Budgeting System Analysis and Proposed New Budgeting System

For

Michigan Technological University

Prepared by Dickmeyer Consulting, LLC

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Principal
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Introduction

Dickmeyer Consulting, LLC was commissioned by Michigan Technological University to assess various aspects of its current budgeting system and to make recommendations for a new system more adapted to MTU's current financial and strategic challenges. The consultant, Dr. Nathan Dickmeyer, was able to begin the assessment with documents from the university's web site and provided by the university. Eight interviews of administrators and Board of Control members lasting between one and two hours were conducted by telephone on February 5 and 6. The consultant conducted on-campus interviews with thirty staff, faculty and administrators, singly and in small groups, over three days from February 11 through February 13. Each of these interviews lasted approximately one hour.

Technically, a budgeting system is not a decision system; it is a system for implementing decisions. Nevertheless, each budgeting system shapes and informs decisions on the allocation of resources to tasks and functions, on the investment of resources in new ventures, and on the ceasing of existing activities. Once the decisions are made, much of the implementation is done through the allocation of resources that control or give incentives to various actions of participants in the organization. The effectiveness of a budgeting system is judged by its success in moving the organization toward its vision, a vision that usually requires financial stability and strategic change.

A university is not a business. More precisely, a not-for-profit college or university is significantly different than a for-profit business. A university has no owners; it is a public trust. Without owners it has no one to pay dividends to, and no one for whom it must maximize its profits. A business has a single overriding goal: the maximization of return for the owners. A university has a multiplicity of goals: to foster learning, to create knowledge, and to serve its community.

Nevertheless, both a university and a business are economic entities, and as economic entities, they must maintain financial viability to survive. This similarity is why both generally have budgeting systems. While the necessity of financial viability is well aligned with the single goal of a business, it is not well aligned with the multiple goals of a university. Thus, university budgeting systems must ensure financial viability while improving a university's ability to reach its central goals. This is our task at hand.

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I. Current System Assessment (Item 2 of the consultation's deliverables)

Because budget allocations have changed very little from year to year, the current budgeting system must be labeled as incremental. Incremental budgeting is characterized by relatively few new investments during healthy financial years and across-the-board cuts in difficult years. MTU has attempted to add an element of non-incremental budgeting by creating a pool of funds to be allocated for projects deemed to be of significant strategic importance to the university. Unfortunately, the current financial crisis has minimized the size of the pool.

Incremental budgeting does not foster a strategic allocation of resources. A strategic allocation of resources is defined as the configuration of investments, budget increases, budget decreases, and budget eliminations that help move the institution toward its goals. Across-the-board cuts and target of opportunity savings are used, not to make strategic resource changes, but to move the institution quickly toward financial safety with the least amount of organizational resistance. In fact, target of opportunity cuts can be anti-strategic, falling on strategically important areas. Rather than foster strategic change, incremental budgeting sustains the status quo.

In many situations sustaining the status quo is strongly desired. When the ideal situation is viewed as very similar to the current situation, incremental budgeting, with its ease of implementation and low political costs, is an ideal system. Incremental budgeting is a low overhead system. Its information requirements are moderate and its methodology easy to learn.

A very strong case, however, can be made that MTU must change in order to assure future financial viability. While its instructional, research and service activities remain strong, fundamental changes in the attitudes and economics of the State of Michigan call for a new financial strategy that integrates well with its academic, recruiting, research and service strategies. Incremental budgeting has not fostered the strategic changes necessary to guarantee survival of the university.

At one time Michigan tacitly supported a fully-funded policy of providing public higher education opportunities to all residents who could benefit. Higher education was treated like an entitlement. As the costs of other, more binding, entitlements have grown and as new entitlements have been added to the state's burden, the state's ability to maintain higher education like an entitlement has diminished. Public higher education is now merely a "desirable state government offering" and no longer an entitlement. The state's goal appears to be shifting away from guaranteeing to everyone the availability of a higher education and toward a somewhat less lofty goal: lowering financial blocks to a higher education. The costs of entitlements like, health, welfare, primary and secondary education, and prisons, have been growing faster than the state's ability to raise revenue. Unless significant reforms in the management of these entitlements occur or unless the wealth of the state increases greatly, the portion of the state budget and the absolute dollar support for higher education will continue to shrink. Higher education's entitlement siblings keep demanding larger slices of a pie that cannot grow fast enough. There are few signs of coming entitlement management reforms or increases in state wealth. The wait for appropriations to return to the old level may be a long one.

Without intention, the state has begun a slow process of privatizing public higher education. Economic forces drive the change. This, in turn, is putting enormous pressure on the university to change in order to survive. It must now begin to use the financial strategies of private institutions

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and eschew the old habits it learned as a public one. Incremental budgeting is unsuited to support this change in financial strategies. The university must find a budgeting system that will assist it as it turns from a focus on meeting the requirements of the State of Michigan to meeting the requirements of the students that it serves best. No longer will it find success simply by being Michigan's technological university. The more it is forced to survive like a private institution with decreasing state support, the more its success will be defined by its ability to provide an education to identifiable groups of students at a price that maintains financial viability and that these students are willing to pay.

The need to effect this change requires a financial strategy and a budgeting system that is at least partially market driven, but that also improves the institution's instruction, research and service. These goals are less opposed than it may seem. Strength in instruction, research and service, if aligned with the requirements of students, will enhance the university's success in the market.

There are other difficulties with the current budgeting system that must be addressed by any proposed system.

Many of the assumptions behind estimates and the impact of new financial policies have not always been made clear to the Board of Control. When the board approves a budget, it is more agreeing with the assumptions behind the numbers, than the numbers themselves. These assumptions must be clear to, and endorsed by, the president before presentation. Not all aspects of responsibility are clear in the present system. The new role of the CFO in budgeting should be carefully defined.

A key aspect of financial strategy that is the responsibility of the board is the setting of financial risk. Risks are embedded in the optimism of revenue forecasts and the size of contingencies. Budget risk should be aligned with the board's tolerance for risk, the current financial condition of the university, and the apparent stability of the financial environment. The current budget system does not do enough to make budget risk evident.

Currently, the budget is not being built from a budget projection (five years in the future is normal these days) that allows the testing of assumptions about the impact of new policies and changes in the financial environment.

Finally, the board is not always shown how the fund budgets will tie into the financial statements. The financial statements are created within Government Accounting Standards Board (GASB) rules. Some elements of fund budgets do not tie with ease to GASB statements. A cross-over chart will decrease surprise at the final, audited statements.

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II. Specifications for an MTU Budgeting System

The system must promote the short- and long-term financial health of MTU. All budgeting systems allow universities to gauge their progress toward budget balance during the fiscal year and to provide tools to document decisions to increase or limit expenses and revenues. Systems that also foster incentives to increase revenues and decrease expenses help move the institution toward long-term financial equilibrium. To secure financial health the systems must reward efficiency and effectiveness, not punish them.

The system must provide sufficient information to the Board of Control to allow it to exercise its constitutionally mandated management and control responsibilities. Boards guide institutions by affirming or questioning the financial policies advanced by the administration. A good budgeting system produces information that a board may use in its decisions on the impact of policies.

The system must advance MTU's financial strategy. This is the most important requirement for MTU at this time. A financial strategy is one of the strategies that a university uses to direct its evolution toward its vision. Other guiding components include academic strategies, research strategies, recruiting strategies, and service strategies. The financial strategy must enhance these other strategic components and not conflict with them. Financial strategies guide the institution by defining financial decision responsibilities, the character of incentives, and the appropriate levels of financial risk. Budgeting systems are the primary instrument of implementing financial strategies. (Other instruments include investment policies and cash management policies.)

Thus, budgeting systems must integrate well with the institution's overall set of strategies. Because of compelling changes in the university's economic environment, the primary financial strategy has become one of assisting MTU to develop financial strength as public sources of revenue decline and private sources come to dominate. The academic strategy shifts toward enhancing programs that have strong appeal to students and that MTU is well-suited to provide. The recruiting strategy shifts to a search for dependable streams of students who will find the experience at MTU exceptional and are thus more willing to support it financially. The research strategy continues to emphasize projects that enhance the experience of students. The service strategy shifts toward the development of higher standards that enhance the appeal of the university by enhancing the growth of students searching for an exceptional educational opportunity. These strategies integrate well and all respond to the exigency of a decline in public support.

To help MTU change in this direction, the budgeting system must reward strategic choices. Budgeting systems reward with increased financial resources. These increases are investments in endeavors that have a high probability of moving the institution toward its vision. The system must inform choices on where to add resources, where to maintain resources, and where to reduce or eliminate resources.

As institutional revenue dependence shifts from public to private sources, the importance of achieving competitive advantage in a competitive market increases. The primary strategic question shifts from, "How can we develop our position as Michigan's technological university?" to, "How can we more strongly appeal to those kinds of students with whom we are most successful such that our financial support is secure?"

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MTU is fortunate in 4that it already has a strong base from which to work. It has become known as a university that brings success to serious, quantitative, goal-directed people who are comfortable with the outdoor environment. It is also increasing its appeal to people in the region who seek a serious educational experience. A critical MTU strategic focus thus becomes finding ways to appeal to those who will have a successful experience at MTU. The budgeting system must allow careful investments in strengthening that appeal. It must reward success.

The system must be simple. Complex budgeting systems often obscure the incentives that they are intended to provide. The consequences of successful strategic behavior should be easily discerned from the system and dependably predictable. Universities, and MTU is no exception, are thinly administered. The burden of a complex budgeting system often results in its early demise.

The information that drives the system must be obtainable without a large expenditure of effort. While new information may be required, it should be derived from regular production systems. Systems that require archival data or data that are difficult to collect should be avoided.

The system should be transparent. No allocation rules should come from a "black box" or from a calculation that can only be reproduced with great difficulty.

The system must not eliminate risk taking. Market-driven budgeting systems can reduce the incentive to take risks. Developing expertise in an area that may be appealing in the future to potential students, especially goal-directed students connecting ideas of quality with the high probability of employment after graduation, is risky. The area may never expand sufficiently to provide jobs. Will nanotechnology, for example, eventually fizzle before jobs become available? A market-driven system rewards immediate success in attracting students and withholds rewards from those who make investments that do not come to fruition quickly, because these investments divert resources from currently attractive programs. Similarly, investments in new administrative systems may be viewed as too risky to divert resources from on-going operations.

Universities require budgeting systems that allow risk taking in the form of investments that may or may not come to fruition. It must be possible to set aside resources for uncertain investments without dampening the incentives to improve the university's revenue base.

The system must force simultaneous resource-allocation decisions, not sequential decisions. Decisions are often sequential in an autocratic organization. Whoever gets to the decision maker first receives funds. To the extent in any organization that resource-allocation decisions are sequential, the institution veers from strategic direction. While not all resources can be allocated in a single sitting (some great ideas do just pop up), budgeting systems that do not foster simultaneous trade-offs of all existing options will over-fund less-desirable activities. First is not necessarily best. A good budgeting system highlights resource allocation trade-offs.

The system must foster decisions at the organizational level where the greatest understanding exists. Wide responsibility for allocation produces stronger attention to strategic goals. This requirement must be balanced against the requirement for simplicity. Most importantly, the system must reward the strategic behavior of all individuals in the campus community, not just the strategic choices of a few. Nevertheless, the system will not succeed if decisions are pushed to those

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unwilling or unable to make them. The best budgeting system is one where simple rules reward the strategic behavior of a broad range of individuals who feel empowered to make strategic choices.

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III. Pure Models of Budgeting Systems: Strengths and Weaknesses

Besides incremental budgeting, there are two other, contrasting styles of budgeting that have seen success recently. Each has limitations that preclude implementation in pure form at MTU. Nevertheless, important principles of operation from each can be combined to build a budgeting system for MTU that satisfies the requirements above. The limitations that are inherent in each system can be reduced with the judicious use of each and with carefully constructed safeguards.

Zero-based budgeting (ZBB). ZBB is a top-down budgeting system where resource allocation decisions are made through a function-by-function assessment. No function is assumed to be necessary. The criteria for evaluation are passed down from higher levels, enhanced and made more appropriate for each area as the criteria are passed down to office and department heads. Department and office heads develop justifications within these evaluation guidelines for each function and justifications for increased resources. These pass back up through the organization with each level setting priorities for resource allocations to individual functions from the levels below. In a university, for example, the admissions office would need to justify against priorities from top administration, as enhanced by the vice president for student affairs, such admissions office functions as recruiting, application processing, hosting campus visits, and responding to inquiries. Resource allocations, task or function eliminations and resource reductions would be based on the alignment of each function, as developed in the justifications, with institutional priorities. This budgeting method is particularly suited to organizations that have used incremental budgeting for years without examining the necessity of continuing any task or function—especially those where there is evidence that many functions have outlived their usefulness.

ZBB is a high overhead system, requiring written justifications of all tasks and functions and priority assessments at every level of the organization. The effort involved in this type of budgeting is roughly equivalent to annually producing an organizational budget, a strategic plan, a functional analysis, and performance evaluations for every manager.

The application of ZBB would be different for academic departments and for service departments. In private business, revenue-producing units with insufficient profitability are eliminated. Because of the direct connection between the instruction provided by academic units and the payment of tuition, academic departments are considered revenue producing. Criteria can be constructed that value the financial efficiency (revenues directly attributable to functions of the department divided by directly attributable expenses) and the financial contribution of the department (the difference between the revenue that would directly be lost if the department were eliminated and the costs directly incurred by having the department). Under a continuous revenue enhancement model, often used in business, the least efficient departments would be eliminated, as long as they did not provide a financial contribution over a minimum amount. This method allows resources from inefficient “investments” to be redistributed to those that provide a contribution at a higher rate. The evaluation criteria might also include offsetting qualitative factors. Under ZBB the evaluation would be undertaken degree program by degree program.

Since service departments produce little measurable revenue, the criteria would need to be based on strategic direction. Each function might be evaluated as to whether it increased enrollments, improved the perception of quality, and increased national stature, for example.

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ZBB, however, runs up against a number of sticky questions. How much "quality" must an "inefficient" academic department possess to offset a $1 million excess of expenditures over revenues (a negative contribution)? Can the administration just impose these criteria without giving currently inefficient departments a chance to improve performance against them? How much in resources should a slightly inefficient department give up to a slightly efficient department? At what point do you stop eliminating inefficient departments? When only one, the most efficient, is left?

How does one write evaluation criteria for service departments when a department like admissions is so clearly strategic and one like accounting is so much less concerned with strategies like attracting students or national stature? (It is merely absolutely necessary.) Do we really suspect that any current function might be eliminated? How will the transfer of resources from less strategic functions to more strategic functions assist the less strategic departments in becoming more strategic in their operations?

ZBB scores poorly on the strategic direction, simplicity, and expanded responsibility requirements listed above. Unless the suspicion that there are more functions that could be eliminated is better supported, the large amount of resources necessary to implement ZBB would probably be wasted. In 38 interviews only the subvention to the Rozsa Center was ever questioned as something that ought not to be done. Under ZBB, thousands of person hours would be exhausted to support this single supposition. The universities that have adopted ZBB have noted that its primary value is in inventorying and evaluating the effectiveness of functions. They also note the enormous effort involved. Few have used the system longer than a single year. I know of none that have gone past two years. The associated function inventories and evaluations are very useful for understanding the workings of a complex organization like a university and add judgment to budgeting decisions. The annual cycle of university budgeting, however, has proved too brief, multi-faceted, and concentrated to successfully incorporate the mechanics and breadth of ZBB.

Responsibility Center Budgeting (RCB). Edward L. Whalen in *Responsibility Center Budgeting* (Indiana University Press, 1991) describes RCB at Indiana University. This implementation of RCB is particularly interesting because it is one of the few described for a public institution. In Indiana's implementation the university's 14 schools (including, Arts and Humanities, Physical and Math Science, Social and Behavioral Science, Dentistry, Medicine, Law, Business, Music, Engineering and Technology, Optometry and Nursing) were given earned tuition, indirect cost recovery and an allocation of the appropriation and were charged for all central services. Tuition and fees were allocated according to student credit hours taught by unit. All responsibility centers were allocated all support and central expenses through a series of negotiated formulas. State appropriation was allocated to the responsibility centers in a sufficient amount to allow all centers to cover current (pre-RCB) expenditures not covered by earned revenue (like tuition).

If a center experienced a tuition revenue increase, perhaps through an enrollment increase, 80% of that increase would be added to the following year's budget. Revenue declines caused a similar decrease in the next year's budget. Eighty percent of surpluses and deficits caused by excess expenditures at the centers were added or deducted from the next year's budget. The residual 20% was put into a central reserve and allocated to the centers according to institutional priorities. Cost increases to central units were passed on to each center according to the allocation formulas.

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Library expenses, for example, were allocated to the centers according to the number of faculty paid by the center and the number of undergraduate student credit hours taught, and graduate student credit hours taught by each center. The weighting of the three factors differed by center. That is, medical faculty members were not regarded as heavy library users and had a lower weight than Arts and Humanities faculty.

The successes attributed to the system included greater willingness to teach service courses, more concern over maintaining enrollments, greater attention to center costs and pressure on support and central units to control costs. Its primary success, however, was in the immediate response of center expense budgets to changes in enrollments. This function made marginal budget changes more automatic. Controversies over budgeting were largely confined to early battles over the allocation formulas and the difficulty of supporting expense increases within support and central units. Implementation required two years.

RCB is driven by the principle that revenue centers should be made primarily responsible for all the expenses of the institution. Revenue centers are treated like independent businesses, managing the revenue that they generate, controlling their own costs, while supporting their share of the "home office."

While the controversy over support and central cost allocations could have paralyzed implementation, Indiana cleverly mollified opposition with its allocation of appropriations. Appropriation allocations were set to keep each revenue center at its status quo level of support in the base year. Thus, the appearance of an arbitrary central cost allocation was balanced by an offsetting arbitrary revenue allocation. If central expenses were to increase more quickly than appropriations, an inequitable allocation (expense too large, appropriation too small) could disadvantage a center. Nevertheless, the centers were disarmed by their initial acceptance of the allocations. Implementation was also assisted by the fact that the university budget began in balance.

Whalen noted that the system runs most smoothly when the units are of comparable size. Negotiations over allocation formulas and claims on central resources appear more equitable when the units have equivalent bargaining power.

The system also assumes that each center has strong control over earned revenues. To the extent that recruiting, fund raising, and grant procurement require the initiative of central offices, the system is weakened. As a rule in management, responsibility must be accompanied by authority. The less control that a dean has over earned revenues, the less willing the dean will be to buy into the budgeting system. Incentives to pursue enrollments and control costs are thus weakened. Responsibility centers at Harvard, Columbia and Indiana, where RCB has been used, have a large degree of control and may even set their own tuition rates within guidelines.

The system also largely depends on social pressure to control administrative costs. The efficacy of social control alone is doubted. The USC implementation controlled administrative costs by reducing all administrative budgets by 3% each year. "Do more with less" was the path chosen by USC to manage service units.

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Other problems that might be anticipated in the implementation of the Indiana system at MTU are technical and not inherent in the system itself. Indiana chose to allocate tuition revenue according to student credit hours. Other formulas that emphasize majors are possible. Indiana chose to use 20% of the earned revenue increment to support central initiatives. A higher or lower percentage could be used depending on the needs of the university. Indiana chose to begin with each center retaining its current budget level, a safe harbor provision. The allocation of appropriation could have more closely followed the tuition revenue proportions and immediately reallocated budget to units with greater market success and lower costs. Central cost allocation formulas could have an entirely different basis than those used by Indiana.

The primary drawback to the system is the emphasis on market success to gain revenues. The 80/20 split is used to divert resources into non-market-driven projects. Nevertheless, within a center, decisions are focused on teaching more units for less cost to the exclusion of other considerations.

This system also makes cooperation between centers less likely. Multi-discipline courses and research projects must overcome the prejudice against splitting revenues with others. In Indiana's implementation, indirect cost recovery goes entirely to the project director's home center, making it less likely for researchers from disciplines in other schools to join the project. The drive to offer service courses within each center would be extremely strong. A separate effort to control course proliferation was needed.

The system drives each center to build capability in revenue generation. Central recruiting, fund raising and grant procurement support are duplicated in each center. At Harvard and Columbia, this has always been the case. Each business and medical school, for example, has complete capability in these areas.

These limitations keep the system from fully meeting the MTU requirements. It is complex and emphasizes most strongly only the strategic concern to offer more courses to more students. Risk taking and non-financial priorities appear to be protected only by the 20% revenue-increment tax. If enrollment in a majority of centers and appropriations falls, the system allocates deficits to each center, but it is not apparent how year-to-year deficit rolling could be halted.

The strength of the system is that many decisions are pushed down to levels that are closer to the activities that define the university.

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IV. Other Budgeting Systems—Variations on ZBB and RCB

Two systems that are variations on the systems above may be adaptable to MTU's requirements. Redefining the criteria used in ZBB to budget against desired levels of service may be useful for MTU's cost centers. An RCB system that is primarily driven by enrollments, but provides for the funding of service courses, strategic initiatives and new program development well be examined for use by MTU's academic areas. Variations on ZBB and RCB usually retain those names. The consultant, however, has re-named these variations for clarity.

Service-level Budgeting (SLB). Unlike ZBB, SLB does not require that every task be justified against centrally determined criteria. SLB is based on the assumption that all service functions have been justified in the past. The budgeting question is, "At what level of service should the function be funded?" Under this method every office breaks down all efforts not associated with revenue generation into large functions. The performance of each function is then described at no more than five levels of service. The resource requirements of performing each function at each level of service are then estimated and a required budget determined. Higher levels of service require larger budgets.

For example, the facilities office may define its functions as maintaining building cleanliness, repairing and upgrading facilities, providing environmental comfort, maintaining the grounds, and maintaining infrastructure. Service level one would be the lowest and, for repairing and upgrading facilities, for example, might describe the institution's absolute minimum standard. The level one standard might thus be only maintaining healthful and safe building conditions, and repairing any condition that could lead to further damage. Level two would add maintaining administrative and instructional functionality of existing spaces. Level three might add renovating spaces to improve functionality. Level four might add improving the aesthetics of existing spaces. Level five might include maintaining buildings at a standard equivalent to that used by any of the better endowed technological universities.

Library service levels could similarly be graded and assigned costs at levels from "survival" to "the best." Functions like recruiting provide a rough relationship between costs and results. The cost curve increases exponentially as the difficulty of recruiting each additional student expands. The service levels are represented by increasingly larger numbers of matriculation successes, each with an accelerating increase in necessary expense. Certain functions, like accounting, may only be able to develop one or two service-level budgets. The options for improving over required levels are limited.

Institutionally-funded research may be budgeted within the SLB process. By definition, university-funded research is not supported by outside revenue. The decisions and trade-offs forced when considering resource options for various levels of research (sufficient for a departmental budget to provide course-load reductions, for example) are well suited to the SLB decision structure. Increased funding for university-supported research in particular departments lowers the funding leverage of enrollments. As in all service-level decisions, qualitative results are traded-off against a measured financial impact.

Like ZBB, SLB requires a mixture of negotiating and trade-offs. Like ZBB, these trade-offs are made at higher levels in the organization. The trade-offs are made between a desire to increase

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service levels and the requirements for funds for other activities. With the recruiting function, the trade-off also has a limitation determined by a financial investment assessment. At what point does the next recruitment cost more than the dollars to be generated in marginal net tuition revenue. The benefit of investments in other activities generally keeps the selection of the recruiting service level well below the financial investment limit.

While ZBB requires that functions be justified in terms of given criteria, SLB requires that functions be budgeted at levels that balance the need for greater service with the need for maintaining service levels elsewhere and with the need to provide resources to revenue-generating areas.

Since the purpose of breaking the efforts of an office into functions is only to determine service levels, functions where service levels are set together should be grouped together, and their budgets should be estimated jointly. For example, it probably makes little sense to maintain building cleanliness at a high level while setting a building maintenance standard that merely keeps things from falling apart. Why wax floors weekly when cracked windows and burned out lights are only replaced once a year? Thus, unlike ZBB where functions are minutely divided to determine whether they should be maintained or not, SLB requires fewer analyses. The focus is on determining the cost of providing various levels of service, not on eliminating narrow tasks.

At MTU service levels should be attuned to the financial strategy of increasing the probability of replacing appropriation dollars with tuition dollars. Most service levels would be set from the vantage point of the university's primary service populations. To the extent that revenues also depend on attracting donors and winning research contracts, service levels may be justified from a number of viewpoints simultaneously. Because research facilities and the aesthetics of the campus are also part of the appeal to students, the various viewpoints nearly coincide.

The administration may decide during this process that the appropriate service level for a function is zero and eliminate the function. SLB, however, is more intended to provide a process for funding the highest level of service within available resources. Easy rules for making the trade-offs do not exist. No rule of thumb exists for determining whether limited resources should be committed to raising bursar service from "receive funds from students with accuracy" to "receive funds from students with accuracy and provide financial counseling with careful explanations of financing options" or to the office of institutional research function on survey response to go from "answer legally mandated surveys" to "answer legally mandated surveys and all surveys providing information to potential students." Nevertheless, through the use of SLB, the university will be able to set performance levels for each function with adequate budgets in a way that allows simultaneous consideration of alternatives.

An administrator must also apply additional judgment on the administrative efficiency of a manager. A request to support a service level with a budget out of line with peer standards for the area may open a manager up to questions on his or her adequacy for the job.

SLB's use extends beyond pure service areas. While an area like Fine Arts may gain budget from its tuition revenue generation, as discussed below, much of what that area does is outside of instruction, for example, to foster music groups and theatre productions. These are services and a portion of their budgets may be determined through Service-level Budgeting. The amount

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budgeted will be determined by the decision to fund a particular level of service. The service levels will reflect support for increasing numbers of activities and increasing levels of quality. The subvention to the Rozsa Center should be evaluated using the same methodology.

Revenue Directed Budgeting (RDB). RDB is a variation of Resource Center Budgeting that relies on transfer pricing rather than full revenue and expense allocations. Service-level budgets for central offices, subsidy funding, and initiative pool allocations are deducted from central support (largely appropriations). Tuition revenue net of institutionally funded student aid is earned by schools and colleges according to each student's academic home base, determined by major. The Graduate School is an exception and should be budgeted as a service function. (A variation on this allows some of the funding of the Graduate School to be based on charge-backs. A fee might be assessed to each school or college for each of its graduate students.) The surplus or deficit from the difference between central revenues and central service-level expenses, subsidies, and pools is similarly allocated. Schools and colleges are charged a transfer price when their majors take a course outside of their home school or college. The transfer price is centrally subsidized so that the providing school or college receives an amount that approximates its cost, and the student's home school or college is charged an amount that approximates its potential cost were the school or college to duplicate the course internally. The difference is centrally subsidized. All directly earned revenue is kept by the school or college, including indirect cost recovery, unrestricted gifts earmarked for use by the school or college, and investment income earned on unrestricted endowments earmarked for the unit. Certain discretionary services are charged directly to the school or college. These services represent funding above the service level of the providing department, requested at the discretion of the school or college, and sufficiently large and demanding of the service department as to require rationing through charge-backs.

Budget calculations are lagged, as at Indiana, so that revenue performance and service course enrollments can be determined with accuracy, making mid-year budget adjustments less necessary. Budget calculations use the previous year's earned revenue and enrollment data. Implementation requires a five-year transition with early years being proportionally more determined by current budget proportions.

Like RCB, RDB gives departmental allocation control to the schools and colleges. Much of the school or college budget internal allocations, however, are partially determined by central administrative action. Union contracts, benefit levels, tuition prices, tuition discounts, and need-based student financial aid all policy will limit full flexibility within a school or college's internal allocation. Nevertheless, schools and colleges may be given the opportunity to set tuition differentials within guidelines, faculty salaries (unless there are bargaining unit limitations), and school or college student financial assistance programs. While budget allocations will be determined at the school or college level, information will be provided at the department level to assist the school or college in making departmental allocations.

Revenue Directed Budgeting differs from Resource Center Budgeting in that schools and colleges are treated much less like separate businesses. Support and central service expenses are not allocated to revenue centers according to an allocation formula. The expense of increasing general levels of service is traded off against the expense of increasing general levels of support for academic areas by upper administration. The starting point of the trade of is at the lowest ("survival") level of service, allowing a maximum level of central support above tuition (or a

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minimum of a central net charge for services, depending on whether central revenues exceed central expenses). Support and central units' cost control is accomplished through service-level decisions and a trade-off between general service levels and academic unit funding, not social persuasion.

Central appropriations are not used as a "hold harmless" starting point. Instead a transition period begins with the current budget proportions and slowly moves to one determined more by net tuition revenue secured by attracting majors. At the end of the transition, central revenue net of central expense also tracks net tuition from majors.

Unlike the Indiana version of RCB, RDB allows a school or college in which students take most of their initial course work outside of the division to benefit as soon as the year after an increase in majors. The marginal cost of external credits will generally be less than the marginal net revenue brought by the major. At Indiana all tuition went to the area offering the course; no direct credit was given for the efforts of curriculum design, and recruiting and advising majors. RDB is designed to strongly motivate the recruitment of majors, without punishing service course departments.

As at Indiana, a central pool is used to finance new ventures and unusual one-time expenses. Indiana funded the pool with an invariant 20% of marginal revenues. The size of the pool under RCB is determined by resource availability, the appeal of investing in new ventures, and the necessity of the one-time only purchase.

Schools and colleges may run surpluses. These surpluses may be rolled over for one-time only projects, but only after a lag of a year to allow exact calculation. Surpluses may not be used to support on-going costs and will be maintained in a separate fund. Rollover additions will be specifically budgeted before budget balance is managed.

Schools and colleges may similarly run deficits, if they are unable to move expenditures in line with budgets. During the transition, the move to greater dependence on tuition revenue may force consideration of personnel reductions. These decisions are never made easily, and the delay will result in a deficit. Because deficits are also rolled over, the difficulty of balancing revenues with expenditures is increased in the following year. Several years of deficits above a minimum level will put heavy pressure on MTU to discontinue the area. Schools and colleges with individual departments running deficits will need to consider special actions, including merger and discontinuance.

RCB attempts to simulate a business environment where decisions are made as though divisions were companies selling credits. RDB is an incentive budgeting system that rewards a division's ability to attract student majors and control costs, while service courses are supported and paid for equitably.

By avoiding allocation formulas for central expenses and revenues, budget calculations for schools and colleges are simpler than under RCB. Nevertheless, the use of service-level budgeting for functions not supported by direct or earned revenues adds a level of complexity. Service unit budgets at Indiana were formula driven, but incentives to deviate from the status quo are not evident. USC's implementation of RCB also depended on a simple method of allocating budgets to

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service units. As noted above, each unit's budget was reduced annually by 3% and the reductions were placed in a central incentive pool.

Several of the limitations of RCB need to be addressed in RDB as well. Schools' and colleges' determination to decentralize services, especially those associated with revenue generation, will be very strong. Several schools and colleges have already hired recruiters and fund raisers. The trade-off between efficiency and effectiveness will undoubtedly be won by effectiveness. MTU will need to initiate coordinating committees for these functions where representatives of the schools regularly meet with central effort representatives to attempt to coordinate activities. These activities should be explicitly sanctioned, and schools and colleges should understand that what is not sanctioned is forbidden. These units must not presume that they are allowed to dabble in cash handling or facilities work, for example.

In RDB, central fund pools may used to fund projects where financial incentives for schools and colleges may be low. These low-incentive projects include those necessary to gain expertise in areas with only potential (and not current) research and tuition revenue attraction. They also include cross-divisional course support and research endeavors.

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V. System Description—Service/Revenue Budgeting (SRB)
Service-level and Revenue Directed Budgeting Combined (Item 5 on Deliverables)

Organization: Roles and Responsibilities. This section provides an idea of the roles and responsibilities of participants in the construction of the budget. Because the recommended process includes several new decision points and calculations, new tasks and responsibilities need to be assigned. This organizational nomenclature is presented at this point to make the implementation discussion in the next section easier to follow.

President

Very early in the implementation the president will need to nominate members of the Budget Committee. This group has the responsibility for making the primary, strategic decisions of the process. I recommend that the committee be small and willing to make difficult decisions, consisting only of the president, provost and CFO. A larger, more representative group is possible, but the Budget Committee must have a strategic view of the entire university. Members should be willing to work only for the good of the university as a whole, and not fall into partisan wrangling.

The president will approve the final budget to be sent to Board of Control. The president makes the final assessment as to whether the process has yielded the optimum budget for the university.

During the year, the president is solely responsible for authorizing budget transfers from the central contingency. The central contingency should be regarded as holy ground. Any time funding for an activity with no existing budget is approved, the contingency must be used. Excessive approvals will lead the institution into deficit. Known revenue shortfalls should be reflected in transfers out of the contingency budget to decrease the "short" revenue budget. A report, listing transfers from the contingency (and into the contingency when budgets are "taken up"), becomes a record of the institution's struggle to maintain budget balance. The president is accountable to the Board of Control for maintaining the approved budget balance. The president, therefore, must give his approval of any actions that would change that balance during the year. The nature of this report will be discussed more below.

Budget Committee

The Budget Committee will appoint members of the Budget Staff, the Incubator Committee, and the Major Expense Committee. The Budget Staff is a large working group that processes much of the data needed for constructing the budget. The Budget Staff will include people from a broad range of offices and departments. This group will meet regularly to coordinate activities and share data. It is not a policy-making group. The Incubator Committee should consist of five to seven members, predominately from academic administration. Its duties are discussed in more detail below. The Major Expense Committee should also consist of five to seven members and be roughly balanced among academic, support and central service administrators. By soliciting and approving projects within budgets set by the Budget Committee, the later two groups will be making policy decisions.

The Budget Committee will set assumptions for central revenue calculations. While calculations for tuition revenue will be based on the previous year's actual results, allocations will

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be based on assumptions regarding budget support to be expected from other central revenues and transfers for the budget's fiscal year. These include the appropriation, unrestricted gifts, investment earnings, transfers from auxiliary services and transfers from/(into) reserves. Principles for these assumptions will be discussed below.

The Budget Committee will set service course exchange rates. A recommended methodology will be presented below. Nevertheless, even with this methodology, judgment will be needed. The rates need to be set such that service departments are motivated to offer service courses, and major departments are motivated to send their majors to these courses, instead of developing their own. The difference between the "buy" and "sell" prices will have to be subsidized. The larger the difference, the higher the subsidy, and the lower available funds will be to allocate for the support of student majors. Also, the basis of the prices should rely on simple measures to make the anticipation of transfer payments a more reliable incentive.

The Budget Committee will make the final decision on balancing service levels and central pool levels against academic support levels. This is a fundamental, strategic set of decisions. The budget process uses a number of parameters to allow trading off of major funding allocations. As higher service levels are approved for support and central administrative areas, funds become less available for central pools (Incubator, Major Expense, and Contingency) and become less available for allocation to academic departments. The primary decisions in this context are:

The authorization of service levels. While recommendations for service levels and the resulting necessary budgets for support and central areas will come from the vice presidents and other budget officers with broad responsibilities, this committee will make the final adjustments as a trade-off between primary areas. A budget-service-level calculation matrix will be presented below.

The determination of the size of the Incubator Pool. This set-aside will fund investments in start-up activities based on proposals recommended by vice presidents. This pool may also be used to subsidize cross-divisional activities. In general, funding will last for no more than three years for any project.

The determination of the size of the Major Expense Pool. These projects will be for one-time only expenditures.

The determination of the size of the central contingency to be recommended along with the total budget to the president. This decision is based on a determination of the risk of revenue shortfalls from estimates, the probability of expense control failures (for example, unavoidable, but necessary, unbudgeted expenditures), the size of other available reserves, and an understanding of the risk tolerance of the Board of Control. Discussion of the mechanics of this is given below in the section on calculations.

The Budget Committee will also be responsible for determining when to suspend an activity. Although a significant decline in budget support generated through the workings of the budget process will be a strong indicator of the need to suspend an activity, this decision is, in fact, independent of the budget process. The Budget Committee will need to set the parameters that

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indicate the need for such a decision, for example, three years of division deficits in excess of $500,000. The Budget Committee will also need to determine if an expanded process is necessary for evaluating the decision. Does an all-university committee need to provide input on recommendations to close offices or halt services in response to indicated failure, as measured by the Budget Committee's parameters?

Budget Staff. The Budget Staff is a large working group with representatives from the Provost's Office, budgeting staff from schools and colleges, representatives from Institutional Analysis, a member of the Major Expense Committee, a member of the Incubator Committee, a representative from accounting, and the CFO. This group will be headed by the Director of Budget and Planning. The CFO will provide liaison to the Budget Committee. This group should meet weekly during the peak period of budget development. The group will determine the budget impact of the assumptions and policy decisions of the Budget Committee and the results of calculations delegated to its members. When the Budget Staff finds it necessary to make assumptions during budget calculations, the assumptions should be clearly presented to the Budget Committee for their endorsement or modification. The Budget Staff should avoid taking responsibility for assumptions that affect risk levels or assumptions that appear to set policy. The primary responsibilities of the Budget Staff include:

Developing the five-year, primary planning variable, budget projection model. Attention should be paid in a five-year projection to the impact of financial policy and major environmental events. A detailed budget projection often produces only confusion. A model that allows manipulation of overall trends in enrollment, tuition levels, salaries and benefits, investments in new programs, and trends in other costs can show the possible impact on financial condition of adjustments to policies (like long-term salary increase goals). The model should also allow preliminary trade-offs of central budgeting coefficients by the Budget Committee. In this way preliminary estimates for the Incubator Pool and the Major Expense Pool may be sent to those committees. Banner has the capability to do expense budget projections and, with sophisticated use, will allow detailed elements to be combined to allow the testing of changes to some primary planning variables. Spreadsheet projection models, however, are needed to combine expense projections and revenue projections. Complex projection models are available that combine current fund budget projections with changes in other funds to give projected changes to the balance sheet and cash position. A budget projection model that is closely aligned with the structure of this budgeting proposal can assist the Budget Committee in making trade-offs and testing the impact on future budgets of recent decisions and projected one-time only major expenses.

Estimating central revenue for current year. Using the assumptions developed by the Budget Committee, the Budget Staff will develop the central support budget based on projections of appropriations, unrestricted gifts, investment income, transfers from reserves, and transfers from auxiliaries for each set of assumptions. This will be an iterative process, because of the need to trade the optimism in revenue assumptions against the risk protection of a contingency, and the constant inflow of new information. This task should be delegated to the Budget and Planning Office.

Writing the Budget Guidelines and the Service-level Request Package. These documents prepare the campus community for the budget process. The topics to be covered in the

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Budget Guidelines are listed in Appendix B. The budget guidelines are designed to describe the process, present major assumptions, list critical dates, and define responsibilities to the campus community, especially budget officers. The Service-level Request Package (also outlined in Appendix B) is a more detailed document for budget officers in areas that provide services unsupported by direct revenues.

Constructing the service-level budget matrix. There are only three determinants of a service area's budget: earned revenue, charge-backs (including charges for the provision of service courses), and service-level funding. Each vice president will submit to the Budget Staff budgets for all functions in his or her area at each service level (up to five), and a recommended service level for each function. Under guidance from the Budget Staff, the Budget and Planning Office will develop a spreadsheet that sums all budgets for each function at the recommended service level. This spreadsheet will allow a quick recalculation of the total budget allocated to service functions with any adjustment to a function's proposed level of service.

Calculating school and college earned revenue using the previous year's actual earned revenues and census-date enrollment data. Under this methodology, each school and college (calculated at a departmental level) earns budget dollars according to the net tuition payments of each of its departmental majors during the previous year, calculated at the budget year's tuition rates. This calculation requires enrollment data as of each semester's census date by major summed by department. (Summer enrollment and net tuition revenue may need to be estimated early in the project. Estimation errors should be corrected by transfers from contingency before the start of the fiscal year.) The tuition charged to each student and any institutionally-funded scholarships, grants, discounts and fellowships awarded by the department, school or college should be summed similarly as of each semester census dates. This revenue must be discounted by the university-wide proportion of institutionally-funded scholarships, grants, discounts and fellowships that are awarded according to a central policy and not at the discretion of the department, school or college. Separate revenue discounts should be calculated for graduates and undergraduates. The Office of Institutional Analysis will be primarily responsible for these calculations.

Calculating the course exchange matrix. Based on the "buy" and "sell" prices assigned by the Budget Committee and the current year's "import/export" table by departments, Budget Staff will assign budget additions for providing service courses to other schools and colleges (detailed at the department level) and budget deductions for majors taking courses outside of the school or college. The "import/export" table, developed principally by the Office of Institutional Analysis, shows the total number of semester credits in the current year, as measured on the census date, taken by majors in each external department. The intra-school/college departmental transfers would be for information only and would not affect the calculation of each school or college transfer payment/receipt.

Calculating the Exchange Payment Subsidy. The Budget Staff will need to calculate the difference between total payments for instructing students outside the school or college and total charges to schools and colleges sending students.

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Vice Presidents. "Vice Presidents" is shorthand for the group of administrators who report directly to the president and who have responsibility for one or more offices or departments. The CFO, for example, is included in this designation.

The most important budgeting task for vice presidents is to negotiate service-level budget options with area and office heads. Responsibility for soliciting service-level proposals and budgets, and recommending service levels should be delegated down the hierarchy as appropriate. The vice presidents are responsible for providing the Budget Staff with a complete set of function service-level options and budgets for each option their areas. The vice presidents will also have responsibility for submitting service-level recommendations and budgets for each of their functions to and under the guidance of the Budget Committee.

Incubator Committee. Incubator Committee members are the venture capitalists for the university. New efforts that are intended to be self-supporting after a start-up period may be funded by grants from this pool during the incubation period. Incubator pool support for a project should be limited to three years. Note that funding equilibrium may take three years before the probability of projects going off funding would equal the possibility of those added. The major tasks of this committee include:

Setting guidelines for funding proposals. The committee should publish guidelines for proposals, including priorities (perhaps reflecting priorities in the academic plan), required structure and format of the proposal and budget, and deadlines. Proposals should be required to include sections on how support will be developed for this effort after the incubation period and how the project will be evaluated for success at each stage.

Developing a listing of projects in priority order (in the judgment of the committee) within estimated resources to be put in pool. The five-year financial projection, as guided by the Budget Committee, will produce a projection of the size of the Incubator Pool. The list of priority projects will be submitted to the Budget Committee before they set the final parameters of the budget. In setting the parameters, the Budget Committee will be trading off the value of funding more of the projects against other priorities. The final approval for funding individual projects on the list comes from the Budget Committee. The minimum amount that must be budgeted is the amount that would allow continuation of projects approved for renewal by the Incubator Committee.

Evaluating committee-funded projects annually to determine whether to renew funding. In the time before the deadline for proposal submission, the committee should request progress reports from all projects that are eligible for renewal in the following fiscal year (those that would not have reached the time limit). Projects where interest has flagged or where the prospects for future self-funding have dropped significantly should be considered for non-renewal.

Major expense committee. This committee will function somewhat similarly to the Incubator Pool Committee. The major expense pool is intended for one-time expenditures that are difficult to fund from on-going budgets. In general, the proposals will be for capital items that must be supported by the general fund. In many cases these projects will represent investments in automation to gain efficiency. They may also be for investments by departments to improve future earned revenues, especially in departments running deficits with little initial possibility of building

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carry-forward reserves. New faculty support, hardware, software, infrastructure are all contemplated as possible requests. This committee will also need to develop proposal guidelines and then rank proposals within an estimated pool level for the budget year. Ranking will be based on a quantitative and qualitative assessment of the long-term benefits of the expenditure against its cost.

Deans' budget staffs. In this section on roles and responsibilities, it is important to note that each school and college will be given a lump sum budget, determined by the methods described below. The task of allocating these funds among the departments is left to these divisions. The Board of Control should be asked if it wishes to see the academic department allocations before they approve the final budget. If so, the allocations have an early deadline. If not, the allocations should still be done well before the fiscal year starts in order to allow enough time for payroll and departmental budget set up. Allocation methods, decision responsibility and technical support responsibility will vary by school or college.

Process description: the annual cycle of calculations and decisions. The order in which information is needed and used is important in this process. A number of the sub-processes require long lead times and should be done in parallel with other sub-processes.

1. Set service-level budget options. This task is put first because it requires the most training, development and negotiation time of all tasks. This task will primarily be undertaken by office directors. Each budget officer should consider whether he or she has any functions that fit this description (not supported any other way) and then should develop the options for these functions.
    a. Determine functions within offices and departments that require support *outside of* tuition and other revenues directed to schools and colleges (for example, gifts designated for use by a particular school and indirect cost recovery net of cost sharing of grants with project directors primarily in the school). Include budgets for self-supporting charge-back endeavors (for example, laboratory renovations, copy shop, and so forth) in the list of functions. These self-supporting budgets will be offset by the amount of anticipated charge-back transfer.
        i. The functions should be complete. If a function is not supported by a service-level budget, a charge-back, a transfer charge (for service courses), or earned revenue, it is not supported at all. The list of functions should represent all budget items not otherwise supported.
        ii. The functions should be aggregated such that a single service-level decision may be applied to the set. As noted above, the facilities area has the option of combining large categories like building maintenance and building custodial care, if the service levels of those two service units should always be linked. The bursar's office, however, may not want to aggregate the options for service and budgets for student billing and for third-party billing, if it contemplates the possibility of operating the functions with different standards of responsiveness, for example.
        iii. Functions should not be overly aggregated. Combining unrelated functions prevent the university from making service-level distinctions.
        iv. The list of function areas should be approved up to the vice presidential level, before the next steps are taken.

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v. An short list of sample functions can be found in Appendix A**.**

b. Describe base-level operations for the function. In no case should the base-level option (service level one) describe tasks not currently undertaken or qualitative improvements in service over that currently provided. The base-level budget may never exceed the current budget. In many cases, a supervising administrator may insist that base level be described and budgeted at lower levels than currently, if the administrator believes that the lower option is viable and worth examining as a way of re-allocating resources.
c. Describe the top or fifth service level. In this case the description includes the additional services that would become available, if the function were operated at a level that would effectively compete with the best private, technical universities.
d. Describe no more than three intermediate service levels. (In the service-level matrix, if there are less than three intermediate service-level options presented, the missing service levels should show the next lowest budget. This prevents the possibility of a zero budget inadvertently being put into the calculation.) Extra care should be taken with the second service level. It should describe a reasonable increase in service above the base level. The budget increment for this first step up should be as low as possible to allow serious consideration of the upgrade.
e. Determine the resources necessary to achieve each service level. Especially note any changes in staffing.
f. Determine the necessary budget to support the required resources for each service-level option. Include in the resource descriptions one-time only major purchases. Do not include these purchases in the budget total for the option. Funding for one-time-only major purchases must come from the Major Expense Pool. The proposal for funding should note the link to the service level. In the proposal the relevant vice president should indicate the probability of selecting that service-level option for funding.
g. Deduct from the total request the anticipated transfers that will cover self-supported functions.
h. Office directors should submit their complete function service-level option descriptions and budgets to their supervisors.
i. Supervisors should evaluate the descriptions and request amendments. The criteria for judgment include:
    i. Completeness. Do the functions cover all budgets not otherwise provided for?
    ii. Adequacy of description. Is there enough description for an administrator to make a reasoned choice among options?
    iii. Accuracy of budgets for options. Are the budgets sufficient without being excessive to provide the additional services at each level?
    iv. Accuracy of the end point options. Does the base level really reflect only those services necessary for university survival? Does the top level really reflect only what is necessary to bring the service in competition with the best?
    v. Are the steps up from base-level funding reasonable for consideration for funding in the coming year?
j. The appropriately amended service-level descriptions and budgets should be passed up to the vice president for the area.
k. Vice presidents should approve the descriptions and budgets or request amendments as above.
l. Vice presidents in consultation with appropriate staff should develop a priority order of service-level improvements to consider and send these to the Budget Committee.

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m. Vice presidents should submit to the Budget Staff a copy of the division's service-level descriptions and budgets by function and option.
n. The Budget Staff will construct the Service-level Budget Options Matrix.
o. During the budgeting process the Budget Committee will attempt to include in the budget the highest priority service level increases submitted by the vice presidents.

2. Determine school and college earned revenues. This task will largely fall to the institutional analysis office, although the accounting office will also have data to provide. The process goes from data collection to calculation.
   a. Determine who controls the level of funding for each institutionally funded scholarship, discount, grant, and fellowship program. Who controls how much and/or how many? There are two categories of control: (1) schools/colleges or departments, and (2) a central support or service office.
   b. A database will need to be created that holds each student by major, total tuition and any non-directed fees (a lab fee creates a self-funding budget, for example, and should not be included), discounted by any category (1) financial aid from above. These calculations will be based on enrollment information at the time of each semester's census date. Summer session may need to be estimated based on the previous year's information.
   c. Category (2) financial aid should be summed by award program. The financial aid office and graduate college will use this information to develop service-level funding options for these programs (these contra-revenues are treated like expenses for budgeting purposes).
   d. Sum the tuitions and fees less department, school or college controlled financial aid by major and allocate to departments.
   e. Add to department net tuition and fee revenue any unrestricted gifts or endowment pay out earmarked for use by the department.
   f. Add to this department calculation the indirect cost recovery net of true cost sharing earned to-date from funded projects, extrapolated to the end of the fiscal year. True cost sharing includes only the replacement cost for released faculty time. Cost sharing a portion of a faculty member's salary to work on the project does not cause the university to incur an expense equal to a portion of the faculty member's salary. All of indirect cost recovery is included as income to the school or college because of the desire to maximize the incentive to pursue grants, especially those with higher net indirect recoveries. While the basis of the calculation recognizes the increased burden to central services resulting from support of these grants and contracts, the decision on budgets for central support and administrative areas rests on the requirements to provide service at appropriate levels and total available funds. This decision is reasonably independent of the level of funds brought in by indirect cost recovery.
   g. Add to calculated departmental earned revenues any other unrestricted revenues directly earned by the department.
   h. Sum these revenues by school or college.

3. Calculate central revenue. Central revenue includes all the appropriation, unrestricted gifts and pay out from unrestricted endowments, except for those portions of each that are earmarked by the legislature or the Board of Control for a school or college. Central

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revenue also includes revenue from external charges by service units. This revenue should equal the amount added to the service-level expense budgets as functions supported by external funds. Successful lobbying by a department for a special appropriation addition should be recognized, as should gift designations by the board to recognize effort by the department or a departmental connection to the donor.

Transfers from unrestricted reserves and the auxiliary fund, as determined by the Budget Committee, are included in central revenue. Auxiliaries should continue to be treated like a separate business and taxed for central support. This tax goes directly into central revenue and is not allocated to the support departments used in estimating the tax. The Budget Committee must decide how much of the auxiliary fund accumulated net revenue should be used to support central revenues and how much should be available for auxiliaries to invest in operations. The decision on the size of the transfer may require several iterations through the budget calculations as other parameters are refined.

Total central revenue includes any other revenue that is neither restricted, nor allocated to schools and colleges.

4. Calculate the course exchange payment subsidy. The steps at this stage are outlined below.
   a. The first step is to set the price to be paid for each credit taken by a student majoring outside of his or her home school or college. I recommend that the per-credit price be uniform regardless of net tuition paid by the student or the expense level of the offering department. This will greatly simplify what could be an extremely difficult calculation. In order to inhibit the motivation for the home division to offer its own version of the service course, the price paid by the sending department should be set at the lowest cost to offer the course. This would be the all-university average cost per credit for the salary and benefits of a lecturer (or adjunct).
   b. The Budget Committee should then set the amount to be received by the department offering the credits taken by majors outside of their home division. Once again the need for simplicity dictates a uniform amount per credit. The amount received by the offering school or college should be high enough that there is no motivation to lower costs with little decrease in transfer payments by dropping service courses. The amount should approximate the cost. I recommend using the all-university average assistant professor salary and benefits per credit of a full teaching load. If the modal service course is taught by, for example, an associate professor, then a higher cost per credit should be used.
   c. The payment subsidy is found by multiplying the difference per credit between the "buy" and "sell" prices and multiplying this by the total number of credits taken during a fiscal year by students outside of their home school or college.

5. Calculate the budget transfers among schools/colleges by department. These calculations are done by department, but the budget change is made only to the school or college total. The information by department is passed on to the divisions for use in their allocation decisions. The number of credits taken by students outside their home departments and in departments within the school or college should also be made available to the schools and colleges. No budget changes for the schools and colleges will be made based on these intra-

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divisional service exchanges. An attempt should be made when doing the credit attributions to avoid counting as an exchange credit any credit taken in a cross-listed course where one of the sponsors is the in home division. This may be a difficult undertaking in Banner.

a. For each student credit hour taught to students from majors outside the school or college, the school/college should receive an increase to its budget in the amount of the "sell" price (the average assistant professor per credit salary and benefit cost).
b. For each student credit hour from a course taken by a school or college's majors outside of the school or college, the school or college should receive a decrease to its budget (a subtraction from the school or college's earned revenue) in the amount of the "buy" price (the average lecturer per credit salary and benefit cost).

6. Estimate the necessary amount for contingency. This estimate will be based on a determination of the risk of revenue estimate shortfalls, the probability of unavoidable, but necessary, unbudgeted expenditures, the size of other available reserves, and an understanding of the risk profile of the Board of Control. By approving the budget, the Board of Control is approving an estimated chance of a deficit. Their willingness to take that chance should be accurately reflected in the size of the contingency. The rule is: the more risk averse the board, the higher the contingency. The contingency may also contain an offset equal to the probable impact of an enrollment increase on revenues.

7. Set central pool budgets maximum levels. At this point the Budget Committee has enough information to set the maximum level for the Incubator pool and the Major Expense pool combined. The total of these pools should not exceed central revenue less the exchange payment subsidy, less the tentative contingency and less the total required for funding service functions at base level. If service function budgets exceed central revenues, then funding for these pools and deficits must be drawn from income earned by schools and colleges.

   The amount available for the pools, if positive, represents the amount that can be used to fund the pools, increase service levels above the base, and allocate to the academic divisions. Service levels and the pools should be held to a minimum to keep academic divisions from experiencing a decrease in funding.

8. Set residual through trade-offs. The residual is the actual amount to be transferred from central resources (positive or negative) after deducting funds for pools, the exchange payment subsidy, and service function budgets. Three competing interests (with many sub-interests) must be balanced: the desire to raise service levels, the need to fund each of the central pools generously, and the need to improve total funding for the academic areas over the previous year. Given the current size of the appropriation, the amount available for the residual, before increasing service levels and funding the pools, will continue to be positive for many years in the future.

   Nevertheless, the current difficulty with balancing the budget leads me to believe that even the entire residual will be insufficient to provide funding for the academic budgets at their current level. Rather than pass the entire shortfall to the academic areas, service departments will have to be reduced below base levels and the incubator and major purchase pools will be forced to be unfunded. This budget methodology is not intended to

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provide short-run solutions. Many of the recommendations from the budget reduction committees seemed to be very worthy of implementation.

9. Add or subtract carry-forwards to schools and colleges (only). The incentives to increase earned revenue and control cost are diminished if schools and colleges cannot carry forward the excess of final, actual earned revenues over expenditures. Conversely, an excess of expenditures should be applied to the next budget allocations to fully activate the incentives. At this point in budget construction, however, only the previous year's actual carry-forward can be computed. Unless the deans feel that the lag of a year greatly reduces the desired incentives, the previous year's actual should be added to the next year's budget. If this is not possible, an estimate of the carry-forward for the current year should be added or subtracted from the calculated school and college budgets, and an adjustment to the budget will need to be made, based on actual results, during the budgeted fiscal year at the close of the books.

   Support and central offices should not be included in this step. Support and central service budget officers are to provide service to best of their capability within the budget option selected. They are expected to spend wisely. Without earned revenue, performance must be judged against a standard, not against financial results.

   In advance of implementation, the board should decide how these carry-forwards are to be funded. If they do not wish to use previously accumulated reserves, then the budget must be balanced after the inclusion of these amounts in academic budgets with no adjustment to contingency. If they wish to use reserves, then net total carried forward should be subtracted from budgeted contingency and a lower contingency used. This effectively budgets the expectation of a deficit (if the net carry-forwards are positive), which will use previously built reserves. A surplus may also be budgeted by adding more funds to the contingency than are expected to be used in carry-forwards. This will restore reserves.

   The board may also set a "tax on profits" by only carrying forward a proportion of a school or college's excess of actual revenues and transfer payments over expenditures, like 75%. The tax recognizes central administration's role in assisting the division to gain financial success. The tax could be added to contingency to help maintain balance and to better prepare the university for unforeseen difficulties.

10. Calculate individual school or college budget (under the "new" method, before the transition adjustment). Each school or college will receive its earned revenue, a similarly allocated portion of the residual (using the same proportion as the school or college's proportion of earned revenue), its net service course exchange payment, plus any allowed carry-forward adjustment.

11. Apply transition formula. The transition to the new budgeting process is structured for academic divisions and unstructured for service departments. The transition for service departments is managed through the process of setting service levels. The change in budgeting systems by itself does not force a change in the current budget of any service function, although the requirement for budget balance may do so. The choice may always be made to maintain the current service level and required budget for any function.

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Because the budgets for schools and colleges, however, are revenue-driven, a sudden implementation could drastically affect their budgets. The transition period is designed to give schools and colleges time to adopt strategies to become successful under the new system. The intention of the transition is to give every department a chance to gain funding to fully support its efforts at the desired level. A transition period of five years is recommended, beginning after a final year of budgeting under the current regimen.

The transition averages the final year's funding under the current regimen (the "previous" budget) for a school or college with the funding calculated using the formulas above (the "new" method). The weighting of the "previous" and "new" shifts from strongly favoring the "previous" amount to strongly favoring the "new" amount over the five years. The full transition should take five years and the weights should shift as follows:

a. Year 1, 90 % previous -10% new;
b. Year 2, 75 % previous -25% new;
c. Year 3, 55 % previous -45% new;
d. Year 4, 35 % previous -65% new;
e. Year 5, 15 % previous -85% new; and
f. Year 6, the first year after the transition, 0 % previous -100% new.

To assist in preserving budget balance, no increases to the amounts used in the "previous" budget should be added for salary or other cost increases from year-to-year during the transition. That burden should be taken up by improved results with the "new" portion of the calculation.

12. Determine budget balancing coefficient. Application of the transition formula may throw the budget balance achieved at the step when trade-offs set the residual. While the "new" methodology is constructed such that initial budget balance is forced, the averaging in for the academic budgets of a portion of their "previous" budgets from before implementation throws balance off. There are several approaches to "re-balancing."

    a. Go back and re-do the new method trade-offs. By redoing the trade-offs in order to bring enough money into the contingency to cover the deficit (after transition averaging), strategic allocation changes may be made. Particular service levels may be lowered, pools may be decreased, and the residual may be decreased. Note, the impact of lowering the residual added to academic budgets will only aid budget balance in proportion to the transition coefficient applied to the new budget. For example, in year three a reduction to the residual of $100,000 only reduces expense budgets by $45,000 because of the application of the 45% transition formula.
    b. Full across-the-board. A coefficient may be applied to all budgets and pools to bring the budget in line. While computationally elegant, this procedure undermines service-level budgeting and the rationale for budgeting for the pools, and somewhat weakens the intended revenue incentives.
    c. Academic across-the-board. A coefficient may be applied to academic budgets alone, after the application of the transition formula, to bring the budget in line. This preserves the integrity of the service-level budgeting process, but weakens the earned revenue enhancement incentives during the transition.

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d. Sequential. After the application of the transition formula, selected budgets are decreased to bring the budget in balance. The order of application may be:
    i. Reduce the pools as much as possible.
    ii. Reduce service levels for selected support and central functions.
    iii. Reduce individual school or college budgets.

12. Determine university general fund budget. At this point the balancing, application of transition coefficients, and re-balancing is complete. The university budget at the function, pool, and college and university level has been calculated. Revenues have also been projected. Function budgets must be aggregated to create office and divisional allocations. This step is largely confined to formatting.

13. Approval of the allocations by the president. At this point the president may request modifications to the allocations. His or her membership on the Budget Committee, however, should allow this step to be a formality.

14. Schools and colleges allocate their budgets among departments and line items. Support and central divisions allocate office budgets to line items. At this point, only allocations to schools, colleges and offices are set. The process calls for a decentralized development of detailed budgets within the school and college allocations.

15. Approval of the budget by the Board of Control. Although line item allocations (like, office and department personnel, supplies and services, benefits) may not be necessary at this point, the budget presented to the board should provide the completed allocations to academic departments, if requested.

Calculations/formulas. The process description above refers to a number of formulas. This section presents the calculations in a more quantitative format.

Service-level budget options. Step one in the process calls for the construction of a service-level budget matrix. This matrix allows the impact on the total budget for all service functions to be determined each time a new service-level option is tested for a function. A matrix using only a small sample of arbitrary functions and budget options follows.

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Row #		Service Levels & Corresponding Budgets					Selected	Resulting
1	Function	**1**	2	3	4	5	Level	Budget
2	Recruiting	2,000,000	3,000,000	5,000,000	8,000,000	12,000,000	2	3,000,000.00
3	Facilities cleaning and maintenance	3,000,000	3,200,000	3,400,000	3,800,000	4,500,000	3	3,400,000.00
4	Library services	2,500,000	2,600,000	2,800,000	3,300,000	3,700,000	5	3,700,000.00

Service function budget total:	10,100,000.00
Less self-support transfers	-200,000.00
Total service functions request	9,900,000.00

This spreadsheet is set up such that the selection of a new service-level option for a particular function (by changing the "Selected Level" number in the yellow column for that function), changes the budget for that function and the total.

The grey area is a "named" set of cells (in this case "Bud"). The formula in the "Resulting Budget" column contains a horizontal lookup, keys off of the number in the yellow column, and inserts that level's budget into the "Resulting Budget" column. [For Library services the formula is =HLOOKUP(H6,Bud,A6) where H6 is the yellow column and A6 is the Row #, and 6 is the Library Services absolute row number.]

School and college earned revenue calculation. For each department in a school or college add the following items:

Sum of Tuition and Non-directed Fee Revenue from all Majors in the Department	_	Department Determined Student Aid to All Majors	+	Earmarked Unrestricted Gifts and Endowment Payout	+	Indirect Cost Recovery on All Department Grants & Contracts	_	True Cost Sharing on Grants & Contracts	+	Other Unrestricted Department Earned Revenue

School or College earned revenue is the sum of the earned revenue of the school or college's departments.

Total Central Revenue. This is a summation.

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State Appropriations Not Directed to a School or College	+	Unrestricted Gifts and Unrestricted Endowment Payout Not Designated to a Department	+	Fund transfers from other funds including Auxiliaries	+	Auxiliary Fund Tax	+	Other Revenue Not Designated to Departments Plus External Charge-back Revenue	+	Transfers from Unrestricted Reserves

Transfer Payments for Service Courses. The credits for any course outside of a student's major school or college in which that student is enrolled on the census date of each semester trigger a transfer payment. Transfer payments are based on the number of credits that are imported and exported. The school or college in which the student has his or her major "imports" credits and is called the "home" school or college. The school or college in which the student takes the course "exports" the credits. Although the data is collected by department, only courses taken outside of the home school or college (not just in a department outside of the home department but still inside the home school or college) are counted as imported or exported. A sample import/export table is shown below. These three departments happen to be in different schools, as indicated by the non-zero cross-tabs between any two.

Departments		Credits Imported				Total
		Dep't. 1	Dep't. 2	Dep't. 3	...	Exported
Dep't. 1	Credit Exported	0	603	10	...	...
Dep't. 2		400	0	95	...	...
Dep't. 3		127	5	0	...	...
...		...	...	...	...	...
Total Imported		...	...	...	...	...

The total imported by department is the total of all credits that department's majors took outside of the school or college. The total exported is the total of all credits taught by that department to students with majors outside of that department's school or college. Students with majors in department 1 took 400 credits in department 2 and 127 in department 3. Department 3's majors took comparatively fewer credits outside of the home school. Department 2's students took many credits from department 1 and few from department 3. Departments in the same school or college would show no imports or exports between them on the table.

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The transfer payment for credits exported, or credits "bought," is the total exported for the department times the per-credit "buy" price. This becomes a deduction in the school or college budget calculation. The transfer payment received for credits imported, or credits "sold," is the total imported for the department times the per credit "sell" price. This is an addition to the school or college budget calculation.

Contingency Calculations. Most institutions set their contingency fund at the level they have needed in the past. A check on this method is to sum the probable outcomes of various possible needs. Probable outcomes are valued at the impact of the outcome times its probability. The set of calculations might have elements like the following.

Event	Possible Impact	Estimated Probability	Required Contingency
$1 million reduction in appropriation	$1,000,000	10%	$100,000
$5 million reduction in appropriation	$5,000,000	0.2%	$10,000
A 2% drop in enrollments below last year (used for earned revenue calculations)	$1,500,000	30%	$450,000
$200,000 item that must be purchased	$200,000	50%	$100,000
Total estimated required contingency			**$660,000**

After examining this table the board could indicate its discomfort with the risk, and say that they felt there was nearly a 100% chance of a $1 million appropriation shortfall below the budgeted amount. An additional $900,000 in contingency would then be required. The board might also accept that the 2% drop in enrollments could be absorbed by existing reserves, if it occurred, and the budgets of the academic divisions would be reduced the next year through the carry-forward mechanism, replacing the lost reserves. This would allow a $450,000 decrease in the required contingency. Most people take large gains or losses more seriously than the probability of occurrence requires. The board would be in line with normal perceptions if it said that $10,000 was insufficient preparation for a $5 million loss, even at that low probability. The amount must then be adjusted.

This example illustrates a method of quantifying the interplay of the risk and size of a negative event, the use of reserves, and board risk tolerance in setting the contingency.

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Calculation of the Residual. The residual is the difference between central revenue and central expense responsibilities. The residual is found by adding or subtracting, as indicated, the following items.

Central Revenue	-	Total of All Budgets for Support and Central Services Funded by SLB	-	Allocation to Incubator Pool	-	Allocation to Major Expense Pool	-	Central Con-tingency Fund	- Exchange Payment Subsidy

The residual is added to the budget of the schools and colleges. At this point Central Revenue and the Exchange Payment Subsidy should be fixed. Since the Exchange Payment Subsidy goes to the schools and colleges, there is no trade-off to be done against the size of the subsidy and the residual. Decreasing the subsidy by bringing the "buy" and "sell" prices of service credits closer together leverages earned revenue and decreases both the cost of and payment for service credits. The contingency may be relatively fixed at this point because it should depend on the revenue risk and expenditure control risk assessments. Nevertheless, I have no doubt that changes to the contingency will be part of the trade-offs made at this point. Increases in service levels and in allocations to the pools shrink the residual. This is the fundamental budget trade-off.

Allocations to Schools and Colleges. Once a tentative residual has been determined, a trial set of allocations to the schools and colleges can be calculated. The calculation for an individual school's allocation is as follows. (Note, the first term is Schools Earned Revenue *divided by* Total School & College Earned Revenue.

$$\left[\frac{\text{School's Earned Revenue}}{\text{Total School \& College Earned Revenue}} * \left[\text{Total School \& College Earned Revenue} + \text{Total Residual}\right]\right] +/- \text{Net Service Course Exchange Payments for this School} +/- \text{Carry-Forward}$$

The first term calculates the proportion of total earned revenue that belongs to this school. The school receives that portion of both total earned revenue and the residual. If a school's earned revenue (revenue from majors' net tuition, school indirect cost recovery, and so forth) is 15% of all the earned revenue to schools and colleges, the school's share of the residual will be 15%. This maximizes the earned revenue and cost control incentives.

MTU may choose to allocate the residual in another manner and not maximize the incentive. I would not recommend using it in an attempt to hold budgets at least at current levels. The transition coefficients will ease the transition more efficiently. Because of predicted short-term deficits, attempts to hold budgets harmless will defeat the incentive completely.

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Modifying School and College Budgets During the Transition. The recommended formulas for each transition year for finding each school or college's budget, before adjustment for budget balance, are given below.

Year 1: 90 % * "previous" + 10% * "new"
Year 2: 75 % * "previous" + 25% * "new"
Year 3: 55 % * "previous" + 45% * "new"
Year 4: 35 % * "previous" + 65% * "new"
Year 5: 15 % * "previous" + 85% * "new"

Year 6: (the first year after the transition)
0 % * "previous" + 100% * "new"

The "previous" amount stays fixed each year at the amount found in the pre-transition year. The "new" amount is re-calculated, as above, each year. Schools and colleges may wish to apply this formula as part of their allocation to departments, but the choice of allocation rules is left to the school or college.

Final Budget Balance Methodology. If the sum of the "previous" amounts across all schools and colleges exceeds the sum of the "new" amounts, the budget will be put into deficit by that amount. If it is less, the budget will be put into unintended surplus by that amount. A final adjustment must be made to the calculated budget because of impact of the transition formula.

Only the two "across-the-board" methods for re-balancing may be done with a formula. The calculation is straight-forward. A percentage is calculated by dividing the deficit or surplus by the sum of the budgets, as calculated to this point, which are intended to absorb the imbalance. This percentage is used to decrease or increase the selected areas.

Final University Budget.

Revenues: General fund, unrestricted revenues have been calculated above and consist of:

1. Central Revenues, less:
    a. Fund transfers from other funds including Auxiliaries,
    b. Auxiliary Fund Tax,
    c. Transfers from Unrest. Reserves,
    d. Department Determined Student Aid to All Majors, and
    e. Centrally Determined Student Aid, Budgeted in the Service-level Budgets.
2. Earned Revenues of the Schools and Colleges, plus
    a. True Cost Sharing on Grants & Contracts.

(Note that student aid is netted out of this revenue number.)

Expense budget: General fund, unrestricted expense budgets have been calculated above and consist of:

1. Service center budgets, less
    a. Centrally Determined Student Aid, Budgeted in the Service-level Budgets.
2. Final Budgets for Schools and Colleges,

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3. Incubator Pool budget,
4. Major Expense Pool budget, and
5. Contingency budget.

The general fund balance will change by difference between revenues and expenditures in these areas plus:

1. Fund transfers from other funds including Auxiliaries,
2. Auxiliary Fund Tax, and
3. Transfers to/from Unrestricted Reserves.

Note that there are no expense or revenue terms for the service course transfer payments. The transfer payment subsidy pool should equal the service course-related budget increases for "imports" less service course-related decreases from "exports." These adjustments must "wash."

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VI. SRB Implementation (Item 6 on Deliverables).

Timeline and stages. A Gantt chart showing the events necessary to arrive at the first new-method budget by the spring board meeting in April 2005 is shown in Appendix C**.** There are several phases to the implementation. The schedule results in a budget under the new method by April 2006 for fiscal year 2006-2007 after two years of preparation. Many of the task durations assume that people will be doing things for the first time. Nevertheless, delays on critical tasks will cause the budget to miss the spring deadline.

1. First Year Start Up.
   a. Board Approval. This is shown for the March 2004 meeting.
   b. Administrative Review of the System. Following the board's approval, the administration should review the system and make adjustments.
   c. Calculation & Data Questions to Consultant. I will be available to answer questions from the Budget Staff on challenges they expect to face gathering the necessary data. In most cases of difficulty, adequate information can be developed by another approach.
   d. Town Hall Discussion of New System. After preparing a packet explaining the system, using pieces of this report, the president and CFO should sponsor an open meeting to discuss the change.
   e. Set Up Access to Tuition, Fees, & Financial Aid Revenues. Budget Staff, especially the institutional analysis office, will need to build the necessary reports, downloads, and calculation worksheets to obtain the necessary data. These reports can be written during this period, even though the data for next year will not yet be available.
   f. First workshop on service-level budgeting. Before the set of trial requests and calculations, a workshop on service-level budgeting will be helpful to people trying this effort for the first time.
2. Second Year Trial Run.
   a. Write Trial Budget Instructions & Trial Service-level Request Package. The topics to be covered in the Budget Guidelines are listed in Appendix B. The budget guidelines are designed to describe the process, present major assumptions, list critical dates, and define responsibilities to the campus community, especially budget officers. The Service-level Request Package (also found in Appendix B) is a more detailed document for budget officers in areas that provide services, unsupported by direct revenues. Budget Staff must revise and issue these information packages each year.
   b. Send Out Trial Budget Instructions and Trial Service-Level Request Packages.
   c. Define Trial Service-Level Functions. As an aid in starting this process, an appendix is included that demonstrates one possible way of breaking the work of an office into functions for a sample of areas. These can be one sentence descriptions of the function. Unlike ZBB, SLB does not run on justifications of narrow function descriptions. This process will be the most difficult for many people. The concept of offering a service at various levels of quality and cost will be new.
   d. Supervisor Review of Trial Service-Level Functions. Supervisors must feel comfortable with the way office functions are broken down. The list must be complete to assure full funding. The functions must not be too narrow to keep budgeting simple. The functions must not be too broad to allow discrimination in service levels where necessary.

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e. Trial Service-level Budgets Developed for Each Function. After defining functions, budgets need to be estimated for each level of service for each function.
f. Trial Service-Level Budgets Due From Offices.
g. Trial Service-Level Budget Revisions. Supervisors and area heads will need to work with office heads to bring budgets into line with expectations.
h. Trial Service Budgets Due to Vice Presidents.
i. Trial Service-level Budget Revisions II. Vice Presidents may need to request revisions.
j. Submit Trial Service-Level Function Budgets to Budget Staff.
k. Build Trial Service-Level Matrix. Budget Staff will prepare the calculation worksheet to allow the Budget Committee to test the impact on the budget of re-setting service levels.
l. Set Up Trial Earned Revenue Data. Estimating summer tuitions and separating centrally-determined student financial aid from that determined by the academic areas will be the most challenging. As much should be done ahead of time to prepare coding and produce a format that will allow deans to feel comfortable with the calculations.
m. Trial Earned Revenue Done and to Deans.
n. Corrections from Deans on Trial Earned Revenue.
o. Revised Trial Earned Revenue.
p. Build Trial Import/Export Matrix. This is a reasonably simple cross-tab summation table.
q. Set Trial Buy & Sell Rates for Service Courses.
r. Calculate Trial Subsidy.
s. Calculate Trial Service Course Budget Transfers. This information will be needed for building the School and College budgets.
t. Project Revenues for the Next Year. This is required for calculating contingency and final school and college budget adjustments.
u. Calculate Central Revenue.
v. Estimate Necessary Contingency, Incubator Pool, and Major Expense Pool.
w. Trade-off & Set Trial Residual. This is a difficult stage. The Budget Committee makes explicit budgeting decisions that may have been more implicit in the past.
x. Enter estimated carry-forwards.
y. First Schools and Colleges Trial Budget Calculations. This consists largely of allocating the residual.
z. Apply Transition Formula to First Trial Schools and Colleges Budgets. This step goes away at the end of the transition.
aa. Distribute Trial Budgets for discussion. This trial phase is a learning process, designed to allow improvements to the method and formulas.
bb. Three workshops conclude this phase. The workshops should be designed to assist staff in: (1) Developing Service-level Requests, (2) Understanding How Revenue-based Budgets Work, and (3) How to Request Incubator Pool and Major Expense Pool Budgets.

3. Annual Start-up.
   a. Write Budget Guidelines & Service-level Request Package. Additional items may be added based on the response to the trial instructions and package.
   b. Send Out Budget Guidelines
   c. Nominate & Charge Committees. As defined in the Organization section above, a number of committees are necessary to run the process.

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4. Developing Service-Level Budgets. Task groupings 4, 5, 6, 7, and 8 may run roughly parallel. All must be completed before the final stage of the development of the budget. The task group, Developing Service-Level Budgets, will probably be the most difficult, but the trial run from the year before should be helpful.
   a. Send Out Service-Level Request.
   b. Define Service-Level Functions. As an aid in starting this process, an appendix is included that demonstrates one possible way of breaking the work of an office into functions for a sample of areas. These can be one sentence descriptions of the function. Unlike ZBB, SLB does not run on justifications of narrow function descriptions.
   c. Supervisor Review of Service-Level Functions. Supervisors must feel comfortable with the way office functions are broken down. The list must be complete to assure full funding. The functions must not be too narrow to keep budgeting simple. The functions must not be too broad to allow discrimination in service levels where necessary.
   d. Service-level Budgets Developed for Each Function. After defining functions, budgets need to be estimated for each level of service for each function.
   e. Service-Level Budgets Due From Offices.
   f. Service-Level Budget Revisions. Supervisors and area heads will need to work with office heads to bring budgets into line with expectations.
   g. Service Budgets Due to Vice Presidents.
   h. Service-level Budget Revisions II. Vice Presidents may need to request revisions.
   i. Submit Service-Level Function Budgets to Budget Staff.
   j. Build Service-Level Matrix. Budget Staff will prepare the calculation worksheet to allow the Budget Committee to test the impact on the budget of re-setting service levels.
5. Compute School and College Earned Revenue. During this stage the office of institutional analysis will calculate earned revenue from the current year's count of majors. This critical path activity may be delayed until the census date for spring.
   a. Set Up Trial Earned Revenue Data. Estimating summer tuitions and separating centrally-determined student financial aid from that determined by the academic areas will be the most challenging. As much should be done ahead of time to prepare coding and produce a format that will allow deans to feel comfortable with the calculations.
   b. Trial Earned Revenue Done and to Deans.
   c. Corrections from Deans on Trial Earned Revenue.
   d. Revised Earned Revenue.
6. Compute Service Course Transfers. While earned revenue is a principal determinant of the amount to be budgeted for a school or college, an adjustment is made for teaching extra-divisional majors. Pulling the data and building the matrix spreadsheet should not be difficult. The Budget Committee should introduce its ideas on the transfer price levels with the Deans as early in the year as possible to prevent this critical step from delaying the budget.
   a. Build Import/Export Matrix. This is a reasonably simple cross-tab summation table.
   b. Set Buy & Sell Rates for Service Courses.
   c. Calculate Subsidy.
   d. Calculate Service Course Budget Transfers. This information will be needed for building the School and College budgets.

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7. Compute Central Revenues and Contingency. This stage is another with difficult timing. It is necessary for finishing the budget, yet every day of delay allows more information to be available about next year's appropriation and spring revenues.
   a. Project Revenues for the Next Year. This is required for calculating contingency and final school and college budget adjustments.
   b. Calculate Central Revenue.
   c. Estimate Necessary Contingency.
8. Set Budgets for Incubator and Major Purchase Pools, and Carry-forward Adjustment. This is a reasonably self-contained stage. These guidelines should be issued after the general budget guidelines come out. The stage needs to be completed before school and college budgets may be done.
   a. Write Pool Proposal Guidelines. An outline of topics is available in Appendix B.
   b. Issue Pool Proposal Guidelines.
   c. Pool Proposals Due. Before the Budget Committee can make the final set of trade-offs, they will need to be aware of the quality of the most critical requests from the Incubator and Major Expense Pools.
   d. Rank Order Pool Proposals.
   e. Budget Pools. This is a tentative allocation, before final trade-offs are made.
9. Final Budget Steps. This is a linear set of processes necessary to get a proposed budget to the board. All previous steps must be completed before this may proceed.
   a. Trade-off & Set Residual. This is a difficult stage. The Budget Committee makes explicit budgeting decisions that may have been more implicit in the past.
   b. Enter carry-forwards. Any carry-forwards should be added at this point. Because this method is lagged by two years, and because the old budgeting method did not rely on incentives, the addition of carry-forwards may be delayed until the third year.
   c. First Schools and Colleges Budget Calculations. This consists largely of allocating the residual.
   d. Apply Transition Formula to First Schools and Colleges Budgets. This step goes away at the end of the transition.
   e. Revise Revenue and Re-balance Budget. New information about revenue should be applied at this point. Then the budget should be re-balanced.
   f. Final Schools and Colleges Budget.
   g. Calculate Presentation Budget. The budget as it is developed will need to be translated into a format that allows comparison with previous years.
   h. President's Approval.
   i. Allocate Academic Department Budgets. A tentative allocation may be made after school and college budgets have been calculated. Nevertheless, the president may wish to intervene in the allocations and these calculations would need to be redone. This task should then be moved ahead of the previous task.
   j. Board Approval.
   k. Distribute Budgets. This step could certainly be delayed somewhat.

Skills and training. There are a few new skills required for this implementation.

Banner. A difficult view may need to be built encompassing registration and student billing data, including student aid awards. The skills to do this appear to exist on campus.

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Service-Level Assessments. Learning to break down the work of an office into functions, describing the functions at various levels of service, and developing budgets for each level will take practice. Having office heads work on this in teams may speed the learning.

Major Challenges. Management of the process should be focused on a number of critical areas.

Timely decisions. Delays in setting revenue assumptions and setting service course transfer prices, for example will throw the timing of the whole process off.

Estimating. A number of stages really require information before it will be available. Creating a methodology for estimating the current year's summer revenues will require attention. Estimating school and college carry-forwards may be the second challenge in the process, unless the addition is lagged.

Judging. Making the trade-offs to balance the preliminary budget and set the amount of net central revenue to pass on to the schools and colleges will be difficult. Individual service levels for functions will need to be tested. Projects funded by pools will need to be put off or added. The demands that risk puts on the size of the contingency will need to be addressed. The benefit of large dollar changes to the budgets of the schools and colleges will need to be understood concretely. All of these values will need to be understood simultaneously and traded-off. The process requires strong intellectual control of the workings of the university, a strong grasp of personal values, and a clear picture of university strategies and vision.

Assessing SRB. An important piece of any implementation is the design of future assessments. These define success, and with that definition in mind, the implementation will be improved. A short description of the goals of the assessments that should be undertaken at various points follows.

Initial assessment (Real data assessment). After the first set of requests, service level determinations and revenue calculations lead to approximate budgets. The university must ask, "Can we live with this?" Even with the transition, some academic area budgets may be insufficient to support all the people in the area. Service-level decisions may result in zero allocation to a function. Both of these conditions imply layoffs.

At the point when the process produces budgets for service areas and for schools and colleges, the president and vice presidents must be prepared to make a careful assessment.

a. Are the results far from expected?
b. Are there probable errors in the process?
c. Do the budgets merely require small adjustments or must the residual allocation be completely redone?
d. Are the results so apparently destructive, and have we gathered enough information to kill the effort and quickly produce a budget using the former method?
e. Will the result meet board expectations?
f. Will the result meet campus community expectations?

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Two-year assessment (Policy evaluation). An assessment should be planned at the conclusion of the second full year of the process. This evaluation focuses on the implementation of the process and any weaknesses caused by its introduction.

a. Has our assumption that increasing budgets is an incentive to continue pursuing revenue gains been correct?
b. Do we have the right funding balance between market-determined and service-level-determined budgets? Has our implementation of the process pushed us to neglect one area or the other?
c. Are we comfortable with our methodology for forecasting revenues?
d. Have we been able to fund the pools well enough to encourage innovation and investment?
e. Have we significantly lost efficiency because many central services have been allowed to become decentralized within academic units?
f. Does our assessment of risk appear to have been accurate?
g. Have our service level settings been strategic?
h. Have there been negative side effects from emphasizing revenue gain?
i. Have the budgets to permit certain levels of service been accurate enough to allow the provision of these services?

Five-year assessment (goal attainment evaluation). MTU will be implementing this system to achieve certain things. After five years most should have been gained. The questions below relate to many of the goals that were evident in the section above on specifications.

a. Budget balance should have been achieved by year three and all years afterward. Enrollment gains and increased revenue should have been sufficient to offset loses of appropriation.
b. The enrollment gains and increased revenue should have caused the institution to become more competitive with leading private technological universities.
c. Contingencies should have been adequate to provide for 75% of the events that cause revenues or expenses to go outside of budgets. "Adequate" here means that severe austerity measures (freezes, layoffs) were not required.
d. The budgeting systems should have allowed the generation of a sufficient number of new programs and service efficiencies to have kept MTU competitive with similar institutions.
e. Service levels should be measurably improved. A goal might be to be able to increase funding such that the majority of services have been pushed up two levels.
f. The work of managing the SRB budgeting system has not pushed costs attributable to it to be no more than 0.15% of budget.

Seven-year assessment (Useful life assessment). This assessment comes at the most likely time for the useful life of the SRB budgeting system to have ended. Demands for enrollment growth may have declined; the inter-dependencies of schools and colleges may have increased. More and better information may now be available for making decisions, changing the basis of resource allocation decisions. There will be a new vision, a new strategy, and new goals. At this point there may be a better match between university requirements and newly developed budgeting systems. The essence of the question for this assessment is: Have the finances, strategies, and goals of the university changed so much as to require a new system, or does a continual update of parameters suffice?

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Fairness. SRB is not fair. It is not intended to be fair. It is intended to allow decision makers to enact a financial strategy that will assist in moving the university toward its goals. It rewards increasing revenues and controlling costs in areas that can directly affect these efforts. It also allows decision-makers to design services best suited to the goals of the university and its resources.

Decisions to halt an activity. SRB has an explicit phase for determining when to halt a service function. Before setting a function's service level to zero, of course, an administrator should examine carefully the full ramifications of stopping the function. Setting the budget to zero does not immediately halt the function and allows approximately four and one-half months for a process to end the function to be put in place. This budgeting system was developed on the premise that few functions will be found to be unnecessary. Previous periods of austerity have forced out marginal activities. Nevertheless, vice presidents should be asking two questions as they review service-level budget analyses: What is the highest service level that can be justified for this service under current resource constraints? And, is this function necessary? In some cases a more orderly transition can be achieved by budgeting for a half-year of activity.

On the other side of the budget, SRB has no explicit phase for determining when a school or college should be closed. There are several signals, however, that should trigger an evaluation of closing, merging, or re-aligning the division. Since schools and colleges will not have a separate bank account, they may continue through difficult times by running a deficit. In a manner of speaking MTU would be "loaning" them money. MTU should consider setting school or college closure standards explicitly before taking the first budget to the board. I do not have a good feel for what would be tolerated. The size of discrepancies between budgets computed under SRB and those of the last budget allocation made under the current system will inform ideas about standards. One standard may have the form of calling the closure question if deficits have exceeded a given number (for example, $500,000) over a given number of years in a row (for example, 3). Another standard may be reached if the school or college deficit exceeds an even greater amount (for example, $1.5 million) after one year. Another alternative may be to have the closure-examination triggered simply by the size of the school or college's accumulated deficit.

Nevertheless, a school or college should not be closed for financial reasons, if it will not have a positive financial effect. MTU should not consider closing if the amount of money MTU would no longer receive, if MTU eliminated this activity, exceeds the amount of money that MTU would save through the elimination. That this might occur, even though the activity is in deficit, is a result of differences between imputed activity revenue and costs (through SRB) and the actual marginal costs of an activity. It may also be that the annual marginal savings from closure would exceed the annual deficit.

For example, if a school were to be closed, but no personnel were laid off and were transferred to other, unbudgeted positions, the marginal cost savings could not include their salaries. The deficit is calculated with salaries as an expense, but the marginal cost savings should not include the salaries. The salaries are not "saved" by the action. Likewise, a school's surplus or deficit is computed using an allocation of net central revenue and costs. Closing a school would have only a small effect on central revenues and costs in most cases (appropriations being the largest piece of this). Therefore, although the residual of net central revenues and costs is part of the computation of the surplus or deficit, central revenue would not necessarily be "lost" through closure.

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Thus, although individual school or college deficits should be monitored, only an assessment of the true marginal results of closing will give the probable financial impact. The decision, of course, should not be based on financial impact alone.

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VII. Another Strategy and Another Budgeting System

The choice of SRB rests on a belief in the need for the institution to prepare itself for a decline in appropriations by becoming more competitive in the struggle for student tuition dollars. Another strategy in the face of a probable long-term decline in state support is to contract activities. That is, if the institution found that the competition for student tuition dollars could not be won, then it might need to fully acknowledge its dependency on the state. That dependency would require that if the state chose to reduce its commitment to higher education, specifically technology higher education, then the institution would be forced to reflect this decline in commitment by scaling back its scope and complexity.

A budgeting system that would push toward a reduction in size would force the institution to eliminate the lowest priority services and cut the least efficient academic departments.

The strategy of pursuing tuition dollars and SRB was elected by the consultant after the interviews were concluded. After the phone interviews, the consultant sought to understand how the institution would function under and what adaptations would be needed under several budgeting systems that had merits for various strategies: Incremental, ZBB, RCB, SRB and Forced Reduction. As might be anticipated, no interviewees were comfortable with Forced Reduction. The strategy of "giving in" to the state had no appeal. It just did not seem to be a premise under which anyone wanted to work. All but one interviewee felt comfortable with the premises of RCB and SRB-type systems. This one interviewee preferred a system where a committee would make strategic allocations. This person did not feel that incentives would change behavior.

A forced choice methodology would eliminate a sufficient number of academic departments such that the net marginal savings in the budget would offset a portion of the predicted decline in appropriation. That piece of the expected loss in appropriation should approximate the proportion of the budget held by departmental academic activities. The method calls for the elimination of the least efficient areas in gaining revenues. Financial efficiency is measured by dividing revenues attributed to the department by expenditures attributed to the department. I have found reasonable success dividing tuition in half and allocating one-half according to the distribution of course points taught by a department and the other by the distribution of majors.

A number of departments at the bottom of the efficiency ranking, chosen such that the financial impact of the closings would offset the academic portion of the appropriation decline, would be assessed for closing. If there was a great disparity between the financial efficiencies of the schools and colleges at the top of the ranking and those at the bottom, the university could choose to close more than the number needed to match a portion of the appropriations decline. The excess of resources generated could be "invested" in the higher efficiency departments in an attempt to boost efficiency.

For support and central administration areas, the design of this budgeting system would closely parallel ZBB. The definition of functions would be narrow. The task of managers going up the hierarchy would be to rank the priority (a combination of necessity and strategic worth) of all those functions under his or her purview. The final ranking at the top would, however, be subject to a critical set of decisions. A percentage of the functions ranked at the lowest priority would be eliminated from the budget after the final priorities were set. This percentage might be set at the

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drop in revenues predicted for the budget year as a result of enrollments, tuition policy and state appropriation changes. This is the first part of forced choice.

The strategy is, as was said, unpopular. Forced choice uses a financial assessment as the basis for academic management. The consultant's preference is for a system that uses financial assessment to focus attention on the financial stability of the university. The trauma of forced choice is generally not considered to be appropriate in a university, unless the institution is on the brink of closing.

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VIII. Reforms and Assessments

During the interviews, the consultant was given descriptions of a number of procedures that may need further assessment. Because the consultant did not witness the execution of any of these procedures, he may have misunderstood. Before taking any of the actions suggested below, MTU should make sure that the understanding of the consultant is correct, and his assumptions are appropriate.

Revenue projections (related to item 3 on Deliverables). There are two distinct responsibilities in making revenue projections: assumptions and calculations. The major assumptions are the responsibility of the president. When the president presents the budget to the board, he or she is endorsing a set of assumptions about the future and about the behaviors of people. The most critical assumptions in the budget lie with the projection of revenue: the number and distribution of enrollments and the amount of appropriation. When a board approves a budget, it is most critically approving the reasonableness of the assumptions. The board is also indirectly asserting that the probability of error and the resulting potential cost is adequately anticipated in the budget within their tolerance for risk.

For the president to take the responsibility and for the board to exercise its judgments, the assumptions within the budget along with an assessment of the probability and size of possible negative deviations must be explicit. Any person or group at MTU that is assigned the task of projecting revenues must make all assumptions and risks explicit before sending them up to the president. As much as possible the president and other officers should agree to and make known a preferred set of assumptions before the projections are made. Because of the dependence of a great many factors on these assumptions, the interaction between the technical staff and officers should be open.

The recent difficulties with the last set of revenue projections, however, were largely technical, rather than with the assumptions themselves. The Internal Audit Office's report suggests that a committee review the projections. I would go one step further and ask the Internal Audit Office to review the calculations for accuracy. I would not ask the Internal Audit Office for any evaluation that looked at face validity, the appropriateness of the assumptions, or other subjective questions. The Internal Audit Office, however, has the skills and orientation to assess calculation procedures and to perform cross-checks. Just knowing that the Internal Audit Office is going request an explanation of the calculations will assure greater care in documentation and procedure.

Budget management. Regardless of the budgeting system or software used, there are several general principles of budgeting that, if followed, increase its effectiveness as a management tool.

a. Contingency management. A system for managing the contingency is described in the proposal above. The budget should begin and end in apparent balance with an account, often the contingency, recording the size of the current budgeted surplus or deficit. Any budget changes that would affect budget balance are, instead of making budgeted expenses unequal to budgeted revenues, shown as budget transfers into or out of contingency. Approvals of unbudgeted items and revisions to revenue expectations have an offsetting budget change in this account. The list of transactions in this account is a report of actions that have changed the budget balance that was originally approved

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by the board, considering the original contingency as a beginning surplus. Contingency budget transactions should be the basis of a regular report to the board. Boards are generally glad for the explanation. Authorization to make budget changes that change budget balance should be restricted. Given the president's endorsement of the original budget and its balance to the board, the president must reserve the right for approving changes over a certain size.

b. Comparing to original. Another important report, which Banner can produce, if set up properly, compares an adjusted budget to the original budget. This allows tracking of not only budget balance changes but transfers among budgets. This is another report that I have found boards to be eager to receive, if at a sufficiently high level of aggregation. Boards are often puzzled to see enormous differences between ending expenditures and approved budgets for particular areas. Regular reporting and explanations of necessary budget adjustments will assist the board in understanding the complex process of financial management at a university.

c. Exception reports. Catching problems early can be eased with exception reports. Unfortunately, current software, like Banner, has a particularly weak set of exception report options. This puts the university in the position of having to design and build new reports. Exception reports list only those accounts (or departments) where expenses exceeded a maximum expected proportion of budget for that point in the year. The same applies for revenue accounts that are lower than an expected proportion of budget for that time of year. Normal system reports give the budget deviations for every department and every account. These reports make it difficult for financial management to focus on building problems.

   For exception reports to be accurate, budget transfers must be up to date. Exceptions that "aren't exceptions," because a budget change to cover it has been authorized, but not posted, can shift focus away from problems.

   Although some exception report programs allow the setting of individual monthly expenditure proportions by account, these usually prove too ponderous to be workable. Usually a good report can be made by allowing a generous cumulative proportion for each month. That is, six months into the year, an exception report would pick out items more than 65% spent, instead of 50%. This allows for some normal variation and does not require extensive data entry.

d. Partial allocation. When there is uncontrollable uncertainty over revenues, as happened in this current year, many institutions issue budgets for only the first half of the year. Annual salaries, however, would be fully budgeted for filled permanent positions. Budget managers should be informed that, due to uncertainties over revenues, the partial allocation may have to last for the whole year. There will have to be many exceptions, of course. It is important to issue a budget at the start of the year, however negative. The loss of information and control caused by delaying the issuance of the budget can only increase the negative experience.

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Accounting issues. The accurate determination of service-level budgets and the strength of financial incentive depend on accurate revenue and expense figures.

a. Accurate charges. Although I heard during interviews that not all charges were being accurately placed, I believe the people were mistaken. I will only emphasize that expenses should be charged to the appropriate areas. The tendency at some institutions to move expenses to where there are budgets, instead of moving the budgets, distorts reporting. SRB depends on accurate data, especially accurately charging expenses to the appropriate units.

   Unfortunately, accurate charging can involve apparent double work. If an item required by an academic department is not in the department's budget, the provost may authorize the purchase, having enough in funds under his or her control. Charging the item to the available provost budget can be done as a single step, but the expense is then charged to the provost, instead of the department using the item. Under SRB, the academic department would be understating expenses and the provost would have a higher expense than his or her service level indicated as necessary. The provost should authorize a budget transfer from his or her office to the department (first step), and the expense should then be charged to the department (second step).

b. Fund and GASB cross-over. Maintaining budgets and reporting results by fund category appear well understood by the board and campus community and help maintain cash control. There are a number of danger points, however, that can cause surprises when the expectations of budget results do not show up in the financial statements. The most difficult of these occurs with capital purchases, especially those made with general funds.

   Some amount of equipment and software that should be capitalized is purchased by offices and departments each year. Some building renovations, funded with general funds, may also be capitalized. The apparently conservative practice has been to budget for these expenditures at full value, instead of merely the expectation of that year's depreciation. In the financial reports, only that year's proportion of equipment or renovation expense that is depreciation, however, is charged. To the extent that annual depreciation charges for all buildings and equipment approximates annual capital purchases, this method works well. The "cash-based expense" system used by the budget equals the accrual-based expense system where depreciation expense is charged in the financial statements.

   The danger comes, however, when budgets are being cut. All equipment purchases could be removed from the budget, but the actual reduction in expenses might be small. Depreciation expense from capital purchases of previous years on items still within their useful lives would be charged in the financial statements. The savings does not equal the total cost of the equipment not purchased. The institution can either build into budget reporting a mechanism that compensates for the accounting difference, or MTU can change its "savings" arithmetic to recognize that reducing a "normal" level of equipment and renovation expenditure results in only fractional savings.

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c. Position control. Maintaining a personnel database that accurately charges budgeted and actual salaries to departments and offices is difficult at a complex institution like MTU. At institutions of comparable size and grant level (grants introduce much of the complexity of personnel expense charging), the effort requires a full-time person. The person must input all salary agreements, record changes and reconcile against finance system budgets and the payroll system. If part-time salaries are also maintained (and this is not recommended), two people would undoubtedly be required.

   Good personnel information is required to drive grant reporting and the payroll. Accurately charging salaries to grants and maintaining effort records are a federal requirement. Accounting systems depend on salaries being accurately charged through the payroll. Nevertheless, many institutions, including MTU, have developed systems, independent of the personnel database, for keeping track of grant effort and for driving payroll departmental charges.

   Controlling positions, of course, is the main justification for the effort of maintaining the database. Position control can, however, be replaced by budget control, salary "pick up," and a careful system of appointment approvals. Position control is designed to allow the institution to control the number of "slots" available to an office or department, and, usually, the grade of each as well. This kind of control allows the institution to prevent the hiring of two lower-paid people when a higher-paid person retires. This kind of control also prevents the hiring of two people mid-year after a position has been vacant for the first half-year. Budget control alone would show sufficient funds for two people for the rest of the year.

   Many institutions use simple policies to prevent such practices without employing position control. A rule that requires any remaining budgets from open positions to revert back to the central budget prevents the two-cheap replacing one-expensive practice. Offices and departments are expected to justify all replacement positions and are given budgets from the central pool to cover only what is authorized by the replacement decision. Careful open position recruiting procedures are generally used to prevent the mid-year "two-for-one" practice. The latter is in place now at MTU.

   Position control has some usefulness under service-level budgeting. Service levels are described in terms of the number of people required, not necessarily a dollar salary level. Tracking positions in service areas would add to the budget process. On the other hand, position control has no central use where departments are under incentive budgeting. They can spend the funds that they earn, central position control is irrelevant.

   Much of the current justification for the MTU position control system is to provide data to divisional shadow systems and to avoid embarrassment when the board asks, "How many slots do you have budgeted?" Even under incentive budgeting schools and colleges may want to track positions in departments. Many now have shadow systems that do so and are glad to receive updates from the central position control system. The payroll system, budget system and human resources system (the portion kept up by that

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department, having benefit, salary, and personal information only) cannot produce counts of budgeted slots for the board's information.

To a CFO operating in an environment with a high degree of central control and no incentive budgeting systems, a position control system is a thing of beauty. These CFOs have budgeting system with a finer degree of salary pooling than the MTU system. Contracted salaries are encumbered at the contractual amount and the appropriate amounts are removed from encumbrance as salaries are charged, not changing the budget deviation amount. Budget deviation only changes if a mistake is made in encumbering and more or less payroll expense is charged than expected. Budget deviation changes as new contracts are written or existing ones are altered. Care must be taken to separate out non-contractual salaries like payments for overages or overtime. These should be charged against separately budgeted pools. The cost of maintaining this "high-control" system would not be negligible.

MTU should examine these possible requirements for maintaining the position control system. At the cost of some embarrassment, the university could be managed reasonably well, even under the recommended budgeting systems, without it and without the expense of maintaining it.

Innovation. While the recommended budget system has a process for funding new ideas, more change is required at the university for innovation to bloom. A change in culture (as trite as that phrase has become) is needed. Years of financial difficulty that sometimes resulted in layoffs have made people fearful of stepping out of their roles to carry new ideas. These difficult years have also lead to an organizational structure where units fight for independence—the so-called silo effect. As a result, the university does not appear to have kept up with all of the changes that have helped higher education. Digital copying with office computer access (making multiple copies of documents from your desktop at a large copier is much cheaper and more efficient than printing them on a printer) and online time sheets are two quick examples.

MTU must use the budget town meetings and the workshops to explain the exact conditions under which a department or office might be eliminated and layoffs occur. The process is designed to run on decision rules. Fear comes from uncertainty.

Both service-level and revenue-driven budgeting push hard for mergers and re-organization. Two areas offering the same service should be combined. A financially unsuccessful department may do better when combined with another area. I heard both ideas during the interviews. Perhaps the new budgeting systems will give these ideas the needed push.

I have often faulted higher education institutions for their lack of leadership time. They are thinly administered, and there is never enough administrative time to nurture and guide all the projects and ideas that could benefit the institution. I have the prejudice that much of this could be alleviated if the expectation of leadership were not only confined to the highest levels of administration. Our organizational systems have built the expectation that people in lower positions cannot lead and the result has been some degree of learned helplessness. Nevertheless, during my interviews I was very impressed with the quality of the people in office management and staff positions and with the quality of the ideas they had for innovation. The university should

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examine ways of giving a greater range of people the responsibility and the rewards of project leadership. The burden of nurturing and guidance is too heavily placed only on the president and provost.

Budget software (Item 1 in Deliverables). All drawbacks to Banner software evident from the interviews have been discussed in the report above. Nevertheless, I prefer it to any other package on the market. For almost all institutions, the cost, both sales price and implementation effort, for taking the next step up in flexibility is not even close to the small amount of benefit. Banner is a very complex system, but there appear to be many staff members who have mastered it for their areas.

No software exists that can exactly track the information needed for SLR budgeting. Banner account codes could be modified at MTU by replacing the "location" portion of the number with a code for "function." The effort of coding expenses and setting up the complex "location" tables would not result in very much improvement in the budgeting system. All that is required now is that once a year an office's budget must be apportioned among a limited number of functions. Exactly tracking expenses to functions is not necessary.

Likewise, by lagging most earned revenue calculations, instead of running budgets based on up-to-the-minute earnings, modifications to Banner can be avoided. The Banner enrollment and finance modules can be used to obtain the necessary school and college data needed to construct incentive budgets.

Problems with the system are not largely the fault of the software. The difficulty in estimating revenues has caused such a delay in loading budgets, that describing how financial control was maintained will be challenging. There is some concern that budget controls are not balancing to details. This should be repaired, whether it is an operational or software problem, to maintain confidence in the system.

The most troubling defect in the system is the cumbersome set-up for making budget changes. The screens available to the Budget and Planning Office require many steps for each entry. A more general screen that only the accounting group can access allows much easier entry, but access is limited. I do not doubt that access is limited for very good reasons, nevertheless, the functionality of the screen that accounting may access should be available to the budget office. They, not accounting, should be responsible for the accuracy and timeliness of changes.

Other concerns about the software mentioned above are with its financial projection capabilities, the coding of student financial aid by decision source, and the difficulty of maintaining the position control system.

Planning and Budgeting Office workload assessment (Item 4 on Deliverables). Examining only the budgeting functions in the office, and not the institutional research aspects, the office may be currently understaffed. Office responsibilities include:

a. Loading the annual budget. This activity has been requiring a full-time effort for two to three months each year. It has been handled by a quarter-time person, shifting responsibilities between two activities (in different offices) with different peak times.

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b. Budget changes. This activity has been handled by a half-time person with the assistance of the accounting department for more lengthy entries.
c. Position control. If this effort is believed to be necessary, working with full-time staff and faculty will require a full-time person. Should position control be extended to part-time faculty, an additional person will be needed.
d. Office leadership. This person has provided support to a number of committees and directed the office. It appears to require half of one person's time. The person must have broad skills in management, collaboration, technical analysis, Banner, and problem solving.
e. Analysis. Using the other half of the available time, the head of the department took on many analysis duties, including financial projections, revenue projection calculations and cost analyses. The former head of the department does not appear to have had enough time to complete all these duties. Under the recommended budget system, these duties will grow. Support on revenue analysis from the institutional analysis group has been and will continue to be helpful. Nevertheless, the office director should limit his or her responsibilities in this area to analysis design. Another full-time support person should be hired to carry out the actual modeling, data manipulation, financial projection, and cost analyses required. Good quantitative and financial skills will be required.

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IX. Conclusion

Michigan Tech is an excellent position to implement the recommended budgeting system. Staff members are capable and motivated, if somewhat fearful. Faculty leaders are eager to be rewarded for stronger efforts at building revenues based on tuition and research. The campus community is very concerned about the institution's financial health and realizes that the decline in state appropriations is probably irreversible. All the people on campus that I interviewed were eager to improve quality and services to students. Each one looked forward to competing more like an excellent private technological university in line with the existing strategic plan. Each person acknowledged that the adjustments would be challenging and the result would not be guaranteed, but they also knew that the struggle would be more meaningful to them than just allowing the decline to continue, regardless of the outcome.

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Apppendix A

Sample Service Functions and Service Levels

1. Admissions Office Functions
   a. Outreach
      i. Limited to primary feeder institutions and markets
      ii. Expanded to secondary feeder institutions and markets
      iii. Expanded to include regional high schools and community colleges with a high probability of providing new Tech students
      iv. Expanded to include national high schools and community colleges with high probability of providing new Tech students
      v. Expanded to include web-based outreach to top students
   b. Conversion
   c. Admission
   d. Processing
      i. Accurate accumulation of student application materials and accurate filing
      ii. Expanded to include full online application
      iii. Expanded to include full scanning of paper documents
      iv. Expanded to include full electronic management of application files, including automated notification of missing documents and the presentation to the counselor of the file when completed
      v. Expanded to include full integration of student record from inquiry to graduation
2. Bursar
   a. Cashiering
      i. Window and online (credit card only) payment options
      ii. Expanded to include ACH online payments
      iii. Expanded to include financial counseling, payment plan options only
      iv. Financial counseling expanded to include loan payment options
      v. One-stop financial counseling combining student financial aid and payment options
   b. Student billing
      i. Online billing available to students
      ii. Expanded to include e-mail notifications of new bills
      iii. Expanded to include automatic e-mail follow-up for unpaid bills
      iv. Expanded to include automatic full cycle follow-up for unpaid bills: e-mail through registered notice
      v. Expanded to include automatic payment plan options with bills
   c. Third-party billing
   d. File maintenance
3. Provost's Office
   a. Academic administration
      i. No support staff assigned to work with schools and colleges
      ii. One staff member assigned to work with schools and colleges
      iii. One staff member assigned to each school or college, except engineering, which would have a full staff
      iv. One staff member assigned to each school or college

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v. Full staffs assigned to coordinate with each school and college

(These should be described in terms of outputs—service—but I am not close enough to the offices to describe desired services.)

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Appendix B

Implementation Communications

Agenda for Town Hall Meeting.

1. Financial condition of the university
    a. Trends in appropriation
    b. Trends in enrollment
    c. Number of similar deficits before cash problems
    d. Deficit history?
2. Strategy for the future
    a. Less dependent on state
    b. More competitive with national, private technological universities
    c. More reactive to students
    d. Higher quality in programs and services
3. Service unit budget request
    a. Function definitions
    b. Function-level budgets
    c. Hierarchical decisions on which service level to fund
4. Funding for divisions
    a. Keep net tuition revenue from majors and other earned revenue
    b. Keep share of residual
        i. Central revenue (appropriation mostly), less
        ii. Service function funding
        iii. Pools
        iv. Contingency
        v. Course exchange subsidy
    c. Revenue from sales of student credit hours to majors outside of division
        i. Per unit cost approximately at assistant professor rate
    d. Transfer budget out to pay for majors taking courses outside of division
        i. Per unit cost approximately at lecturer rate
5. Timetable
    a. Date when fund proposals will be due
    b. Budget requests from service units
        i. Budget information and call for requests: date
        ii. Requests due date
    c. Budget numbers for schools and colleges
        i. Allocations given to schools and colleges
        ii. Allocations to departments due
    d. Board authorization
    e. Budgets distributed
    f. Adjustments
6. Transition
    a. What it means for schools and colleges
7. Fund proposals
    a. Innovation Fund
        i. What to ask for?

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        ii. How to Justify
    b. Major Expense Fund
        i. What to ask for?
        ii. How to Justify
8. Carry-forwards
    a. For schools and colleges only
    b. How estimated

Topics for Workshops.

1. Service-Level Budgets.
    a. Functions definitions
        i. Comprehensive for office
        ii. Grouped
        iii. Simple
    b. Function levels
        i. Basic: survival
        ii. One step up: better, but still shabby
        iii. Two steps up: average
        iv. Three steps up: above average
        v. Competitive: Equal to best private, technological university
    c. Function budgets
        i. What is needed for each level?
2. Revenue-Directed Budgets.
    a. Categories of earned revenue
        i. Net tuition from majors
            1. Net of grants/scholarships
                a. All-university discount for university-determined
                b. Direct reduction for school, college or department-determined
            2. Not net of taxable fellowships
            3. Dual major splits
        ii. Indirect cost recovery
        iii. Designated revenue
    b. Service course transfer payments
    c. Calculation of residual
    d. Allocation of residual
    e. Transition formula
    f. Re-balancing
3. Creating Proposals for the Incubator and Major Expense Pools.
    a. University priorities of relevance to pools
    b. Categories of projects suitable for Incubator Pool
    c. Categories of projects suitable for Major Expense Pool
    d. Coordination of service-level budgets and major expense requests
    e. Proposal format
        i. Purpose
        ii. Result
        iii. Budget
        iv. Responsibilities

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v. Synergy

Information Packets

1. Cover letter from president
2. Budget System Description (chapter V of this report: section on process description)
3. Q & A (below)
4. Abbreviated timeline

Budget Guidelines

1. Five-year vision statement
2. University financial strategy
3. University priorities
4. Current Expectations for Revenue in budget year
5. Abbreviated timeline
6. Process description from chapter five above

Service-level Request Package

1. Process description for service-level budgets
2. Service-level budget timeline
3. Budget spreadsheet for area, showing categories and previous amounts at tabs
4. A spreadsheet to request budgets for service levels

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New Budget System Q&A

What is SRB? Service/Revenue Budgeting, for short, and Service-Level/Revenue-Center Budgeting, in a longer form. This budget procedure calls for revenue generating areas, like academic units with tuition and other sources of revenue to be budgeted in relation to the amount of resources that they "earn," like tuition from majors and teaching. It also calls for the functions provided by support areas and central service areas to be budgeted according to a certain level of service. The more budget that is provided, the higher the service that the area is expected to provide for a given function.

What is a function? A function is a set of tasks provided by a service department. A function for the library might be to provide inter-library loan service. A function for the admissions office might be to provide potential students with campus tours. A list of functions for a department should be all inclusive, but need not be greatly detailed. Functions that are normally provided at the same service level may be grouped into a single function for budgeting purposes.

What is a service level? A service level is a standard of performance expectation for a function. Service levels should be evaluated at five different levels from basic to competitive. The basic level is the lowest level tolerable for the survival of the institution. The competitive level is one that provides a very high level of service, competitive with the best technological universities in the country. A basic level for the bursar's office function of cashiering might be to take payments from students, accurately giving receipts and accurately recording the receipt. A competitive level might be to do these functions and to give financial counseling on students (financing alternatives, ways of reducing costs), including basic financial aid information.

How do I get funding for a major software purchase? Rather than under-spending budgets and saving them, a pool of funds will be set aside in the budget to provide for major purchases. Under service-level budgeting, units should only receive enough funding to provide the expected level of service. To provide less service to save money would not be meeting expectations. Thus, service departments will not have carry-forwards, but will be able to get funding for major purchases through a proposal to the Major Expense Committee that will be managing the fund.

How do I get funding for an inter-disciplinary project? There will also be a separate fund to foster inter-disciplinary and experimental projects. Revenue-center budgeting can lead departments to avoid working together and avoid investing in new programs because to do so might jeopardize earned revenue in the short run. The Incubator Fund will work like a venture capital fund, run by a faculty and staff committee to allocate budgets to proposals for inter-disciplinary work and curricular/research start-up in new areas.

My department mostly offers service courses, how will I get a budget if SRB allocates tuition according to majors? Departments that offer service courses will receive payment for every credit taught to a major from outside the school or college of the department. The payment will approximate the cost to departments for the salary and benefits of faculty who teach those courses on a per credit basis. Schools and colleges whose majors take courses outside of the home school or college will have their budgets reduced on a per credit basis at approximately the rate that would

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be required to provide the course internally. Because the rate for providers will be greater than the rate for senders, a subsidy from central funds will be necessary.

Will I get credit for the full tuition charged my majors? Schools and colleges will get credit for the net tuition revenue. Net tuition revenue is tuition revenue reduced by the amount of financial aid provided by the university (but not the state or federal government). Awards that are managed by the department, school or college will be charged directly to the school or college. Awards that are managed by the university will reduce the overall earned tuition revenue.

Who gets the appropriation? The appropriation is first used to fund the service departments, then the service course subsidy, then the major projects fund, then the incubator fund, then the contingency. We anticipate that there will be a large amount available after these allocations. This will be distributed to the schools and colleges according to their earned revenue proportions.

How much time will we have to improve enrollments enough to support our department's expenses? We anticipate that the first time that we will partially use this method of budgeting will be for the fiscal year beginning in 2006. At that time the school and college budgets will be determined 90 percent by the 2005-2006 budget and 10 percent by SRB. SRB will be based on the tuition and other earned revenues of the previous year. Over the next five years the percentage of support from the SRB calculations will grow in regular steps to 100 percent.

Will there be carry-forwards? Only for schools and colleges with earned revenues. Service departments will not be able to carry forward unspent budget. The carry-forward, however, will need to be provided for in the budget, and will be based on the actual amount unspent from the most recently completed year.

When will we get our budgets? Budgets should be nearly final for the spring Board of Control meeting. Our goal is to provide budgets in May.

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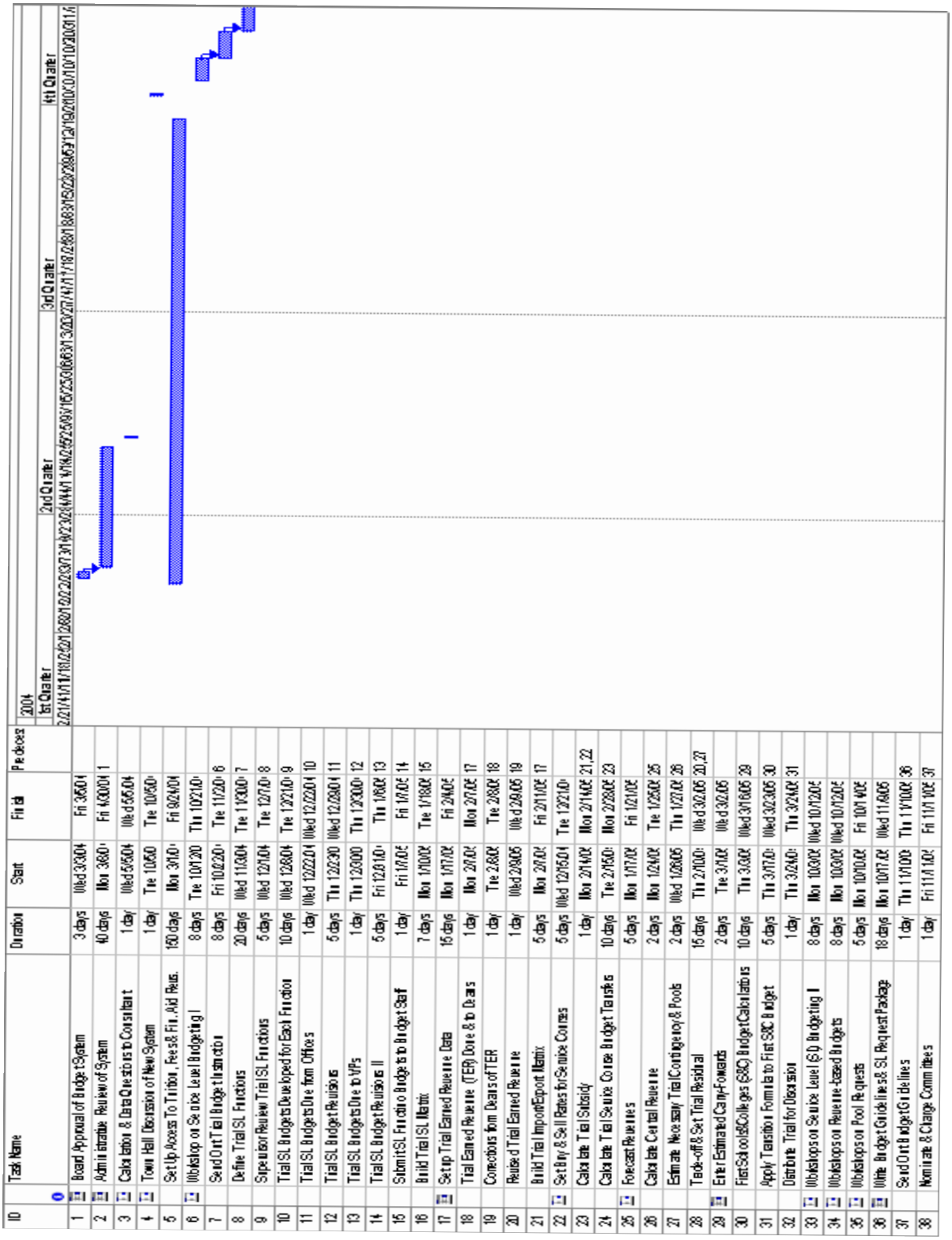
Appendix C

ProjectTimeline (Gantt Format)



ID	Task Name	Duration	Start	Finish	Predecessors
1	Board Approval of Budget System	3 days	Wed 3/3/04	Fri 3/5/04	
2	Administrative Review of System	40 days	Mon 3/8/04	Fri 4/30/04	1
3	Calculation & Data Questions to Consultant	1 day	Wed 5/5/04	Wed 5/5/04	
4	Town Hall Discussion of New System	1 day	Tue 10/5/04	Tue 10/5/04	
5	Set Up Access To Tuition, Fees & Fin. Aid Reps.	150 days	Mon 3/1/04	Fri 9/24/04	
6	Workshop on Service Level Budgeting I	8 days	Tue 10/19/04	Thu 10/21/04	
7	Send Out Trial Budget Instructions	8 days	Fri 10/22/04	Tue 11/2/04	6
8	Define Trial SL Functions	20 days	Wed 11/3/04	Tue 11/30/04	7
9	Supervisor Review Trial SL Functions	5 days	Wed 12/1/04	Tue 12/7/04	8
10	Trial SL Budgets Developed for Each Function	10 days	Wed 12/8/04	Tue 12/21/04	9
11	Trial SL Budgets Due from Offices	1 day	Wed 12/22/04	Wed 12/22/04	10
12	Trial SL Budget Revisions	5 days	Thu 12/23/04	Wed 12/29/04	11
13	Trial SL Budgets Due to VPs	1 day	Thu 12/30/04	Thu 12/30/04	12
14	Trial SL Budget Revisions II	5 days	Fri 12/31/04	Thu 1/6/05	13
15	Submit SL Function Budgets to Budget Staff	1 day	Fri 1/7/05	Fri 1/7/05	14
16	Build Trial SL Matrix	7 days	Mon 1/10/05	Tue 1/18/05	15
17	Setup Trial Earned Revenue Data	15 days	Mon 1/17/05	Fri 2/4/05	
18	Trial Earned Revenue (TER) Done & to Deans	1 day	Mon 2/7/05	Mon 2/7/05	17
19	Corrections from Deans of TER	1 day	Tue 2/8/05	Tue 2/8/05	18
20	Revised Trial Earned Revenue	1 day	Wed 2/9/05	Wed 2/9/05	19
21	Build Trial Import/Export Matrix	5 days	Mon 2/7/05	Fri 2/11/05	17
22	Set Buy & Sell Rates for Service Courses	5 days	Wed 12/15/04	Tue 12/21/04	
23	Calculate Trial Subsidy	1 day	Mon 2/14/05	Mon 2/14/05	21,22
24	Calculate Trial Service Course Budget Transfers	10 days	Tue 2/15/05	Mon 2/28/05	23
25	Forecast Revenues	5 days	Mon 1/17/05	Fri 1/21/05	
26	Calculate Central Revenue	2 days	Mon 1/24/05	Tue 1/25/05	25
27	Estimate Necessary Trial Contingency & Pools	2 days	Wed 1/26/05	Thu 1/27/05	26
28	Trade-off & Set Trial Residual	15 days	Thu 2/10/05	Wed 3/2/05	20,27
29	Enter Estimated Carry-Forwards	2 days	Tue 3/1/05	Wed 3/2/05	
30	First Schools & Colleges (S&C) Budget Calculations	10 days	Thu 3/3/05	Wed 3/16/05	29
31	Apply Transition Formula to First S&C Budget	5 days	Thu 3/17/05	Wed 3/23/05	30
32	Distribute Trial for Discussion	1 day	Thu 3/24/05	Thu 3/24/05	31
33	Workshop on Service Level (SL) Budgeting I	8 days	Mon 10/3/05	Wed 10/12/05	
34	Workshop on Revenue-based Budgets	8 days	Mon 10/3/05	Wed 10/12/05	
35	Workshop on Pool Requests	5 days	Mon 10/10/05	Fri 10/14/05	
36	Write Budget Guidelines & SL Request Package	18 days	Mon 10/17/05	Wed 11/9/05	
37	Send Out Budget Guidelines	1 day	Thu 11/10/05	Thu 11/10/05	36
38	Nominate & Charge Committees	1 day	Fri 11/11/05	Fri 11/11/05	37

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ID	Task Name	Duration	Start	Finish	Predecessors
39	Send Out SL Budget Guidelines	1 day	Mon 11/14/05	Mon 11/14/05	38
40	Define SL Functions	20 days	Tue 11/15/0	Mon 12/12/05	39
41	Supervisor Review SL Functions	5 days	Tue 12/13/0	Mon 12/19/05	40
42	SL Budgets Developed for Each Function	10 days	Tue 12/20/0	Mon 1/2/06	41
43	SL Budgets Due from Offices	1 day	Tue 1/3/06	Tue 1/3/06	42
44	SL Budget Revisions	5 days	Wed 1/4/06	Tue 1/10/0	43
45	SL Budgets Due to VPs	1 day	Wed 1/11/06	Wed 1/11/06	44
46	SL Budget Revisions II	5 days	Thu 1/12/0	Wed 1/18/06	45
47	Submit SL Functio Budgets to Budget Staff	1 day	Thu 1/19/0	Thu 1/19/0	46
48	Build SL Matrix	7 days	Fri 1/20/06	Mon 1/30/06	47
49	Set up Earned Revenue Data	15 days	Mon 1/23/06	Fri 2/10/06	
50	Trial Earned Revenue (TER) Done & to Deans	1 day	Mon 2/13/06	Mon 2/13/06	49
51	Corrections from Deans of TER	1 day	Tue 2/14/0	Tue 2/14/0	50
52	Revised Earned Revenue	1 day	Wed 2/15/06	Wed 2/15/06	51
53	Build Import/Export Matrix	5 days	Mon 2/13/06	Fri 2/17/06	49
54	Reset Buy & Sell Rates for Service Courses	5 days	Thu 12/15/0	Wed 12/21/05	
55	Calculate Subsidy	1 day	Mon 2/20/06	Mon 2/20/06	53,54
56	Calculate Service Course Budget Transfers	10 days	Tue 2/21/0	Mon 3/6/06	55
57	Project Revenues	5 days	Mon 1/16/06	Fri 1/20/06	
58	Calculate Central Revenue	2 days	Mon 1/23/06	Tue 1/24/0	57
59	Estimate Necessary Contingency	2 days	Wed 1/25/06	Thu 1/26/0	58
60	Write Pool Proposal Guidelines	20 days	Mon 10/3/05	Fri 10/28/05	
61	Issue Pool Proposal Guidelines	1 day	Mon 10/31/05	Mon 10/31/05	60
62	Pool Proposals Due	1 day	Wed 2/1/06	Wed 2/1/06	61
63	Rank Order Pool Proposals	2 days	Thu 2/2/06	Fri 2/3/06	62
64	Budget Pools	2 days	Mon 2/6/06	Tue 2/7/06	63
65	Trade-off & Set Residual	10 days	Thu 2/16/0	Wed 3/1/06	52,64
66	Enter Carry-Forwards	2 days	Thu 3/2/06	Fri 3/3/06	65
67	First Schools&Colleges (S&C) Budget Calculations	5 days	Tue 3/7/06	Mon 3/13/06	48,56,66
68	Apply Transition Formula to First S&C Budget	5 days	Tue 3/14/0	Mon 3/20/06	67
69	Revise Revenue Projection & Re-Balance Budget	2 days	Tue 3/21/0	Wed 3/22/06	68
70	Final S&C Budget Calculations	2 days	Thu 3/23/0	Fri 3/24/06	69
71	Calculate Presentation Budget	2 days	Mon 3/27/06	Tue 3/28/0	70
72	President's Approval	1 day	Wed 3/29/06	Wed 3/29/06	71
73	Allocate Academic Department Budgets	10 days	Thu 3/30/0	Wed 4/12/06	72
74	Board Approval	1 day	Thu 4/13/0	Thu 4/13/0	73
75	Distribute Budgets	1 day	Fri 4/14/06	Fri 4/14/06	74

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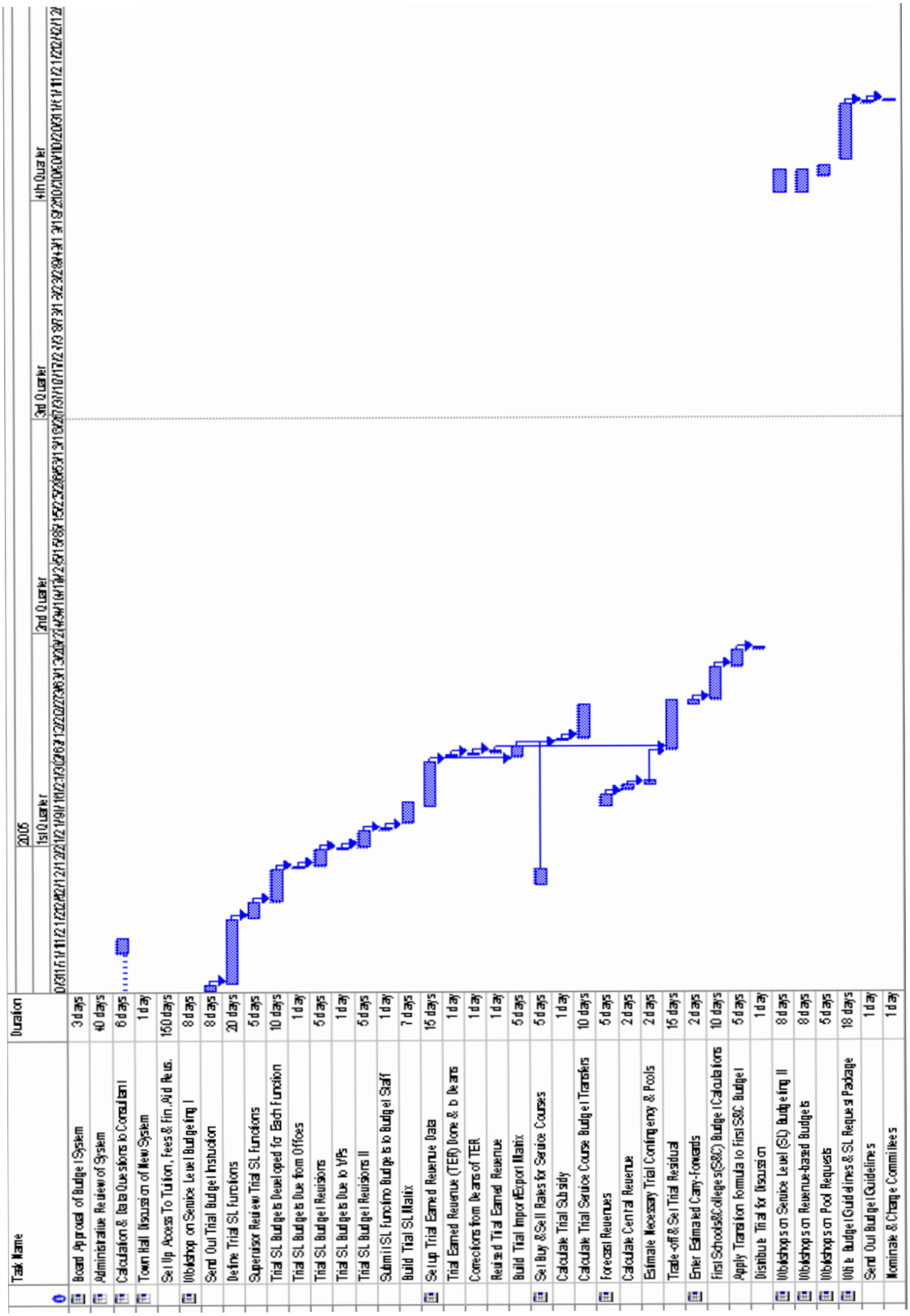

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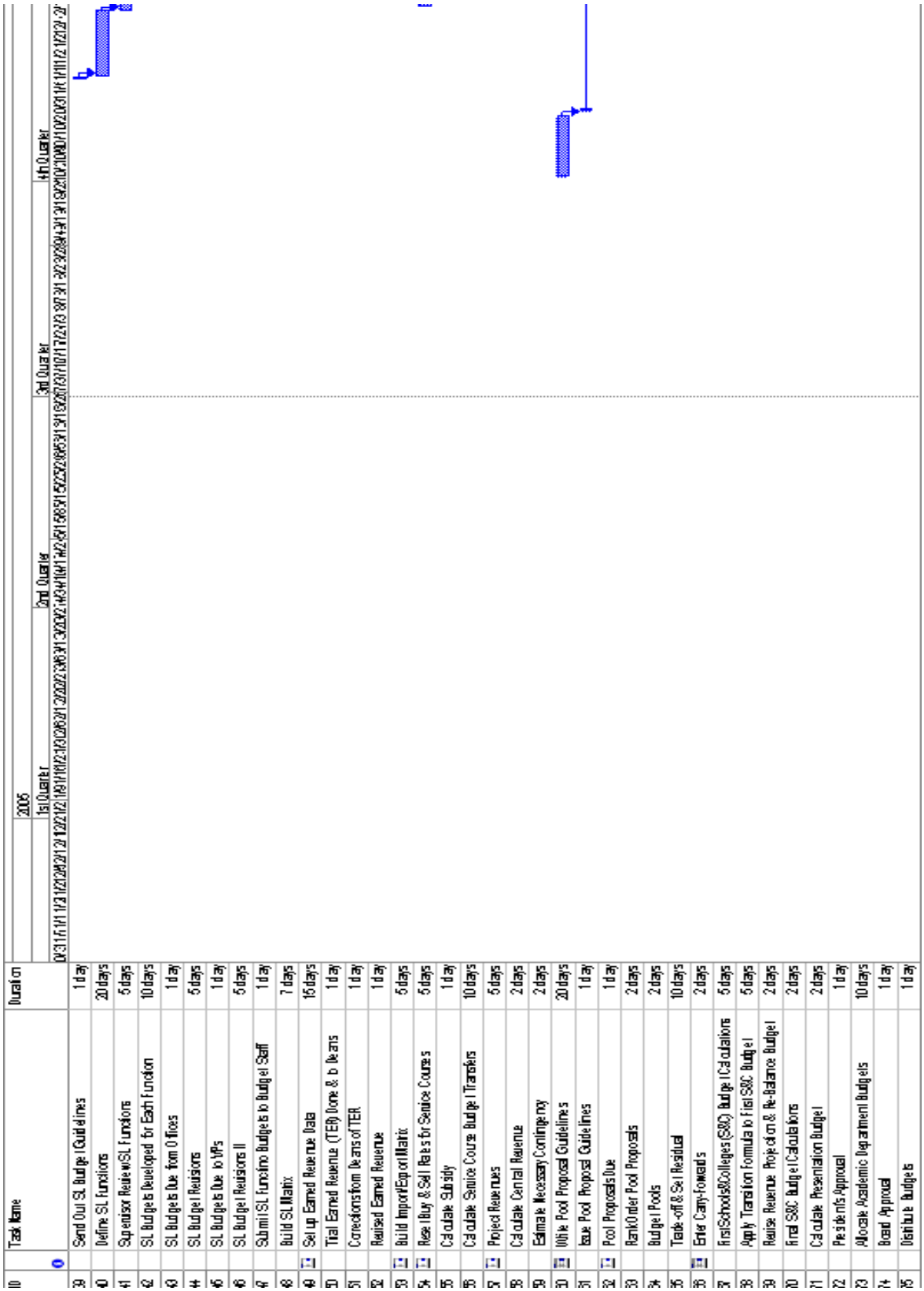

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34	Workshops on Revenue-based Budgets	8 days
35	Workshops on Pool Requests	5 days
36	Write Budget Guidelines & SL Request Package	18 days
37	Send Out Budget Guidelines	1 day
38	Nominate & Charge Committees	1 day

Timeline: 2006 — 1st Quarter, 2nd Quarter, 3rd Quarter, 4th Quarter; 2007 — 1st Quarter
2/21/1 1/81/11/21/22/52/12/12/23/53/13/13/24/24/94/14/24/35/75/16/25/26/45/15/16/25/27/27/97/16/27/38/68/13/23/29/39/19/19/24/10/10/10/10/20/21/61/11/11/21/22/12/12/22/31/7/1/14/21/22/42/

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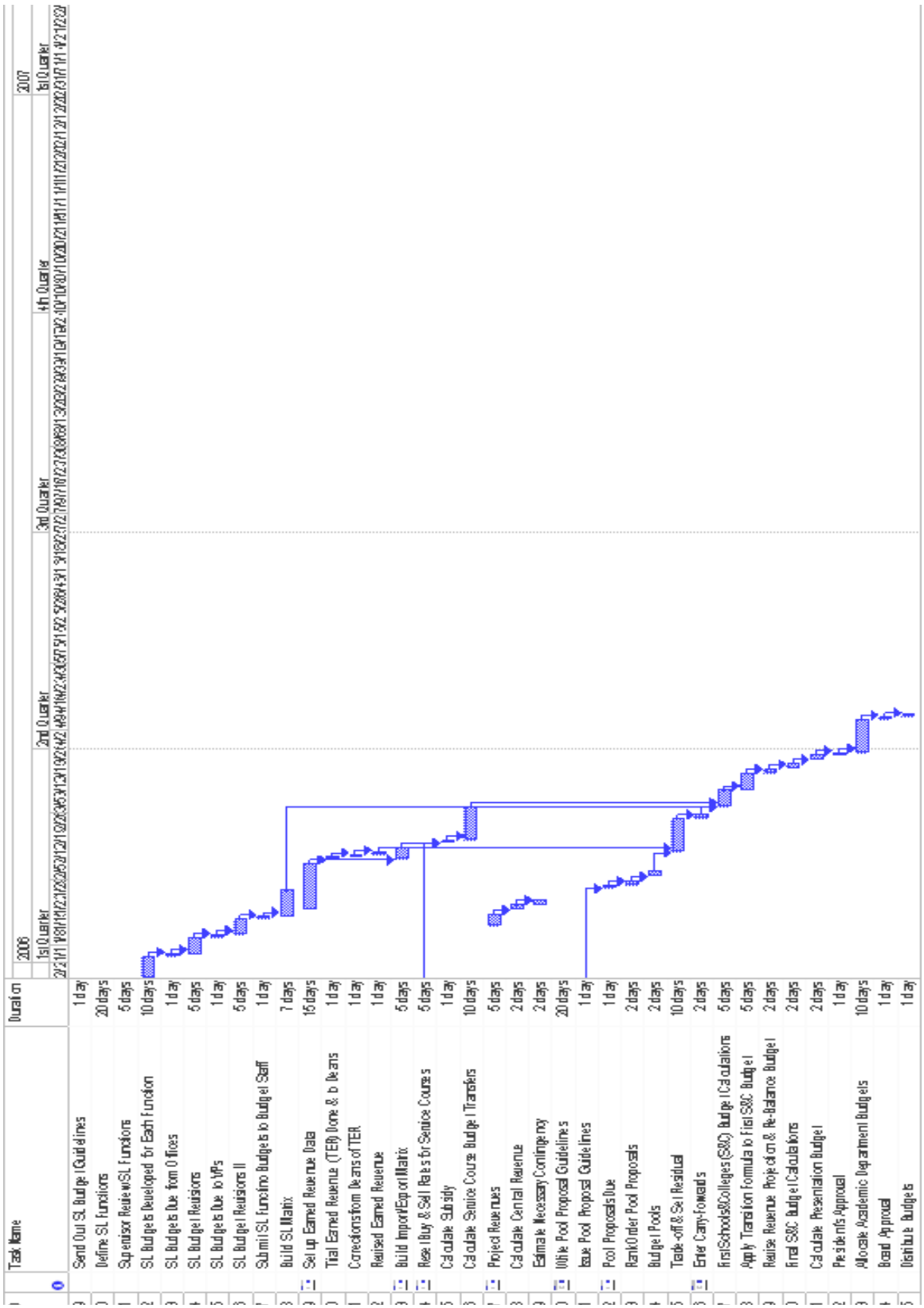

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