently carried out by means of laptop computers at remote libraries and archives. UMBC faculty in all disciplines are increasingly engaged in research that involves Information Technology, and these new kinds of IT-intensive research are vital to maintaining UMBC's leading academic areas of expertise at a level comparable to the best research universities in the U.S.A. UMBC's research mission is severely hampered by chronic underfunding in support of desktop and laptop computers for faculty. Adequate computer equipment is not generally available to faculty outside of the hard sciences, where grant support and startup funds are often used for the purchase of computer equipment.

**Flat Operating Budgets:** Departments in the humanities and social sciences generally have not seen any substantial increases (after inflation) in their operating budgets during the last decade. Nor have any resources been earmarked specifically for the purchase of computer equipment for faculty or staff. Thus many departments have had to scrape together funds originally intended for other purposes in order to finance the purchase of faculty computers. For those departments with large numbers of part-time faculty, providing adequate computers for all faculty would eat up their entire operating budget, leaving nothing for faculty travel or other legitimate research expenses.

As a specific example of the consequences of inadequate funds, laptop computers have been almost completely unavailable to research faculty in the humanities and social sciences out of any UMBC-supported source. Some active research faculty in these fields have chosen to purchase a laptop out of their personal income. At some institutions, a new laptop computer is a standard part of startup costs for new research faculty. Most full-time faculty members at UMBC have a legitimate need for access to a laptop computer in their teaching and research, and there is (at present) no routine mechanism for purchasing laptop computers for UMBC faculty (so far as the committee is aware.) The utter lack of provision for laptop computers poses a significant recruitment and retention issue for research faculty in the humanities and social sciences at UMBC.

**Replacement Cycle:** It is the stated policy of the IT Steering Committee that "UMBC will continually renew equipment according to industry standards, currently a three-year cycle." The Task Force has not carried out a comprehensive survey of campus computer resources, but it is our impression that this goal is far from being reached at the present time for faculty in the humanities and social sciences. For example, the UMBC English Department received 2 new computers under the replacement initiative last year (1999), which works out to a 13-year replacement cycle for its 26 desktop computers. Should this year's replacement initiative be supported at the same level of funding as last year's, then sufficient funds will not be available this year to actually implement a 3-year replacement cycle.

The actual distribution of funds for computer replacement is informative. State funds and DRIF funds generate an available budget of \$100,000; some additional and modest monies may be available from other sources. In order to provide a larger number of awards, the amount per computer replacement was scaled back from \$1000 to \$900, and requests for the funding of RAM upgrades were allowed for the first time. For FY 2000, requests were submitted for 187 PC replacements and 11 RAM upgrades. Budget constraints and satisfying the criteria for PC replacement permitted the review committee to approve 118 PC replacements and 10 RAM upgrades. Of the 118 PC replacements last year, 40 went to faculty (59 requests were received) and 88 went to Staff (139 requests were received). UMBC staff certainly have needs for up-to-date computers, but it is rather startling that only one in three awards for PC replacement was made to UMBC faculty.

### **Recommendations:**

**Assured Access for Faculty:** Fundamentally, the Research Task Force believes that the best way to address these concerns would be to allocate sufficient funds to actually replace all of the faculty desktop computers on the UMBC campus on a 3-year cycle, according to the stated IT Committee policy. In light of the current proposal to provide Assured Access to computers for all UMBC students, we strongly advocate that we provide Assured Access for all UMBC faculty. Every faculty member at UMBC should have an adequate computer on their desk to carry out their assigned instructional responsibilities, including the delivery of web-based course content. In addition, those faculty with demonstrated need for a laptop computer in research and teaching (which will be most of our full-time research faculty) should have access to laptop computers, and replacement of these laptops on a regular basis.

Accordingly, we make a number of recommendations. Recommendations 5A through 5F apply to "phase 1", the period between FY 2000 and FY 2003, in which UMBC attempts to replace especially old PCs with new PCs. Recommendation 5G applies to "phase 2", in which the budgetary framework for computer replacement is brought into conformity with any policies that UMBC might implement with regard to the eventual devolution of budget authority to the department level.

**Recommendation 5A: We recommend that the Vice-Provost for Academic Affairs undertake a survey of all PCs currently being used by UMBC full-time and part-time faculty, to ascertain the age, power and platform of the PCs.** The purpose of this survey is to develop baseline information on the capacity of each full time or part time faculty member's PC. We also recommend that the Vice-Provost for Academic Affairs include in the survey information on the types and locations of peripherals being used by faculty.

**Recommendation 5B: We recommend that by September, 2001, all faculty with PCs that are five years old at that time receive funds with which to purchase up-to-date computers. We further recommend that a policy with regard to the purchase of peripheral equipment also be developed.** We have no idea how many PCs would need to be replaced to conform to this recommendation, but imagine that the amount of money involved could easily come to \$50,000 - \$100,000. That is, we anticipate that the budget available to the PC Replacement Initiative and other sources might need to be augmented by as much as \$100,000, perhaps less, to achieve this target. The need for laptop computers should be embedded into the augmented budget for the PC Replacement Initiative, as should the need for new PCs for grants management.

**Recommendation 5C: In order to continue an orderly progression towards meeting the IT Committee's proposal for a three year replacement policy, we recommend that by September 2002, all faculty with PCs that are four years old by that date receive funds with which to purchase up-to-date computers. We further recommend that the policy developed earlier with regard to peripheral equipment also be adequately funded.** Again, the PC Replacement Initiative may need to be enhanced beyond its current funding of \$100,000.

**Recommendation 5D: We recommend that by September 2003, funds be made available so that the three year replacement policy recommended by the IT Steering Committee can be implemented.**

**Recommendation 5E: We recommend that the Provost (or the Vice-Provost for Academic Affairs) immediately set aside \$20,000 for the creation of a Laptop Lending Library, to be run either by UCS or the Deans' Offices, for the use of faculty needing to borrow Laptop Computers for field research or conference presentations.** The \$20,000 should be enough to purchase 8 to 10 state of the art laptop computers (with internet capability), carrying cases, and cables (to discourage theft). Faculty would be able to "check out" laptops for up to a month at a time to support out-of-office research or presentation needs.

**Recommendation 5F: With regard to supplemental budgetary support, the Research Task Force further recommends that the UMBC computer replacement policy be supplemented immediately by the allocation of funds to the operating budgets of those departments and programs with demonstrated shortfalls in their existing computer resources.** Such allocations should be specifically earmarked for the

purchase of faculty computer equipment. These allocations should be based on the size of the department's full time and part time faculty, not on the past history of the department's ability to replace its PCs. The current computer replacement policy is a hollow promise if departments lack adequate matching funds for the purchase of new desktop computers. Departments need adequate budgetary resources for the targeted purchase of laptops and peripherals for their top research faculty. These concerns about the existing computer replacement policy, and the lack of supplemental support for departmental operating budgets, are shared by many departments in the humanities and social sciences. We need to ensure that our most productive research faculty have access to computer resources that are consistent with the goal of being a major, high-tech public research university.

**Recommendation 5G: We recommend that over the longer term the administration consider phasing out the Replacement Initiative, devolving the funds to the individual departments and programs.** The amounts of money to be devolved to each department would be consistent with what is needed to satisfy Recommendation 5D.

2. Research "time off" for junior and other faculty:

UMBC already has in place the UMBC Research Fellowships program (formerly known as the Provost's Research Fellowships), which awards \$20,000 grants for one semester to faculty who wish to have "time off" to make progress on major research projects. These awards are targeted towards, but not limited to, junior faculty. The Task Force believes that this is a highly valuable program that deserves expansion. In academic year 1999/2000, six faculty received awards, two for Spring 2000 and four for academic year 2000/2001. This is a considerably smaller number than the number of faculty who actually applied for these awards (22). In addition some faculty might well have applied if more awards had been available, or the dollar value of the award were closer to half of their academic year salary. In general, the Task Force believes that this program provides an excellent opportunity for faculty, especially junior faculty, to complete important research that they might otherwise not have time to complete. This existence of this program could be viewed by many departments as an important recruitment tool.

Accordingly, we recommend the following:

**Recommendation 5H: We recommend that the Office of the Provost undertake a survey of salaries of junior faculty, to ascertain the actual dollar value of 50% of the median academic year salary of UMBC junior faculty in FY 2001.**

**Recommendation 5I: We recommend that the figure determined under Recommendation 5H above, or a higher figure, become the new value of the award for FY 2001.** We suspect that there are some faculty members who do not apply for these awards because \$20,000 is insufficient to cover their salary needs; setting the award at 50% of the median junior faculty salary would reduce the disincentive to apply.

**Recommendation 5J: We recommend that the yearly award be indexed by the annual rate of inflation, or the annual percentage salary increase for University of Maryland faculty, or the annual percentage salary increase for junior faculty.**

**Recommendation 5K: We recommend that this program be expanded, so that more faculty can receive Research Fellowships.** Specifically, we recommend that additional monies be made available to fund an additional four awards in FY 2002, and that additional monies be made available to fund an additional eight awards in FY 2003, relative to FY 2000. Again, while the competition for these awards should be open to faculty at all ranks, the fellowships should be targeted primarily to junior faculty.

**Recommendation 5L: We recommend that departments be given funds to hire part time faculty to replace faculty who receive UMBC Research Fellowships.**

#### **Budget Implications:**

Recommendation 5H does not require the outlay of money. Recommendation 5I may entail perhaps \$15,000 to upgrade the base award in FY 2001 for the number of awards likely to be made. Recommendation 5J would not become operative until FY 2002, when it would raise the base cost of the UMBC Research Fellowships program by perhaps 4%. Recommendation 5K is somewhat expensive; we recommend that \$100,000 be added to the program for FY 2002 and \$200,000 be added to the program for FY 2003, both with respect to FY 2001. With respect to Recommendation 5L, if we assume that in FY 2002 a total of 16 part timers must be hired at \$2500 per part timer to replace faculty on research leave, the outlay would be \$40,000.

#### 6. Incentives for faculty to seek outside funding

In addition to the existing “Exceptional Sponsored Research Fellows Policy”, **the Task Force recommends that additional incentives for faculty to garner external research funding be explored.** For example, current UMBC policy precludes faculty from being paid more than the equivalent of their 12 month salary. This might well create a disincentive for faculty who are already on 12 month contracts, such as department chairs and institute directors, to seek additional grant support. While we do not know precisely how strong this disincentive effect is, it is axiomatic that if faculty were permitted to effectively augment their salaries through external support, many would choose to do so. In addition to the obvious financial benefit to the faculty member, the university would benefit in parallel by increased indirect cost recovery. Such a policy may have the additional benefit of decreasing the incentive for faculty to supplement their salaries by consulting, an activity from which the university derives no direct financial benefit. This policy may also help to increase retention of “marketable” faculty at no cost to the university. A model to consider may be the “Medical School Approach”, where substantially higher salaries are offered, but which are guaranteed only in part by the

university. The committee recommends that the proposed Research Council take up this matter as a high priority during its inaugural year. As part of its consideration of this issue, it should explore the degree to which UMBC faculty can identify other universities where such policies are already in effect.

Along rather different lines, we believe that some faculty might be more willing to solicit grants and contracts if the process of monitoring the monetary flows were easier. We have already suggested adoption of AwardTrak to help project officers and business managers manage their grants and contracts. However, in some units of UMBC, it is up to relatively inexperienced faculty members or departmental administrative assistants to deal with the complexities of grants and contracts. Departments in Arts, Humanities and Social Sciences sometimes struggle mightily to keep up with the demands of monitoring grants and contracts. These departments do not have business managers or other personnel to manage the grants/contracts. Some departments are considering banding together to hire business managers. **We recommend that departments be encouraged to consider whether “banding together” in clusters for purposes of having expertise available to manage external funds would be desirable.** These business managers could be employed at the “department cluster” level or in the relevant dean’s office.

**Recommendation 6: We recommend that one business manager position for the use of a group of academic departments be created in FY 2002.** We estimate the cost of that position at about \$50,000 per year, including benefits.

#### 7. Recruitment of graduate students

UMBC supports a total of 298 State-funded graduate assistants; that reflects significant and sustained growth in assistantship funding over the past three years. In addition to increasing the numbers of graduate assistantships, UMBC has raised its base level of Ph.D. support to \$12,690 for 9.5 months, which is comparable to assistantship levels recommended by NIH in FY99. While many research universities provide higher levels of support for graduate assistants in selected science and engineering areas, UMBC ranks among the very highest in its peer group of public Research II universities in terms of the minimum assistantship level provided. A goal over the next several years should be to raise the assistantship levels to be competitive with other research universities in selected science and engineering fields.

While UMBC has improved the base level of graduate student support significantly and is competitive with other public research universities in Maryland, it lags in the number of assistantships as a percentage of its overall number of graduate students in comparison with the College Park campus. In FY 2000, UMBC spent \$5,371,878 in State funds on 298 graduate assistants (or 273 FTE graduate assistantships). This figure includes tuition remission, health coverage, and an hourly stipend for graduate research support or graduate teaching. College Park spent \$38,404,500 in State funds on 2,305 graduate assistants (or 2,176 FTE graduate

assistantships). The Graduate School at UMCP indicated that departments also used State funds to augment that support, resulting in an additional number of assistantships and higher support levels for students. With the overall population of graduate students at College Park approaching 8,147, and using the most conservative figure of 2,305 assistants or (2,176 FTE assistantships), we find that 28.29% of the UMCP graduate student population is supported on state funds; UMBC, with 1,411 graduate students, supported 21.12% of its graduate student population on state funds.

For UMBC to reach assistantship parity with UMCP in terms of the number of State-funded assistantships as a ratio of its graduate student population, we would need to add at least another 100 assistantships, or almost \$2 million, to annual spending. Much of this increase could be in the area of teaching support, potentially reducing part-time instructional costs. Nevertheless, the gap is significant. As we grow with more graduate students, the gap will also expand.

Other methods of comparative analysis between the two campuses have been suggested, including the use of credit hours to adjust for enrollment differences. Additional analyses will be undertaken with the help of the Office of Institutional Research and reported to the Provost at a later date.

Graduate students are the lifeline of a research university, providing to faculty essential talent and resources for carrying out advanced research and providing intellectual stimulation for pushing the envelope of new scholarship and inquiry. Faculty have repeatedly indicated that with additional assistantships, they could expand the number of Ph.D.s produced and the number of high-quality graduate students being admitted. For all these reasons, UMBC needs to begin addressing the shortfall of graduate assistantships in a multi-year, systematic, and sustained manner.

**It is recommended that the support gap for graduate assistantships between UMBC and UMCP, that is, the number of graduate assistants as a percentage of the graduate student population, be closed over a 5-year period. To do this, UMBC should set a goal of adding \$400,000, or about 20 FTE graduate assistantships per year, to the base budget over a 5-year period.**

## 8. Additional Topics

There are a number of topics that we did not discuss this year, but recommend that they be considered by the Research Council next year. These topics include

1. There be a fund by which doctoral programs could pay potential graduate students to come to campus for campus visits during their senior year of college.
2. Other issues relating to graduate students should await reports coming from the other Task Forces, especially Student Life. The biggest issue we have heard from graduate students already on campus relates to the lack of library hours at night

and on weekends. We believe that the additional funds we have recommended for the Library could perhaps alleviate some of the shortage-of-hours concerns of the graduate students.

3. Consideration of providing more resources to improve the writing, public speaking skills of our graduate students.
4. Allocation of DRIF. This topic is too complex for the time available to the Task Force.
5. Super computing. Some faculty members are frustrated by their inability to get adequate time on Supercomputers. A policy for renting time needs to be considered.
6. Risk management and safety issues. The Research Council should look at best practices at other universities and benchmark our efforts.
7. Grant writing assistance for non-scientists. This is clearly desired by some faculty, particularly in humanities, fine arts, and social sciences. The topic needs to be discussed, but the Task Force is not convinced that the hiring of a full time staff member who has both foundation experience and knowledge of several academic disciplines would be cost-effective.
8. Research opportunities for undergraduates. UMBC has done an admirable job of expanding research opportunities for interested undergraduates, through its Meyerhoff, MARC U\*STAR, and McNair programs, Provost Undergraduate Awards, and individual faculty-sponsored research. The Shriver Center provides some opportunities for off-campus research, but possibly could do more. At the same time, there may be additional undergraduates who would like an opportunity to do research on or off campus. We await reports from other Task Forces, especially the Honors University Task Force, which we believe are likely to address these issues.
1. Evaluation of faculty for merit pay, promotion and tenure. This is a complex issue which deserves far more attention than it received this year. As technology makes it possible for faculty to disseminate their research and other creative efforts across a widening spectrum of media and venues, the question of how to define scholarly contribution needs to be explored.

With regard to the issue of faculty evaluation, the Task Force affirms its conviction that faculty seeking tenure or promotion should demonstrate strong records in scholarship, teaching and service; an excellent record in just one of these three areas is not enough. Similarly, merit pay decisions should not be guided solely by the faculty members performance in just one area. We recognize that some faculty will balance an outstanding record in research with only modest

achievements in teaching and service, other faculty will balance an outstanding record in teaching and/or service with a satisfactory, but not necessarily outstanding, record in research. A university needs not only first rate researchers, but ALSO first rate teachers and citizens.

**Appendix 1: Comparison of Library Resources**

	<b>University of Pennsylvania</b>	<b>University of Delaware</b>	<b>Georgia Tech</b>	<b>UMBC</b>
Holdings/Books	4,672,777 (Includes bound periodicals)	2,259,121	2,022,141	868,082
Holdings/ Periodicals		12,034 subscriptions	14,407 subscriptions	4,142
Materials Budget	\$9,160,553	\$5,024,000	\$4,372,688	\$2,105,236
Total Staff	285	167	114	54
Professional	112	54	52	16
Non- Professional	173	113	62	38
Student Assistants	108	52	6	17
Total Enrollment	18,290	21,380	13,036	10,265

source: 1999-2000 American Library Directory, 52<sup>nd</sup> Edition

note: Only Delaware is a peer institution.

## **Appendix 2: Additional Detail Regarding the Formation of a Research Council at UMBC**

### **Mission Statement:**

As the forum for discussion of research policy, the Research Council would serve to focus attention on the most important issues affecting the direction of policy and the health of the research enterprise at UMBC. It would go beyond discussion to seek consensus on policy recommendations to the Faculty Senate, Provost, and the University President.

### **Membership:**

Proposed membership of the Research Council would include chairs of the IACUC, the IRB, the DRIF Research and Summer Faculty Fellowship Awards Committee, the Library Committee, the IT Committee, and the Research Park Advisory Committee. In addition to these faculty, the directors of official UMBC research centers and institutes would be asked to elect one member for a two-year term (institutes and centers as defined in Senate document dated March 14, 1995). Additionally, six seats would be filled by faculty or chairs from across the campus. An election selecting two faculty each from Engineering, Sciences & Mathematics, and Social Sciences & Humanities would be conducted, serving staggered two-year terms. One faculty member would also serve as the liaison to the Faculty Senate. Graduate students would elect one member; and one member would be elected to represent the Professional and Associate Staff Senate. The Council would discuss whether representatives of the campus' Post-Doctoral students and Research Associates would also have a seat on the Council. Ex-officio members of the Council, with voice but no vote, would include the Vice President for Administrative Affairs, the Provost, Legal Counsel, the Deans, and the Director of the Library.

### **Functions:**

The Research Council would meet monthly during the academic year. Reports would be presented by the other standing research-related committees of UMBC. Specific policy issues would be brought forward by faculty, members of the Council, or by the University Administration.

### Appendix 3: Comparison of AwardTrak and EShadow Grant Management Systems

Each item is rated on a scale of 1 to 5, with 1 being the lowest capability and 5 being the highest capability

<u>Criterion</u>	<u>AwardTrak</u>	<u>EShadow</u>	<u>Comments</u>
Database Technology	2	3	EShadow uses Microsoft SQL whereas AwardTrak uses Access. If we go forward with AwardTrak UCS will look at conversion to Oracle.
Web-based Reporting	1	3	EShadow is moving to support web access; however that isn't a released product. AwardTrak would need to be modified to support web access.
Grants Management Functionality	4	4	Both packages support basic grants accounting functions.
Payroll Transfers/Control	4	3	Both do this, AwardTrak has more flexibility in this.
Automated Reconciliation	1	3	EShadow is implementing this, ultimately to do this properly we need a tracking number which requires that we change our business processes. This is something we should do in the new accounting system.
Reporting Capability	3	3	EShadow has better ad-hoc reporting capability, done through Helmsman product. AwardTrak has better standard reports available.
Proposal Information	3	1	EShadow has no proposal information; AwardTrak does track proposal submissions and move the budget forward.
Ease of Use	4	3	AwardTrak requires fewer keystrokes and less window navigation, so that it is slightly easier to operate.

Support for Subcontracts	4	3	AwardTrak supports multiple accounts per grant, needed for managing subcontracts.
Security	3	3	Both provide reasonable security, though they do this in different ways.
Adaptability	3	2	AwardTrak is owned by UMBC and can be modified as we see fit. EShadow is owned by a private company and must be modified by the company.
Support	3	3	AwardTrak has been supported by a local consultant, Becky Barber. Becky has worked with UMBC for 5 years and has developed a close relationship with this campus. However, should she leave the State we don't have a company behind this and would be on our own. EShadow does have a company, albeit a small one, behind its product.
System Compatibility	2	4	AwardTrak does not yet work with Mac operating systems; Virtual PC under the best of circumstances is problematic. EShadow has web-based reporting for user defined reports and is accessible for these features to any platform with web access.

## **Appendix 4: Grant Management Hierarchy**

**Michael Breton**  
**Sponsored Programs**  
**Accounting**

**Janice Schwartz**  
**Grant**

**Overall Administrative Responsibility**  
**Accountability**  
**for Grants and Shared Responsibility**  
**Respon- for the Compliance of Grants**  
**the Compliance of**

**Overall Financial**  
**for Grants and Shared**  
**sibility for**  
**Grants**

**Tim Sparklin**  
**Brooks**  
**Arts and Sciences**  
**Engineering**

**John**  
**College of**

**Security (access, passwords), Day-to-Day Management**  
**Of Grants Management System and shared responsibility**  
**for the Compliance of Grants**

**Department, Department Clusters**

**Day-to-Day Data Entry and PI Support**

**University Computing**

## **Overall Technical Support of Pre and Post Grant Software**