REPORT OF THE PRESIDENT'S SPECIAL TASK FORCE ON RESEARCH INFRASTRUCTURE AT THE UNIVERSITY OF HAWAII

November 9, 2001

EXECUTIVE SUMMARY

INTRODUCTION

Following-up on a May 2001 letter from the University of Hawaii Association of Research Investigators (UHARI), President Dobelle asked Barry Raleigh, Dean of the School of Ocean and Earth Science and Technology (SOEST) to form a task force to propose remedies to what UHARI described as impediments to the conduct of research at UH. The Task Force has taken President Dobelle's charge as a broad mandate to re-engineer the entire administrative structure governing research and extramural funding.

The Task Force envisions a vigorous and agile research enterprise that is able to respond effectively to new opportunities as federal funding priorities shift. However, flexibility and resiliency must be built into the planning in order to mediate the negative impacts of sudden, unanticipated Congressional budget actions. Such adaptability requires a commitment to cooperation and collegiality among all of the partners in the enterprise – faculty, technical staff, administrative staff, and administrators. That commitment can only be realized when goals are shared and incentives are in place to work towards the shared goals. This reinvigorated and restructured research enterprise will position the University of Hawaii to efficiently and effectively compete with the best research universities in the country in the next decades.

This report recommends solutions, consistent with this vision, for present challenges to the UH research enterprise. They lean heavily on the experiences of the academic research community but are specific to the needs and unique qualities of the University of Hawaii. Some solutions could be implemented immediately, while others require specific prior actions to enable their successful implementation.

CHALLENGES AND SOLUTIONS

Over the latter half of the 20th Century, American research universities have had to accommodate to the post-WWII flood of federally sponsored research programs by changing their internal workings from those peculiar to primarily educational institutions to something quite different. Federal dollars brought with them not only an irrevocable change in the faculties, the student population and the laboratories that served them, but also an increasingly complex body of rules and regulations that governed the expenditures of funds, and hiring of personnel. Public universities, treated more like agencies of the state with all the demands of accountability to state legislatures and executives, have found it difficult to accommodate to these changes. The University of Hawaii, however, with a dynamic new administration and its newly granted autonomy

from much of the regulatory apparatus governing other state agencies, has now an extraordinary opportunity for a major overhaul.

We have prepared this document in the spirit of seeking not "band-aid" patches to a failing system, but new ways of governance that will unleash and expand the creative spirit of our researchers.

Challenge: **Coordinated growth of a healthy research enterprise at the University of Hawaii.**

The research enterprise at the University of Hawaii has grown at a high rate in recent years, but planning for that growth has not been sufficient to anticipate the challenges that this enterprise faces going forward. Research activities are underway or developing on campuses other than Manoa, but there has not been adequate planning or support for that type of growth.

Solution:

- **Periodic strategic planning for the growth of the research enterprise must be undertaken by a partnership involving representative faculty researchers, Deans and Directors, and administrators.**

This document is the first such planning effort at UH that is focused entirely on the research enterprise. A standing advisory committee that includes faculty researchers must be instituted to guide and evaluate the implementation of the UH research strategic plan. This committee should report to an appropriate official in the President's Office.

Challenge: **Who is to be served by the research infrastructure and administration?**

Our initial survey of the perceptions of the principal investigators (PIs) as to the nature of the problems they have encountered revealed that bureaucratic obstacles loomed large. The highly centralized administration for research appeared distant from the needs of the PI, concerned more with proprieties than of cutting through red tape, concerned more with the possibility of errors than the rapid and efficient execution of transactions. The bureaucratic structure seemed designed not for service to the PI, but to protect administrators and their bosses from a mistake that might incur an embarrassing federal disallowance. In the nature of such generalizations, exceptions abound, but such exceptions are found most often in circumstances where the bureaucrats and the scientists work closely together, less so the more centralized the function performed.

What is described above is common to every institution where creative, driven scholars/researchers urgently require swift action. For example, how one contracts for essential repairs to a research ship where every day's delay in the foreign port costs $15,000 is a problem not easily resolved by an agency forced to go out for bids. The list of such crash-prone intersections is a long one and it is exacerbated by a reporting structure likely to lean toward the safe answer rather than the quick but defensible

solution to the researcher's problem. UH faculty, in moments of despair, will describe the problem as one of an institutionalized attitude that can't be changed.

Solution:

- **The function of the research administration is to serve the faculty researcher and thereby to achieve the full potential of research funding to the University. The organizational structure supporting research must reflect this.**

While the problems noted sometimes appear intractable to the PI, the attitudes are certainly not indelible. Attitudes and behaviors change when the goals and rewards for their achievement are clearly identified. The issue is instead a structural one and most of the large Research 1 universities have addressed it by placing the administrative support structure for research administration under a capable vice-president for research charged by and reporting to the president with the undivided responsibility and authority to manage the university's system-wide research support enterprise. This is the solution we have described in detail in the section on Structure and Governance.

Another solution common to our mainland counterparts has knowledgeable and well-trained research administrative officers working within units in close proximity to PIs. We recommend that approach in conjunction with placing authority to make administrative decisions as far down in the hierarchical structure as is consistent with accountability.

Challenge: In a unionized work force, can employees be motivated to provide the quality of service required?

The complacency and obduracy of which the University's administrative staff are sometimes accused probably have their origins in the adversarial nature of the traditional employer-employee relationship. Job protection is seen as trade-off to the higher wages and greater opportunity for advancement that the employer might otherwise offer. Until now the wage range and the narrowly defined job classifications permitted very little opportunity for personal development, advancement, and correspondingly small motivation to excel. In a new spirit of cooperation, all that is now changing to the advantage of the employees and the employer alike.

Solution:

- **A new relationship between HGEA Bargaining Unit 8 and the University of Hawaii.**

On behalf of the Task Force, discussions with the HGEA, Bargaining Unit 8, have been productive in arriving at tentative agreement as to the conditions of employment of administrative, professional and technical staff (APT's). Because of the new broad-banding classification and flexible reward structure being established by UH's Office of Human Resources, employees will be rewarded for productivity and initiative. The merit

and in-grade adjustment components of the newly proposed classification system will allow employees to grow within their classification and possibly eliminate the need for the "priority-three" hiring practice currently in place. The consummation of this tentative agreement between Bargaining Unit 8 and UH is essential to the success of the re-engineering we propose.

Challenge: Who is to be responsible for the growth and management of UH's Research and Training enterprise?

The decline in the relative role of State General funds in sustaining the health and even growth of the University is unlikely to be reversible for some years, if at all. From 57% in 1995 of the University, general funds were only 37% of our budget in FY 2001. On the other hand, research and training funding has grown by 50% and the growth in Indirect Cost Recovery has helped fuel the growth of this now essential enterprise. For example, if our research grant volume grows even at the current rate of about 9% per annum, the annual increment in ICR collected would amortize the cost of a 50,000 sq.ft. research building every year, with a surplus of $4 million per year at the end of 5 years.

It is this kind of calculation that has driven other large research universities to develop their research in as entrepreneurial and businesslike fashion as is consistent with the mission of the university. Our objective should be to increase our extramural funding by 20% per year and for that, we need a respected scientist/administrator placed under the President whose presence in Washington will receive the attention such a position commands. Growth at this rate is not sustainable, however, unless the entire research enterprise is cohesively and efficiently managed with the necessary authority placed in the office of the science administrator.

Solution:

- **The office of Vice-President for Research needs to be created and filled by an energetic, competent scientist/administrator with a proven track record of raising extramural funds and of managing successfully the administration of research.**

Challenge: Mandated implementation of Electronic Research Administration

By 2006, through executive order by former President Clinton, federal agencies will complete their transition to paperless, electronic administration. As a major research university, UH has no option but to develop a compatible electronic research administration (eRA) for submission of proposals, audit of transactions, reporting, and invoicing to continue to do business with the federal government. Currently, the University's paper blizzard and our demand for multiple signatures create interminable delays as each document travels from desk to desk and back again. Other research universities have already made major commitments of personnel and money toward development and implementation of an electronic research administration system. A few have transformed the processes by which proposals are reviewed and approved,

procurements are transacted and audited, and PI's conduct their business all with the goal of eliminating wasteful and redundant multiplication of approvals.

Solution:

- **UH must analyze and re-engineer all business workflow and processes and develop eRA.**

Our report details some of these transformations and points the way to implementation of an eRA for the University of Hawaii. Members of the task force have collected information from several mainland research universities and have visited UC San Diego, a leader in the movement toward eRA. The means by which we should proceed are well understood and are detailed in the body of the report. It follows from our first and highest priority recommendation that a Vice President for Research be charged initially with implementation of Task Force's recommendations for the new eRA.

To maintain appropriate balance among competing demands for research space, equipment cost-matching, new initiatives, and the funding of the eRA development and implementation costs, the Research and Training Revolving Fund must be placed under the authority of a Vice President for Research.

Without first-rate people in place dedicated to eRA implementation, we will not improve the service to our PI's and run the risk of making a tedious system intractable. To manage this transition we will need the services of full-time software developers and IT specialists. In the process we will incur added costs while modifying the system currently in place and adequate funds must be set aside to pay for this transition. Funding for the recommended changes must not fall victim to the vagaries of new demands for funds for other purposes.

Challenge: Should research be administered by RCUH, UH or some combination of the two?

UH has not demonstrated the ability to provide the services needed for all the research administrative functions either expeditiously or with an understanding of the requirements of the researchers. The prevailing attitude has eschewed service to the PI in the interest of risk avoidance. RCUH, on the other hand, has placed service to the PI first, while laying off the risks to the University for federal disallowances for errors.

We have tried to operate research administration as though we were a State agency and bound by all the inappropriate restrictions that ignore the fact that research must be run like a competitive business to be successful. Those rules have disappeared with autonomy, however, and we have only just begun to take advantage of the relaxation of the restrictive bounds. We now have credit cards for purchasing up to $2500, delegation and increased purchasing authority, delegation of proposal sign-off, greatly relaxed hiring rules for APT employees, and are in the beginning stages of developing new web-based systems to allow real-time access to data.

RCUH is, in principle, capable of managing the administration of UH research, although it is presently without the necessary personnel to undertake the control and compliance auditing nor does it currently assume liability for disallowances. It also does not have the IT personnel to undertake a major restructuring to an *e*RA. As RCUH is currently governed, however, UH has no effective control over the costs, the management, the directions of *e*RA development at RCUH and its relationship to UH's own transformation to a paperless administration. Even if these changes take place, we believe the University is best suited, under the Vice President for Research and the organizational structural changes we propose, to effectively and efficiently manage our research enterprise.

Solution: In order of priority, we strongly recommend the following actions:

- **The creation of a Vice President for Research position. This position must have authority over all administrative functions and positions that serve research administration (Fig. 1). Every major research institution in the U.S. has such a position charged with overseeing research administration and growing the research enterprise.**

- **The transition to a new model of research administration should fold RCUH functions and personnel currently devoted to UH research support into the UH's new research administration.**

- **UH must finalize and implement the MOA now near completion with Bargaining Unit 08 of HGEA (Attachment 1). This is the principal solution to hiring and retaining the best qualified research administrative personnel and provide them with the motivation to serve faculty researchers as members of a collaborative team.**

Recommendations for Implementation of the Task Force's Proposals

The following recommendations are taken from the principal conclusions regarding the implementation of the solutions listed above.

Structure, Governance and Administrative Procedures

- There must be a single, clear line of authority and responsibility for the management of research administration to permit issues to be resolved by those charged directly with the effectiveness of administrative procedures.
- Research administration must be led by a senior scientist/administrator.
- Research management must include all pre and post award administration functions including procurement, auditing, reporting, disbursing, and payables, etc. as they relate to research.
- An administrative layer consisting of high-level and knowledgeable administrative officers who serve the principal research units and are hired from the best-qualified applicants must be created.
- An advisory committee, representing all stakeholders in the process, must oversee and prioritize the transition.
- Restructured administrative processes must be implemented through electronic, web-based systems that must be developed.
- The PI or designee, advised by unit administrative officers, must be responsible for entering their own transactions electronically to be audited downstream by fiscal officers.
- Additional IT staff charged with developing and maintaining the software, information systems and interfaces to existing systems need to be recruited and should be provided with an opportunity to collaborate with institutions who have eRA schema in place.
- Hiring of research administrative and temporary research staff must be conducted expeditiously and without mandated preference for currently employed APT staff.
- Delegation to the appropriate unit level is recommended, where accountability permits, of all administrative functions including procurement, audit and approval of proposals, reporting and invoicing.

Indirect Cost Recovery

- Overhead recovery by UH must be reinvested in the research infrastructure, to permit investments in equipment, technical support and faculty salary to remain competitive.
- Investment of state funds for research space and faculty salaries is needed to accommodate expansion in the most promising research growth areas at UH and to permit growth of the indirect cost recovery rate.
- To provide incentives to the units and their PIs to generate more research grants, we strongly recommend that 50% of all RTRF be returned to the units from which they originated.

Space and Facilities Management

- Planning for research space to accommodate UH's current annual growth rate in extramural funding and to account for unusual growth in specific areas calls for an addition of 50,000 sq.ft./year of new or renovated space.
- Restructure FPMO to provide responsive service to laboratory facilities and make outsourcing of services available to improve efficiency and response time.
- Conduct space planning and reallocation to place resources where needed most.

Research Regulatory Support Services

- Reduce response time for review processes by Committee on Human Studies (CHS) and Laboratory Animal Services (LAS)
- Fully fund the Environmental Health and Safety Office and LAS
- Legal support and insurance for regulatory support organization employees and committee members must be provided.
- Provide incentives for faculty participation on CHSs
- Support timely and on-line training for service providers and customers

Faculty and Staff-Quality of Work Life

- The University must ensure that faculty and research staff compensation is comparable with to our mainland competitors in high cost-of-living areas.
- Rewards, both annual and fixed-base, for excellent performance need to be included in the compensation package funded by the legislature.
- We recommend that a pay ladder similar to that in use by the UC system be negotiated with UHPA and HGEA and the legislature so that faculty and staff have a clear vision of how superior performance will be rewarded throughout their careers.
- Training programs for staff need to be a continuing activity so that changing conditions of employment can be accommodated.
- UH should provide meaningful non-financial rewards to recognize excellent performance.

REPORT OF THE PRESIDENT'S SPECIAL TASK FORCE ON RESEARCH INFRASTRUCTURE

I. INTRODUCTION

A. Statement of Purpose

This paper is intended to form the framework for improvements to the administration and conduct of sponsored projects (alternatively "research") at the University of Hawaii. The President of the University of Hawaii, Evan Dobelle, assigned oversight of the task force to C. Barry Raleigh, Dean of SOEST on July 2, 2001. Members of the Research Task Force (RTF) are (in alphabetical order):

Charles Boyd, Researcher, Pacific Biomedical Research Center
Daniel Brown, Professor, Anthropology (UH-Hilo)
William Chismar, Professor, Information Technology Management
Patricia Cooper, Interim Associate Dean, SOEST
Kathy Cutshaw, Director of Administration, SOEST
Shirley Daniel, Professor, Accountancy; Director, PAMI
James Douglas, Professor, Microbiology
Karen Glanz, Researcher, Cancer Research Center of Hawaii
Carolyn Gotay, Associate Researcher, Cancer Research Center of Hawaii
Jan Gouveia, Associate General Counsel
Mike Hamnett, Director, Social Sciences Research Institute
Jim Hollyer, Project Manager, College of Tropical Agriculture and Human Resources
Peggy Hong, System Director, Human Resources
Michael Long, Professor, Second Language Studies
Roger Lukas, Professor, Oceanography
Alex Malahoff, Professor, Oceanography; Director, Hawaii Undersea Lab, MarBEC
Glenn Nakamura, Acting Director, Office of Technology Transfer and Economic Dev.
Mike Rota, Vice Chancellor for Academic Affairs, Community Colleges
Cecilia Shikuma, Assistant Professor, Medicine; Director, HARC
Rose Tseng, Chancellor, UH-Hilo

B. Charge

The Special Task Force on Research Infrastructure received a mandate to conduct a top-to-bottom review of the research enterprise, identifying solutions to existing problems. Among the factors providing impetus for this review were intense competition for resources at all levels, unrelenting pressure to control costs, the desire to improve quality and enhance customer service, and a concomitant need to transform organizational culture and re-engineer business processes.

Six sub-committees (structure and governance, administrative services, overhead return, space and facilities management, research regulatory support, faculty and staff quality of work life) met on July 21 and August 3 to review written materials submitted by principal investigators from the various campuses. Existing impediments to conducting research at the University of Hawaii and suggested solutions were outlined in an initial report to the President dated August 9, 2001.

A preliminary report to the President presented five very broad recommendations:

- Delegate authority to the lowest level possible, consistent with accountability
- Implement post-audit transaction approval process with embedded controls and policies and re-engineer IT business environment in support
- Implement an electronic research system to permit on-line cradle-to-grave sponsored research project administration
- Create a new classification of APT employee to permit flexible, research-friendly human resources system
- Provide liability insurance for University and RCUH

The following set of principles were adopted by the Task Force as a philosophical framework within which restructuring research administration can be accomplished:

- Periodic external review of all aspects of the research enterprise promotes a healthy and innovative system
- The role of administration is to facilitate the research enterprise in ways that are consistent with laws and policies
- The administrative burden on researchers should be minimized
- Budgeting for research support and research facilities should anticipate growth areas and changing needs
- Support services should be available to all researchers, scaled according to demonstrated need
- Facilities should be adequately maintained at all times, or purposefully abandoned
- The process of resource allocation should be transparent
- Priorities for resource allocation should be periodically reviewed and clearly articulated
- Setting of priorities should balance system-wide and local unit perspectives
- All policies and procedures should be kept current and accessible (maintained on UH websites)
- Policy changes should result from a collaborative process involving the research community and the administration
- Local unit deviations from system policy should be justified and communicated to all
- Problems should be resolved as rapidly as possible and a schedule of resolution communicated
- A clear chain of administrative decision-making is required, with appeal to higher authority possible

The Task Force based its recommendations on a set of assumptions. We assume that the University will continue to depend on extramural funds for research and that there will remain the present emphasis on maximizing return on existing resources. Technological advances will accelerate changes in both the content and delivery of education and the way we work. Abundant opportunities to apply technologies in new settings will emerge. In particular, concepts and developments in Internet technology will increasingly impact the way in which the university conducts business. The scope of electronic business models will broaden and will be vital in key areas, including research administration.

II. BACKGROUND

A. University of Hawaii Funding Profile and Funding History

Extramural funding at the University of Hawaii has increased for the fourth consecutive year and now exceeds Manoa's entire G-fund allocation from the legislature:

Fiscal Year	No. Awards	Amount
2000-01	1,405	$216,233,918
1999-00	1,379	180,629,855
1998-99	1,254	164,168,101
1997-98	1,300	159,948,612
1996-97	1,255	160,859,800

This represents a 19.7 percent increase over fiscal year 1999-2000. The average increase in overhead-generating research grant volume over the past 10 years is about 8.5% per year. University of Hawaii faculty members (excluding specialists, librarians, extension agents, and lecturers) are highly productive, generating 1.31 proposals per FTE compared to a national range of 0.81 to 1.31 for institutions with medical schools and averaging about $133,585 per FTE in dollars awarded compared to a national range of $64,052 to $143,647 (Kirby et al., 2000).

Contracts and grants generated more than $17.7 million in returned overhead for FY 2001. These funds (deposited into the Research and Training Revolving fund or RTRF) are used for a variety of purposes, one of which is to defer research-related costs, i.e. the normal operating costs of the University, research infrastructure, and program and project development.

According to the most recently published report of the Office of Research Services, in FY 2001 University of Hawaii obtained 64% of its extramural funding ($138.21 million) from federal sources; 14% ($30.83 million) came from the state, and 22% (47.2 million) came from a variety of other sources. The University's largest sources of federal funds are the Department of Health and Human Services, the National Science Foundation and the Department of Education (Figure 1).

While the task force recognizes that intellectual and not financial competition ultimately determines a university's ranking among its peers, the dollar values of overall research expenditures and federal research expenditures are often interpreted as direct evidence of the quality of a university's intellectual competence. The prominence and distinction afforded "high-ranking" universities by prestigious organizations such as the National Research Council and the National Academy of Sciences is based, in part, on the level of federally funded research. The widely recognized designation of "research university" by the Carnegie Foundation is largely based on federal research expenditures.

A study conducted by the Institute for Scientific Information annually identifies the world's top research institutes in the natural (clinical, biological, physical and environmental science, mathematics, engineering) and social sciences. The University of Hawaii consistently ranks highly in the physical sciences in this study. In the most recently available analyses (FY 99) of the "Top 100 Research Universities," the University of Hawaii is ranked 53rd for federal R&D expenditures and 56th for total research expenditures.

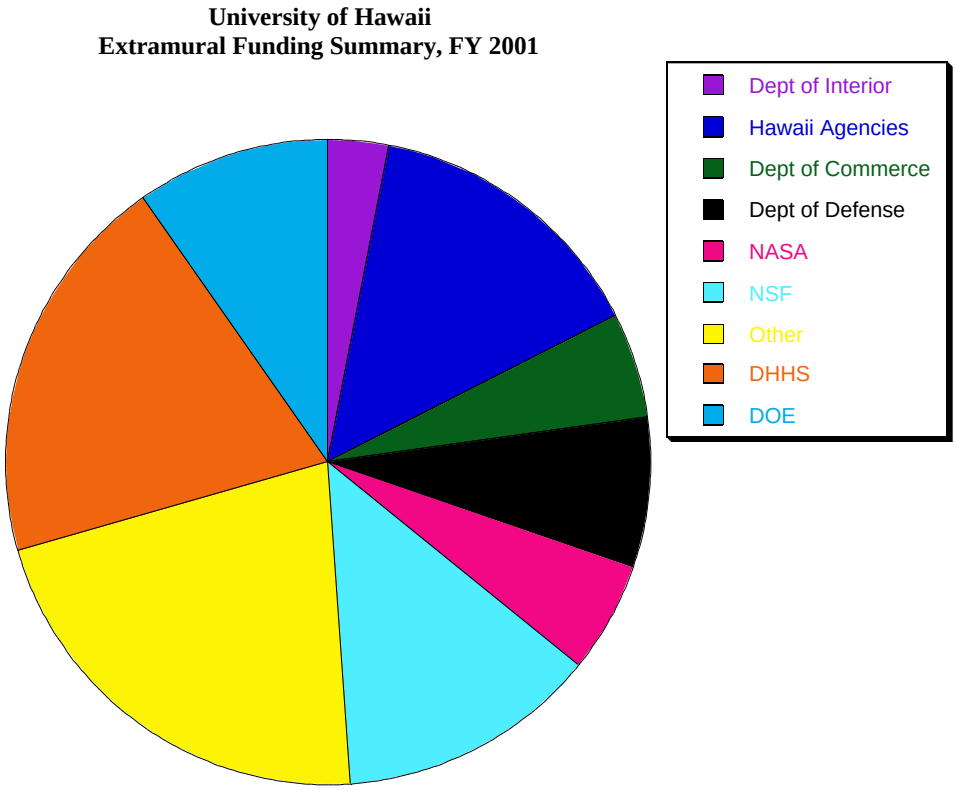

Figure 1

Many University of Hawaii departments, schools and organized research units rank much higher when analyzed on an individual basis. The Oceanography Department, for example, ranks 7th in the U.S. in awarded NSF funding.

B. Federal Funding Trends and Competition for External Funds

Thanks to the previous administration's serious commitment to a balanced federal budget in 1994, increased tax revenues, and an enforceable set of spending restraints, the nation has enjoyed the longest economic expansion in its history. The economic boom was seen in three dramatic effects on university finances: Increased federal revenues eased the pressure on research funding; increased state revenues eased the appropriation pressure on state universities; and the unprecedented rise in the stock market generated private capital assets that benefited public and private university fundraising campaigns. That cycle has come to a close, however, and mainland state universities are once again feeling the pinch of recession. Because the Hawaii economy has been in a decline for the past ten years, the University of Hawaii saw its appropriated budget continue to decline throughout this same period. While other research universities were busy adding faculty in key areas to take advantage of federal funding initiatives and building programs, the University of Hawaii was experiencing widespread reductions in number of faculty and no significant growth in programs. In general, budget cuts at UH focused on faculty and administrative downsizing and created a highly centralized management. The bottom line is that Hawaii must compete with other, now much larger, better-staffed and well-positioned research universities for extramural funds.

Universities that have been successful in increasing their share of federal funding have several things in common. These institutions typically have a high-salaried professoriate, top-notch post-doctoral and graduate students, and state-of-the-art facilities and equipment – paid for or heavily leveraged by federal funds. They have successfully employed these resources to establish feedback loops whereby they continue to build research capacity. The point is, competition for federal research dollars does not occur on a level playing field.

Federal sources account for the largest volume of external funding at the University of Hawaii, and the competition for that funding has become increasingly intense. A review of externally funded projects over the past five years reveals that the number of grants and contracts is increasing along with the amount per agreement. A 17.5% increase in the size of awards to University of Hawaii PIs is noted over the past two fiscal years. Even so, faculty members report that they are spending more time writing and submitting grants to potential sponsors to maintain the scope of their research programs. In light of the Federal Research Investment Act, funding levels for the major federal agencies are expected to remain stable over the next several years, however, many more research universities are competing for them.

The Federal Research Investment Act supports the doubling of the authorization for the civilian federal research budget by the year 2010. Even if constraints on domestic discretionary spending tighten because of the current military operations, the budgets of

the major federal funding agencies – NIH, NSF, DOE, and DOD – will continue to increase. More funding will be available for new proponents, making this an opportune time for the University of Hawaii to solve existing infrastructure problems and aggressively improve its capacity for research.

C. Current Status of Research Administration

Research administration at the University of Hawaii is beset by organizational, policy and procedure, and incentive-related problems. Although most external funding comes from federal sources, an increasing amount comes from state and local government and private industry sources. According to the NSF, nonfederal funding represented 40 percent of all research expenditures by colleges and universities in 1995, increased from 26 percent in 1966. Our administrative systems, originally designed twenty to thirty years ago to deal with a much simpler funding and regulatory environment are now too slow and unresponsive and research administration personnel now work under extremely stressful conditions. The Office of Research Services (ORS), with its current level of resources, simply cannot support the complexity of application and reporting requirements of the diverse range of funding sources available to faculty.

Administrative and fiscal officers are responsible for multiple and diverse tasks. Few spend significant amounts of time on any major aspect of research administration. Varying degrees of staff expertise, together with infrequent or no formal training, contribute to inconsistent quality of work. Research administration staffers are working longer hours and harder than ever, however, many principal investigators are dissatisfied with the services they receive. In addition to time spent writing and submitting grants, faculty report that they spend increasing amounts of time administering awarded funds because of ad hoc policies governing complex procedures. Policies are rigid, outdated, in need of adaptation to diverse and changing needs of extramural funding environment. Researchers seek to work around the process by pressuring the administrative officer or appealing to higher authority. This wastes time and diminishes the contributions and credibility of the administrative officers.

RCUH recently "automated" some of its manual procedures, however, many actual business processes have not been streamlined, and users report that the computerized forms are time consuming, sometimes more so than the paper forms. The ORS offers PIs and administrative officers minimal on-line access to forms and templates. Studies of existing research administration processes for a federal grants or contracts require multiple individual approvals from several offices. This complexity is multiplied when more than one campus unit participates in the grant activity.

Research administration is a significant cost to the University. Funding cuts have left numerous vacant administration positions. The ORS is struggling to meet the demands of agencies and researchers under the existing constraints of years of budget reductions and concomitant erosion of indirect cost recovery. UH infrastructure is handling more business than it can reasonably accommodate without additional resources.

D. Impact of Public Law 106/107

In 1986, five federal agencies initiated a demonstration project (FDP I) to reduce unnecessary administrative burdens on sponsored research, and provide a forum for developing models for administrative reform in a variety of sponsored research areas. By September 1988 FDP II had 21 educational institutions and 10 Federal agencies enrolled in the project. Significant accomplishments of FDP II include more uniform procedures for the administration of grants, simplification of the continuation grant application, and elimination of equipment screening requirements. Continuing this trend, the Federal Demonstration Partnership III will serve as a venue to articulate recommendations for innovations in Federal research policy and practice particularly as they relate to federally funded research at universities and other non-profits.

The Government Paperwork Elimination Act of 1998, together with the Federal Financial Assistance Management Improvement Act of 1999 (Public Law 106/107) mandate improvements to the effectiveness and performance of federal financial assistance programs. These laws require the electronic submission and maintenance of information and stipulate procedures for use and acceptance of electronic signatures. Their purposes are to simplify federal financial application and reporting requirements and to improve the delivery of services to the public.

In May 2001 each federal agency submitted an implementation plan for streamlining and simplification, active participation, agency use of common application and reporting system, and annual performance goals. The Office of Management and Budget is responsible overall, and Health and Human Services is the lead agency for implementation of the "Common Plan."

The Common Plan requires multi-agency action implementing electronic commerce and adopting data standards to promote a common face for government. Funding opportunity announcements, reporting requirements, and terms and conditions for grants will be standardized. The "Federal Commons" establishes an electronic grants management portal and focuses on data elements that, once keyed in, can be pulled into a variety of formats. Most major funding agencies, including the National Science Foundation, Office of Naval Research and the National Institutes of Health, are computerizing their processes and requiring an electronic interface between agency and university.

Meanwhile, on university campuses across the country, changes to OMB Circular A-21 increased the administrative burden on universities by demanding greater fiscal accountability, more timely invoicing and reporting, and more intense monitoring and reporting of incidents of scientific misconduct and conflict of interest. Heightened administrative requirements together with the aggressive implementation of electronic business models by the federal government has sent many research universities scrambling to find the resources to implement their own eRA systems. Members of the Task Force have met with administrators at institutions employing or in the process of developing eRA and attended national meetings focused on eRA implementation. One

thing is clear; the University of Hawaii cannot remain competitive, much less enhance its competitiveness in the federal funding environment, if it does not adopt an electronic research administration model.

III. RECOMMENDATIONS

A. Structure and Governance

1) The Task Force recommends the appointment of a Vice-President for Research (VPR) to head up the implementation of the Task Force's recommendations. That office would be responsible for all research-related functions within the University of Hawaii System. Figure 1 provides a sketch of those functions and how they might be organized.

The administration of research must be integrated under a single line of leadership, from pre-award to purchasing, auditing of transactions, to invoicing and indirect cost collection and distribution. Under an electronic research administration system, personnel training, direction, evaluation and rewards, classification, and promotions need to be under the VPR or his delegates and the VPR must control the funds needed to implement the plan. Considerations include:

A VPR, rather than vice-chancellor, is needed because opportunities for funding arise system-wide but a Manoa-centered research administrator might be less sensitive to the needs of the other campuses. Also, decisions on overhead distribution, on the administrative infrastructure for research, on needs for equipment and buildings for research all should have system-wide attention.

Because the VPR must enable the streamlining of administrative procedures through classification, hiring, training, promotion and rewards of those responsible for operating under the eRA system, a clear definition of responsibilities for UH administrative functions will be necessary. Those conducting procurement from extramural or RTRF funds should report within the research hierarchy. Pre-proposal processing, auditing, reporting, invoicing, disbursing for extramural/RTRF funds need to be contained within the research administration managed by the VPR.
As shown in Figure 1, the VPR has a chief of administrative affairs with direct responsibility for the functions shown under Sponsored Projects Administration, eRA and Resource Administration. The functions of ORS, Procurement, financial management, disbursement and so on, include all the pre-and post award administrative functions under a few centers, or business offices able to sign off on proposals, audit transactions, prepare financial reports and invoices and make payments.

Our recommendations for the organizational structure thus stress a flat or distributed, rather than centralized or hierarchical structure for administrative research services. Some core functions (for example training, policy and compliance, information systems, UH inventory management, cost management and analysis) should remain centralized on the Manoa campus. Business offices will serve large departments or clusters of small departments and should be located proximal to users. Physical location

within those schools and colleges is intended to provide ready access and prompt delivery of service to the PI and to foster a service-oriented attitude. Each business office is headed by a senior administrative officer (Research Administrators) knowledgeable about all aspects of research administration. Depending on the number of faculty served, the business office will have a fiscal officer, personnel officer, and one or more clerical staff. The emphasis in this model is on knowledgeable and accessible service to the PI's where the Administrative officer serving them works directly for their Department, Institute or School.

2) Currently, University researchers use services provided by the Research Corporation of the University of Hawaii (RCUH) and the University of Hawaii professional, administrative and technical (APT) personnel. RCUH has provided an expedited hiring and classification system for research support positions that are equivalent to UH APTs. The fact that RCUH employees whose jobs are not noticeably different from UH APT positions yet are afforded better salaries and annual increases has caused management and personnel problems.

The current environment requires research support personnel to master two administrative systems and corresponding sets of policies and procedures. Those who deal primarily with the UH system find their occasional dealings with RCUH cumbersome and time consuming. The inverse is also true. In both systems, fiscal officers must maintain "shadow systems" to support fiscal activities. UH and RCUH continue to invest funds in both systems as well as in the computer interfaces necessary to track funds through both systems. What should be the roles of UH and RCUH in the transition to a new research administration?

a) Presently, RCUH operates as a corporation. By legislation its Board members are effectively appointed by the Governor. The Board appoints the officers of the corporation, again by law. No UH executive or PI is a member of the governing board. University officials and PI's are not informed about the expenditures of the corporation, the details of its budget, or the interrelation of its non-UH business income and expenses to UH's. Its Executive Director is not under the direction of a UH executive and serves at the pleasure of the Board.

Were the decision made to turn over the management of research to RCUH, our research enterprise would no longer be ours to shape to our own ends. Unless RCUH's Board of Directors is made up dominantly of UH executives and PI's and its management appointed and overseen by the Vice President for Research, the controls needed to ensure that the University is well served are lacking. Without the legislation to change the composition of the RCUH Board of Directors, UH must manage the administration of research internally.

b) Management of research solely by RCUH would place large numbers of APT jobs at UH at risk. UH APT's could not work under the direction of RCUH employees since RCUH employees have no standing within UH thus have no authorization for personnel actions. Persuading current APTs to take RCUH jobs would encounter serious

resistance and the potential for legal action. RCUH's former advantages in flexibility and speed of hiring, compensation, and ability to hire the best qualified have diminished. Bargaining Unit 8 representatives and UH PI's and executive representatives have been in discussions over the past two months to negotiate an M.O.A that will achieve the goals of the Task Force in administering research from entirely within UH. The discussions have taken into account the innovative broad-banding classification and promotion system developed by OHR's Peggy Hong. The M.O.A. as now written allows for flexibility and speed of hiring and dismissal and for compensation and vertical mobility essentially equivalent to RCUH's system (Attachment 1).

The Task force recommends that all research administrative services should eventually be provided by UH. While in the period of transition, both RCUH and UH would continue to support UH research administrative functions, merging their efforts toward a seamless, cradle-to-grave research administrative structure. The Task Force recommends placing the restructured research administration entirely within UH, allowing RCUH employees to retain their positions or transfer into appropriate positions in the new structure. Over time, attrition should permit the RCUH positions to be filled by UH APT's hired under the new rules.

B. Research Administrative Services

Administrative processes and computer systems at the University are complicated, cumbersome and inefficient, and have placed a heavy burden on researchers and administrative staff. Inadequate investment in research infrastructure, combined with a surge in extramural funding activity, has created a major obstacle to research. Further, multiple layers of compliance and control designed to prevent abuse rather than facilitate research have created a gatekeeper environment rather than one which is service-oriented and facilitates solutions. This environment has been a major hindrance to research efforts throughout the system.

In order to improve research productivity, UH must commit to building proper information technology infrastructure. Administrative processes and systems must be redesigned to improve productivity and effectiveness. This will require leadership and resources. Key faculty and staff must be empowered to improve research administration processes and service. Recognizing that a new administrative environment will present major organizational and technological challenges, recommendations are as follows:

- Critically examine and redesign administrative policies and procedures
  Decentralize the processes and accountability
  Move from a control- to a service-oriented environment
  Build trust and empower employees and researchers
  Build in appropriate internal controls

- Obtain management commitment at every level to facilitate organizational change

This component is critical to success. Experience in other organizations has shown that without significant commitment at all levels of the institution, the proposed changes will fail.

- Redesign the current IT architecture to support web-enabled business applications. To achieve maximum productivity, redesign of the policies and procedures must be undertaken simultaneously with that of the redesigning the information systems.

- Implement electronic research administration (eRA) with full integration (access and share data) to all UH systems and databases. Information and services available on-line to include:
  - Funding opportunities
  - Prepare, review, and edit a proposal on-line
  - Submit proposal approval and electronic routing forms electronically
  - Establish account, invoicing, close-out on-line
  - Electronic fund transfers and financial reporting
  - Electronic tracking of faculty, cost match and space commitments

In keeping with the guiding principles of this task force, the contracts and grants environment must provide enhanced value to researchers and administrators and comply with the requirements of funding agencies.

For research as well as management, the University's technical approach must integrate financial, human resources, student services and physical resources, providing a complete and consistent web interface to serve all users. To achieve this most rapidly and least expensively, it is recommended that UH aggressively speed up the current efforts to web-enable FMIS, implement data warehousing, and deploy "portal" technologies. This process should include any unique requirements to support the research enterprise as an integral part of the university's financial management environment.

These strategies are in wide use in universities that have chosen not to replace their legacy financial systems. While requiring investment to achieve results, this approach requires substantially less time and funding than a complete financial system replacement.

The recommended project approach is to hire and support a core staff of professionals who will be dedicated to working through the projects systematically in an order that recognizes the priorities of the user community. These projects will also be designed to leverage ongoing work (data warehousing, purchasing, travel, portal, HR) as well as contribute to those projects to achieve a more coherent single approach to "doing business" at UH. The core project will be comprised of:

- An advisory group to offer input, assist in identifying and reassigning expertise, provide project guidance and prioritize the many projects competing for resources;

- Some of our "best and brightest" reassigned from departments and central offices to do workflow analysis, process redesign, define requirements, review functional specifications and perform testing of systems at appropriate stages of implementation;
- A team of fulltime application and technical infrastructure specialists dedicated to the project.

Judicious use of consultants will ensure that UH efforts are guided by best practices at other universities, provide expertise not available within the University, and provide technical and functional knowledge transfer to UH.

C. Overhead Return

Due to inadequate investment by the State of Hawaii in qualified research facilities and administration[1] at the University of Hawaii during the 1990s, coupled with strong growth in total extramural funding, the present UH on-campus indirect cost recovery (ICR) rate for federal research is exceptionally compared to the national average. This rate (36.3% of modified total direct costs, MTDC) is negotiated based on prior data and is applied as an estimate to future federal grants and contracts[2]. Deviations in actual expenses (as a percentage of MTDC) for qualified facilities and administration from this negotiated rate are recovered after the fact. Thus, a low rate does not mean that only a small fraction of investments in research facilities and administration can be recovered. All allowable expenditures are ultimately recoverable. But, the expenditure must first be made with resources that do not derive from the Federal government. Thus, G and R funds must continually be invested in allowable research facilities and administration in proportion to the direct extramural funding of research at UH. The University's failure to invest in research infrastructure leaves us at a competitive disadvantage.

Inadequate resources have been provided to maintain, let alone enhance, the infrastructure needed to support the growing UH research enterprise. This is a self-limiting process, as the competitiveness of UH researchers in obtaining Federal research grants and contracts will surely decline as the resources are spread more thinly. Principal investigators are encountering more difficulty in delivering promised results to federal agencies within grant and contract periods because they are required to spend more of their time on administration, and in some cases because the University administration

[1] It is also possible that some university administrations are more aggressive or clever than UH in their negotiations with the Federal auditing agencies that are responsible for setting the ICR rate. The White House Office of Management and Budget circular OMB A-21 details the policies and procedures for determining the indirect cost recovery rate for educational institutions. The Rand report [http://www.rand.org/publications/MR/MR1135.1/] on university indirect cost recovery provides an excellent primer and perspective.

[2] We examined the UH documentation of ICR as well as an external consultants report, and we had several discussions with senior Office of Research Support officials. It is clear that we could achieve a higher ICR rate in future years. For example, the cap on administrative expenses is 26%, but the UH fraction is closer to 20%. Most of our competitors provide at least the maximum allowable ratio of administrative support to their research enterprise.

cannot perform their responsibilities within the contract period. Already, some faculty have been turning down relatively “easy” opportunities for extramural funding when the total award is deemed too small to warrant the efforts required to overcome the administrative barriers. Also, some opportunities have been passed over because inadequate space exists for the increased activity.

A substantial fraction of the total UH indirect costs that are recovered have been allocated to activities that do not directly support research and do not qualify as recoverable costs. During the past 8 years, 12% of the UH ICR has been allocated to the Housing Assistance Revolving Fund (HARF) by legislative mandate without any consideration of the total amount ($2.47M in FY01), its intended uses or any demonstrated need. An additional 4% ($824K in FY01) has been redirected to the Discovery and Inventions Revolving Fund (DIRF), an internal entity that has not been adequately coordinated with the rest of the research enterprise. As G-fund support of research has been reduced over time, an increasing fraction of the total resources to support research have come from the Research and Training Revolving Fund (RTRF). As the RTRF is tied directly to the ICR, it is obvious that without sufficient growth in total extramural funding, the R-fund support of research will decline, and in any case, the non-recoverable expenses off the top keep the RTRF from keeping pace with infrastructure needs. In addition, there have been very large changes in the allocations of the RTRF within the University from year to year with no apparent plan. This has created a research environment in which good planning on any level is nearly impossible.

The Task Force strongly recommends that a substantially increased investment of State of Hawaii resources in federally allowable research infrastructure be made to sustain the growth in extramural research funding at UH. The ICR is a reasonable measure of how competitive UH researchers can be relative to their peers at other academic institutions: An ICR rate of 50% of MTDC should be the target. This provides a balance between the objectives of providing the best possible infrastructure for research and submitting cost-competitive proposals for non-NIH grants (where the reviewed grant amount includes the ICR). It is absolutely necessary to invest other sources of State funds than the RTRF to increase the Federal-UH negotiated rate. Because the IC rates will be set for 2003-04 based on actual expenditures during 2002, it is essential to make this investment now. The recommended implementation of an electronic research administration system will require such an investment. Similarly, the backlog of repairs and maintenance on research facilities should be given a very high priority for funding and completion during FY2002. For positive impacts on the ICR over the longer term, the UH policies on cost sharing should be given careful scrutiny.

The University of Hawaii should begin immediately to manage internally all of its recovered indirect costs, and these funds must be entirely reinvested in qualified research facilities and administration to keep the ICR rate from declining further. The IC return to the University involves large sums, and their allocation must strike a fine balance between present needs and future opportunities. IC return in all its distributed forms should be easily transferable across fiscal year boundaries to facilitate long-range planning, while maintaining accountability. A strategic planning process specifically for the University of Hawaii research enterprise should be undertaken every five years, to

communicate shared goals and well-understood limits. The plan should anticipate long-term growth opportunities, while still maintaining a broad and balanced research portfolio required to mitigate sudden declines in Federal funding within particular sectors of the enterprise. The plan should guide the allocation of resources to provide excellent and fairly distributed support to the existing research activities as the top priority, and should guide wise investments for planned new research activities. The plan should guide the evolution of research administration to maximize its utility to the research enterprise while increasing its efficiency. The strategic planning for research and the allocation processes for RTRF should be transparent and include researchers from both large and small projects. A balance between efficient centralized support and responsive distributed support should be found for each business component of the research enterprise. Each research project should receive discretionary RTRF in proportion to its level of activity in order to address contingencies; this amount should be predictable at least a year in advance.

The growth of the research enterprise is limited primarily by the growth in General funds allocated to research-intensive units. Provided the RTRF is fully returned to the research units, however, considerable expansion in the volume of grant funding could take place. Given that in SOEST, the average faculty member generates about half their salary in RTRF, use of half of those funds to hire post-docs could actually increase the number of research faculty by 50%. In principle, our grant volume could rise by 50% or, about $20 million/year, generating another $4 million/year in ICR. The point is that research is a highly leveraged operation, one that can make excellent use of the ICR generated if it is not diverted to less profitable uses.

D. Space and Facilities Management

Growth in research income to the UH must be accompanied by growth in the space allocated to research. As an example, SOEST's research grants (excluding training, state agency grants, etc.) have grown from $26 million in 95-96 to $39.4 million in 00-01. Over that period, SOEST acquired approximately 70,000 sq. ft. in new space, of which 50,000 sq. ft. is consumed by research and associated support services. SOEST's total research space is about 200,000 sq. ft, which yield $250/sq.ft. per year in total extramural funds and $200 in overhead-generating federal research grants. Both give about the same answer; namely, that for every $10 to $15 million of additional research grants, 50,000 sq. ft. of new research space will be required. Without adding about that amount of new space every few years, our growth in grant income will stall.

If the Governor's initiative to invest a billion dollars in new construction yielded 1.8 million sq. ft. in research space, the annual return to the State would be, conservatively, $360 million/year in federal grants. No other investment in new construction by the State would return 36% per year. The university would, of course, be unable to staff the new space given its current G-fund allocations, but we have shown already at Manoa that the G-funded salaries leveraged by federal salary contributions and re-investment of the indirect cost recovery in research still make the total investment of State dollars eminently wise.

The teaching and research mission of the University is highly dependent upon its material assets. Well maintained, functioning buildings are critical to faculty and staff productivity. Effective management decisions, at both the University and the department level, require access to and synthesis of information systems across the University, including facilities management and physical resources. Overall, managers would like a customer service-focused operation that is accountable, exploits technology, optimally utilizes resources, and has streamlined processes.

The Facilities Planning and Management Office is commonly viewed as unresponsive and lacking accountability. Whether real or apparent, the lack of communication between the office and the customer fuels an already high level of frustration.

The Task Force recommends:

- Conduct an evaluation of FPMO's operating processes and organizational structure. Re-engineer organization to optimize efficiency and customer service satisfaction
- Provide customers with best services at the best price. Many FPMO services could be provided through a recharge facility giving the customer the option of using in-house services or external providers
- Cost feasibility studies should be undertaken to determine the feasibility of outsourcing routine services
- Provide web-based management tools, such as an electronic work order system, on-line policies and procedures, services, pricing, project status.

Crucial to the success of any University is it's ability to plan for future growth. Up-to-date information about facilities is central to this planning process as well as to the business operations of the University. Yet the University of Hawaii has no mechanism for obtaining current, accurate facilities and space data. Effective business decisions require access to and synthesis of information from a variety of information systems across the University, including facilities management

The Task Force believes that information technology is the key component in UH's challenge to plan for our future and to manage our assets efficiently. The Task Force recommends:

- An enterprise-wide space management system which integrates facilities data with other University databases, such as human resources, inventory, class scheduling.
- Implementation of an ArcView GIS type tool that provides the opportunity to integrate infrastructure management with room-level detail
- The system must provide an intuitive interface for finding, analyzing, consolidating and communicating facilities and space data with graphical representation of maps, floor plans, occupants and other related data.

Further, the Task Force recommends that:

- formal periodic reviews of current and future space usage and requirements be conducted to evaluate efficient utilization

E. Research Regulatory Support

Reviews of protocols by institutional boards are intended to protect the rights, well-being and safety of human and animal subjects of research. Increasingly complex and numerous federal regulations require more time to monitor and report research activities undertaken under a grant. Research regulatory support at UH involves the Environmental, Health and Safety Office (EHSO), the Laboratory Animal Services (LAS), and the Committee on Human Subjects (CHS). All of these organizations have very different missions, however; those that receive all or a portion of their budget from G-funds are under-funded and poorly equipped, and personnel are poorly trained, creating problems in certification of compliance and training of UH personnel. EHSO, in particular, has no recourse to construction and repairs in conjunction with EHSO functions; the result is usually expensive retro-fitting. Excessively cautious and conservative decision-making on the part of all regulatory support organizations reflects a lack of insurance and assurance from UH administration. UH should provide better risk and legal coverage for employees and committee members of regulatory support organizations.

The CHS protocol review process is too slow and has become an impediment to research. This is in large part due to the reluctance of UH faculty to serve on the IRB and the need to obtain approval from multiple CHSs in the medical community. The University must address the problem of how to adequately compensate or recognize faculty members who serve on CHSs. Whenever possible, multiple CHS reviews should be combined, and a ”fast-track” established for projects that have already undergone extensive reviews or have been modified following approval.

The research needs of faculty and staff must be the highest priority for all research regulatory support organizations. The Task Force recommended that the University form two CHSs that meet every two weeks. Training and certifications for PIs, staff and students must be available on-line. Applicable service standards must be implemented to provide timely responses to PIs. Four weeks from submittal to completed review should be sufficient for review of initial protocols, three weeks from submittal for amendments and revisions of previously approved protocols, and one week for safety or expedited reviews. Following CHS review, memos indicating final approval of the protocol should be mailed to the PI within 5 working days.

LAS must develop closer relationships with UH faculty and staff, giving the needs of PIs high priority. Funding for research regulatory support must increase concurrently with demand for services. LAS has been plagued by budgetary shortfalls that result in staffing shortages, improperly maintained facilities, and the inevitable reduction in service to PIs. LAS administration must respond to PI requests for legitimate research needs without delay

F. Faculty & Staff Quality of Work Life

An essential element of our strategy to maximize the quality and quantity of sponsored research is a supportive and rewarding work environment. The subcommittee considered issues of recruitment, rewards and retention, training and development, and organizational culture and collegiality.

The Task Force recommends that the University be proactive in recruiting qualified research faculty and staff in an internationally competitive marketplace. Specific recommendations pertaining to recruitment involve salaries, benefits and retirement packages, and job classifications and descriptions.

- The University should commit to paying no less than the median nationally competitive salary for institutions in high cost-of-living areas. OHR should consult with departments before compiling information on salaries by discipline. Such salary information should be available on-line for reference by campus authorities.
- UH faculty and staff benefits should be brought up to the level of other Carnegie I Research Universities. Employees are looking for a portable retirement plan with 4-5-year vesting comparable to competing institutions, disability and life insurance with access to affordable group plans, and portable tuition benefits or reciprocity with comparable universities for children of university employees.
- Classifications and position descriptions for union employees must be flexible to fit project needs and approved in a timely manner. Approval turnaround on requested positions should be no more than 5 working days. Web-based job postings and recruitment procedures should be implemented.

Incentive compensation has become much more prevalent during the past several years in the private sector as businesses search for ways to reduce fixed salary costs and motivate, reward and retain top performers. Increasingly, these programs are targeting the rank-and-file as well as management. Universities have begun to explore incentive compensation, but few have implemented it. The value of incentives lies in the link between reward and results. Using an incentive-based compensation program, the University should structure its pay package to include both fixed and variable elements that tie directly to specific objectives or results.

- Design merit pay mechanisms for faculty and staff positions at all levels. Include objective evaluation criteria and benchmarking with comparable universities.
- Provide adequate funding to implement cost-of-living as well as merit pay increases to keep salaries competitive and promote retention.
- Eliminate pay differentials between RCUH and UH personnel.

The University often adds additional responsibility to staff personnel without providing adequate training. The Task Force recommends that sufficient training and career development opportunities be made available to enable staff to keep abreast of technology, reporting requirements, policy changes and other productivity-related job developments.

- Planning and funding for staff training is essential. This is especially true for fiscal officers, IT staff and other technical positions.
- Seed funding, training, mentoring and career development opportunities should be available to junior faculty to enable them to fulfill all elements of their responsibilities.
- Leadership training programs should be encouraged for faculty and staff assuming leadership positions, such as supervisor, department chair, dean, or director.
- The University should maintain a funding pool for "bridge" funding and (large-scale) matching funds; awards from this pool are peer-reviewed.

Finally, the University community would benefit from programs that encourage collegiality and foster professionalism, respect and intellectual stimulation among all personnel. Often, organizational culture is as important as monetary compensation in addressing and resolving recruitment/retention issues.

- The Task Force supports an annual event celebrating UH research to foster interaction between researchers and the community;
- Support for interdisciplinary activities, including seed funding for cross-disciplinary research;
- Allocate space and budget to develop a UH Faculty Club to provide an appropriate venue for faculty interaction and enhance a sense of collegiality and pride among faculty.
- The University should develop a code of conduct or principles of community to promote respect and civility throughout the system.

IV. Implementation

A. Communication

Implementation of the systems conversions will be a large but gradual change for the University at all levels. Communication is key to the success of the project and management of change. The guiding committee must develop and implement a comprehensive communication and training plan, beginning with clarifying the strategic context for why the institution must improve its performance. Both the vision directing this

change effort and the strategies for achieving that vision must be communicated often and effectively. Make sure people understand how they can contribute and what the key performance measures are and create a stake in the outcome so that all employees share the gain. Above all, the guiding committee should serve as role models for the behavior expected of employees. New business processes must be firmly anchored in the university culture.

Broadly publicize goals and critical success factors. Be clear about potential issues surrounding change management. Publicize oversight group members in communications about the project so that end users know who is representing them and who to contact with questions or concerns. Stakeholders should be engaged in both the business process redesign and implementation phases of the various elements of eRA. Concerns and reservations should be openly acknowledged and quickly addressed. Various media should be employed to communicate changes – website, newsletters, meetings, minutes. eRA requires continued process analysis and redesign does not end with implementation.

B. Training

Implementation of an eRA model will require a significant level of restructuring within ORS. Continuing and on-line courses, administrative internships, and other professional development opportunities must be made available to personnel to ensure that research administration personnel stay current in their areas of expertise. Resources should be made available to allow experienced personnel the opportunity to develop and teach workshops and courses, as well as attend relevant professional meetings.

Training is often a problem for major re-engineering efforts. We can't expect people to change habits built up over many years with only little or no training. In addition to the technical skills they will need to perform new tasks and master new business processes, they will need to acquire the social skills and attitudes necessary to make the new system work. A short course offered prior to a new undertaking is not sufficient; administrators will need follow-up and easy-access help utilities to assist them with problems they encounter daily. Begin training early and conduct training sessions frequently throughout implementation

We must resist being overwhelmed by the cost and time involved in training. A cleverly designed educational experience can deliver much greater impact at significantly lower cost than conventional approaches. Training is a critical element in empowering employees to incorporate our vision into their work.

C. Recommended "Deliverables"

Transition to a new model of research administration folding in RCUH personnel and functions.

- Eliminate duplication of administrative effort at system level and shadow systems at all levels.
- Use the funds diverted to RCUH as fees for service to fund implementation of recommended changes to research administration.

Establish an Office of the Vice President for Research (VPR)

- Charge the VPR with chairing the oversight committee responsible for implementation of recommended changes to research administration.
- Integrate all research administration and related activities under a single line authority.
- Draft legislation to restructure RCUH oversight and leadership.

Establish an oversight committee responsible for implementation of changes to research administration and for long-term review and improvements to research administration.

- Delegate significant authority
- Provide periodic, critical review
- Include measurements of success, assessment and rationale for revisions
- Oversee process documentation

Establish unit-based business offices/research administration teams

- Provide one point of contact for the PI and department chair; "one-stop shopping" for all research administration needs
- More accurate and timely interactions with sponsors

Improve the business computing environment: Business system modules

- Purchase orders and personnel actions initialized and finalized at the same time by the same person
- Post-audit mechanism for financial transactions; published written policy on this; extensive training for PIs, FOs, AOs
- Delegate system access authorization to department level
- Establish front-end edits, compliance and exceptions reporting
- General ledger – transactions posted within 24 hours of entry
- Electronic commerce – credit card, electronic payments to pre-approved vendors and campus recharge facilities
- On-line information, management tools and news applicable to procurement
- Travel and employee reimbursement system
- Budget upload tools (sponsored and non-sponsored)
- Data warehouse

Improve the delivery of research services: research information system modules

- A system of linked databases
- Identification of funding opportunities; agency profiles
- PI profiles
- Prepare proposals and protocols (on-line access to forms, templates, policies and procedures)
- Budget preparation
- Proposal reviews/electronic approvals

- Protocol reviews/electronic approvals; multiple, discipline-focused IRBs
- Electronic submission, notifications
- Negotiate/accept award
- Set up project
- Manage project
- Closeout project

Overhead Return

- Increase investment in research infrastructure to target an indirect cost rate of 50%
- Strategic planning process for allocation of research resources that involves researchers

Space and Facilities Management

- Service-oriented staff
- Exploit technology
- Optimize utilization of resources
- Streamline processes
- Formal periodic reviews of space and facilities usage

Research Regulatory Support

- Reduce response time for review processes by Institutional Review Board (IRB) and Laboratory Animal Services (LAS)
- Fully fund the Office of Environmental Health and Safety and LAS
- Legal support and insurance for regulatory support organization employees and committee members
- Incentives for faculty participation on IRBs
- Timely and on-line training for service providers and customers

Faculty and staff rewards

- Competitive faculty salaries
- Bonus and merit salary adjustments for excellent performance need to be included in the compensation package funded by the legislature
- We recommend that a pay ladder similar to that in use by the UC system be negotiated with UHPA and HGEA and the legislature so that faculty and staff have a clear vision of how superior performance will be rewarded throughout their careers.
- We recommend that, in addition to financial rewards for excellent performance, that the UH provide other means of recognition as well.

Develop human resources management strategies that support research

- Facilitate flexible hires under limited-term contract
- Provide career development options for administration, professional, and technical specialists

V. Goals and Vision

Our business process redesign goals are to use the web for delivery of all services with standard browsers (Netscape and Internet Explorer); deliver services that meet the most important campus and system needs; develop services that are simple, easy to use, and require no/minimal training; deliver services that are independent of complex university system organizational structure; leverage existing investment in core financial and personnel systems; establish a central data warehouse.

Our research administration goal is the automation of cradle-to-grave research administration with open and consistent access to all users We strive to minimize the administrative burden on the PI yet assure compliance and at the same time enhance the administrator's ability to manage research in a timely, accurate and compliant manner.

Our vision is a single, seamless, web-based desktop environment consisting of a system of linked databases residing on a central server with variable read/write clearance and simultaneous multiple access from variety of platforms. The system should meet the institution's needs yet have enough flexibility to meet requirements of emerging federal standards without being *driven by those standards*.

VI. Milestones

0-6 months

- Seek BOR approval for reorganization of the Office of the Vice President for Research (VPR)
- Establish and charge committees
  - general oversight committee – core project group headed by VPR to assist and integrate business redesign efforts and other improvement efforts across the university; comptroller, budget officer, key admin computing staff, internal audit
  - business process mapping committee
  - policy review team
- Make necessary hires/appointments
  - project overseer
  - project manager for tech transfer
  - assistant/historian
  - website designer
  - IT electronic research administration team
- Business process mapping
  - comprehensive analysis of grant and contract-related business workflows and processes
  - include people who understand business process fundamentals
  - identify non-value-added steps
  - identify federally mandated steps
  - identify "best practices" and data standards
  - determine criteria to select what should be changed

0-24 months

Implement short-term technology solutions ("quick wins") that require less than 3 months to implement; are low cost (to be defined); and reduce a defined and highly visible problem; can be integrated into the long-term solution; low impact on other existing admin (above all, do no harm)

- Improvements to ORS website
- Easy access to funding opportunity databases, agency info
- Create on-line forms and templates
- Proposal-writing training tool and guide for faculty
- Compliance modules (human and animal subjects, health & safety)
- Institutional profile information
- PI profile information database
- Subcontracts tracking and creation database
- Financial status tool
- Limited submission database

6-18 months

Establish and charge policy review team

- Recommend changes in current procedures, practices and policy
- Ensure compliance

6-24 months

Establish and charge system module teams

- these are business process redesign committees (engage stakeholders)
- 2-3 end users, functional lead, technical lead, consultant, joint policy review member(s), programmers
- use functional staff to lead the project modules and provide credibility; free them to work on this project
- module design, review new system workflow, design checkpoints and test models, explore alternative models
- cost-benefits analysis associated with data acquisition; who gathers data, who ensures data integrity; who enters data into system

12-36 months

Identify and charge local implementation support managers

- individual assigned to a school or college
- brief units/departments with project details – milestones, problems, key decisions
- provide consistent messages and single point of contact for schools
- work with system module teams, provide feedback from end users
- demonstrate prototypes to various University audiences; report feedback to general oversight committee

12-36 months

Implement system modules, some simultaneously, some sequentially

- set go-live date; inform constituency of current state and action plan

- train end users, supervisors
- counsel, train employees whose roles and responsibilities are altered
- plan for post-implementation stabilization period
- retire legacy system; archive data from legacy system

Permanent

Office of Research Services – establish sub-unit for maintenance and improvements to research information system. Maintain legacy system for data purposes. Evaluate new and emerging technologies. Add a training support function group within ORS to support ongoing refresher courses and full courses for new personnel.

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