Montana Legislative Fiscal Division

SABHRS UPDATE

for the

Legislative Finance Committee

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SABHRS UPDATE FOR THE LEGISLATIVE FINANCE COMMITTEE

Introduction

The Statewide Accounting, Budgeting, and Human Resources System (SABHRS) has recently completed its first full year of use. Fiscal 2000 has now been closed. This update to the Legislative Finance Committee (LFC) reviews the performance of SABHRS with regard to the closing of fiscal 2000. This update also identifies future SABHRS issues that could have fiscal impacts.

Fiscal Year 2000 Closing

Closing Delayed

In the March 2000 update to the LFC, a concern was raised that the closing of fiscal 2000 might be delayed and that the budget process could be adversely impacted. Instructions to agency accounting staff identified July 21, 2000, as the target date for completing fiscal year-end transactions. As anticipated in the March report, this date came and passed and agencies were allowed to process year-end transactions until July 29. At this point, fiscal 2000 still wasn't closed as the system was again opened for a period on August 4 for the Department of Public Health and Human Services (DPHHS) to process year-end transactions. At the request of the Department of Administration accounting, the Office of Budget and Program Planning (OBPP), and DPHHS, the system was opened for DPHHS to enter adjustments that would minimized the necessity for making significant present law adjustments in the Executive Budget.

System Issues

Fiscal 2000 was delayed in closing for a number of reasons, some of which can be attributed more directly to SABHRS system issues. Prominent among the SABHRS system issues were cleanup of backlogs associated with the inter-unit journal process and system slowdowns associated with the volume of data in the system and the number of concurrent users accessing the system.

Inter-unit Journal Issues

The inter-unit journal process is used when one agency or program within an agency provides a service for another agency or program and receives a payment for providing the service. An inter-unit journal is an accounting transaction in which two government entities must complete a portion of the transaction before it will completely process and be recorded (posted) in the accounting ledgers. Until both agencies have completed their respective portions of the transaction, the journal will not be recorded in the accounting ledgers.

System Software Flaw Led to Backlogs

Prior to April 1, 2000, the information for one of the entities involved in an inter-unit transaction could be completed and posted to the accounting records without the other portion of the transaction being completed. This SABHRS software flaw and a system peculiarity (feature), which requires a transaction that had not been completed in one accounting-period (month) to be copied to the next accounting-period before it could be processed, combined to cause a backlog of invalid transactions.

System Fix

On April 1, a change to the SABHRS application code was implemented that required both portions of the inter-unit journal transaction to be completed and approved before any information would be posted to the accounting records. The cleanup needed to eliminate the backlog of uncompleted or invalid transactions that accumulated in the system, because of the SABHRS configuration prior to April 1, was a significant factor for delaying fiscal 2000 year-end closing. Since SABHRS has been modified to prevent incomplete inter-unit journals from posting, this should not be an issue for fiscal 2001 and beyond.

Journal Copy

SABHRS Support Bureau plans to implement a system modification that will automatically copy incomplete transaction documents from a closed accounting-period to the next accounting-period. This automatic copy feature is planned for September 2000 and will further help to minimize the potential for system caused delays for fiscal 2001 year-end closing and will make it easier for system users.

System Slowdowns

Besides the system cleanup issues mentioned above, the physical size and associated architecture of SABHRS has also impacted users. These architectural issues can be broken down into two specific issues - volume of data in database and system architecture limitations - that could be addressed exclusive of the other. These two issues will be discussed here relative to their impacts on the fiscal year-end delay, but will also be discussed later relative to their potential for future fiscal implications.

Database Size

The first issue involves the volume of data in the system database. As time has gone on and more accounting transactions have been entered into the system, the number of records in the database has grown. Large numbers of database records (lines of data) take longer to search and compile when users make inquires of the system. As the volume of data in a database grows it also takes longer for those operating the system to perform routine processes such as system backups, database tuning, and routine report compilation. As the number of records in the database continues to grow, the amount of system memory needed to store the database also increases. As a point of reference, SABHRS had roughly 15 million lines of general ledger transactions in fiscal 2000 compared to roughly 5 million lines of equivalent transactions on SBAS during its last year of operations.

Number of Concurrent Users and System Architecture

The second issue involves slowdowns caused by system limitations associated with the number of users concurrently accessing the system and the system architecture. System slowdowns resulted because of the heavy volume of user activity occurring during a very condensed period. Delays caused by heavy user activity were compounded because, during the fiscal 2000 year-end period, the same database server contained and supported the MBARS, human resources, and financial databases. It's like going to a shopping mall during the week of Christmas. At Christmas, it takes a lot longer to find a parking spot and shop because of the large numbers of shoppers than it does during an average shopping day.

Data Concerns

Expenditures without Appropriations

In the March update to the LFC, an issue was raised concerning the integrity of data in the system. A search of the fiscal 2000 expenditure data taken after fiscal 2000 was closed to agencies found that the system allowed entering expenditure transactions without entering a valid sub-classification code (a portion of the appropriation data) for the transaction. An analysis of transactions that showed expenditures of general fund, state special revenue, federal special revenue, and capital project funds identified roughly $115.5 million expended without a sub-classification code entered for the transaction. Further investigation identified that all but $26,852 of these expenditures were made to funds that are off budget or if the fund is a budgeted fund the expenditure is not a budgeted expenditure transaction according to state accounting policies. On September 1, SABHRS implemented a change to the system that requires a sub-classification code to be entered for all expenditure transactions. A type of sub-classification code has been established for use in recording non-budgeted expenditure activity. With these changes, the system will no longer allow leaving the sub-classification code blank when entering expenditure transactions.

Discrepancies Between General Ledger and Budget Ledger Expenditures

During fiscal 2000, a SABHRS application code deficiency allowed budgeted expenditures to be posted to the general ledger without being posted against an appropriation. SABHRS staff has identified that roughly 200 appropriation budgets are impacted for a gross difference of $3,053,894. Because some amounts offset other amounts, the net difference is $1,067,975 in differences that range from $0.01 to $697,943.

An April 2000 a software change was implemented that partially addressed this problem. PeopleSoft has issued a fix to their application code that should prevent this from happening. SABHRS staff is currently testing this software change to determine if it works and if it should be applied to SABHRS. SABHRS staff is also investigating if other software problems exist and could contribute to this issue.

Budget Analysis and Statewide Financial Audit

During the analysis of the Executive Budget, the Legislative Fiscal Division staff will be evaluating the data to identify areas where data irregularities exist or were significant

miscoding associated with SABHRS implementation may have impact the Executive Budget.

Another test of the data will be the statewide financial audit being performed by the Legislative Audit Division. This audit is scheduled to begin in November 2000 and be completed by April 2001, at which time more information will be available regarding the integrity of the financial data contained in SABHRS.

Issues With Potential Fiscal Impacts

Upgrades

SBAS and PPP Replaced

The Statewide Budgeting and Accounting System (SBAS) and the Payroll/Personnel/Position Control System (PPP) were software systems built with state government employees and did not rely upon a vendor keeping their commercially available product current with business and industry standards and practices. Montana controlled upgrades of SBAS and PPP, including what the upgrades would involve and when the upgrades would take place. SBAS and PPP have been replaced by SABHRS. Consequently, Montana relinquished most control of the software upgrade content and timing decisions. The Department of Administration has stated that the control was considered less favorable to the assurance of periodic upgrades. Montana still can decide what upgrade is most appropriate to implement, but the decision to delay or skip implementing an upgraded version of the vendor product involves tradeoffs and risks. The risks were discussed in the March update and are primarily associated with relying upon an unsupported software product.

Montana has required significant levels of customization of the standard commercially available product produced by PeopleSoft. Business processes in Montana state government that are not satisfied by the standard version of the software have primarily driven customization of the standard product. Because of this, upgrades are a significant issue for Montana. Significant effort must be made to evaluate each upgrade to determine the level of effort needed to implement the upgrade and the impact the upgrade will have on the business processes of the state. The approach previously taken by PeopleSoft to push upgrades to users on a nearly annual basis with a relatively narrow window of support available for retired releases has been a concern. PeopleSoft has responded to this concern with business practice changes associated with their upgrade practices.

PeopleSoft Philosophy

PeopleSoft, the vendor for all the SABHRS modules except for MBARS, was contacted to identify the company's philosophy for releasing new versions of its product. During discussions with the PeopleSoft representative, the following factors were identified as drivers for new product releases:

- Business and industry best practices;

- Technology advances;

- User input, by way of a customer advisory board; and

- Competition due to upgrades of competitors products.

Recent PeopleSoft Business Practice Changes

PeopleSoft made two business practice changes in response to concerns by PeopleSoft users regarding their upgrade practices. Concerns that prompted the change were that upgrades were being pushed out by PeopleSoft on a yearly basis and that users received support under the licensing agreement only up to six months after the retirement date of the second major previously retired release. In response to these concerns, PeopleSoft extended the support period from 6 months to 12 months following the second major retired release date. Another change was that PeopleSoft adopted a service pack philosophy of updates. This means that all updated versions of the standard PeopleSoft product will include all of the software fixes that were applied to earlier versions since the last major release. This new practice will begin with the release of human resources version 7.5, which is the version Montana plans to implement in December 2000.

The effect of the PeopleSoft business practice changes is that users of PeopleSoft products will have more flexibility to determine which upgrades they will implement. As such, users will have more flexibility to determine which upgrades will best match their particular business needs. These changes appear to be more compatible with Montana's biennial budgeting cycles.

SABHRS Operating Costs for the 2003 Biennium

SABHRS Operating Cost Increase

The Executive Budget may contain increases for SABHRS operating costs for the 2003 biennium. Development of the 2003 biennium budget has not been completed nor

	FY 2000 Expended	Percent of Total	FY 2002 Projected [2]	Percent of Total	FY 2003 Projected [2]	Percent of Total
Table 1						
SABHRS Operating Cost Funding						
General Fund [1]	$1,231,031	35.70%	$1,351,488	32.54%	$1,366,995	32.57%
State Special Revenue	817,215	23.70%	1,327,174	31.95%	1,342,492	31.99%
Federal Special Revenue	475,827	13.80%	672,608	16.19%	680,390	16.21%
Capital Project	4,500	0.13%	2,582	0.06%	2,594	0.06%
Proprietary	828,266	24.02%	596,452	14.36%	601,221	14.32%
Expendable Trust	114	0.003%	199	0.005%	201	0.005%
Pension Trust	11,967	0.35%	13,083	0.31%	13,234	0.32%
University	79,814	2.31%	190,000	4.57%	190,000	4.53%
Total Fiscal 2000 Payments to SABHRS [1]	$3,448,734		$4,153,586		$4,197,128	

[1] FY 2000 general fund includes $476,314 directly appropriated to SABHRS for SABHRS licensing costs and not allocated to agencies. In the 2003 biennium the licensing costs are included in the agency allocations for FY 2002 and FY 2003.

[2] For FY 2002 and FY 2003 the projected amounts assume the same funding that appears in the fiscal year-end expenditure data on SABHRS. The general fund direct appropriation was excluded from the funding model used to determine FY 2002 and FY 2003 projections. Agency allocations used to determine funding projections are from fixed cost allocations contained with the executive budget instructions for the 2003 biennium.

transmitted to the Legislative Fiscal Analyst. Because the budget request has not been finalized, SABHRS operating costs are speculative, but are based on information provided to agencies by the Office of Budget and Program Planning for developing agency budget requests. When the Executive Budget is finalized, the budget analysis will contain a more thorough discussion of the following SABHRS operating cost issues.

The available information indicates that SABHRS operating costs will increase by nearly 32 percent in fiscal 2002 and nearly 33 percent in fiscal 2003 from the combination of the general fund appropriation and internal service allocations that were authorized by the 1999 legislature. In comparison, the increases are 20 percent for fiscal 2002 and 22 percent for fiscal 2003 relative to the actual fiscal 2000 expenditures.

The difference between the legislative authorized amount of $3,156,522 and the actual amount of $3,448,734 that appears on Table 1 is due to an increase preliminarily authorized by the budget director to allow SABHRS to address upgrade issues. The increased authority supported the addition of 7.0 FTE to support upgrades of SABHRS software. These FTE and associated operating costs for upgrade support were funded via contributions from other state agencies.

Allocation Methodology Change

Table 1 shows the projected funding for the fiscal years 2002 and 2003 SABHRS operating costs. The projections assume the 2003 biennium allocations will be funded similar to how the allocated portion of the SABHRS operating costs were actually paid by SABHRS user agencies in fiscal 2000. If these projections hold true, state special revenue and federal revenue funding will support larger percentages of SABHRS operations while general fund and proprietary funding will receive reduced allocations of the costs. The primary reason for this change in allocation to the various fund types is the change in allocation methodology that is being proposed.

Currently, the SABHRS operating costs are allocated based on a combination of personal service costs based on FTE (40 percent weighting) and transaction activity (60 percent weighting). Under the proposed allocation methodology, the costs will be allocated to agencies based only on FTE counts. The new allocation methodology was endorsed by the SABHRS Executive Council. As such, agencies with higher counts of FTE will be allocated larger shares of the costs regardless of their overall use of the system. This allocation methodology is a policy decision in which the legislature may be interested. The legislature may wish to consider the appropriateness of an allocation methodology based only on the number of FTE verses including a component that would include transaction volume or other system usage factors.

Elimination of Direct General Fund Appropriation

The 1999 legislature appropriated general fund for a portion of the SABHRS operating costs. The general fund appropriation was made to fund the cost of the PeopleSoft software license. This direct appropriation is not being proposed for the 2003 biennium. Instead, all SABHRS operating costs would now be included in the allocation made to user agencies. The distribution of the software licensing costs to agencies factors in the allocation changes that would be born by agencies, but is not a growth of the program, only a change in funding methodology.

Agency Allocations of SABHRS Operating costs

Table 2 shows the proposed allocation of SABHRS operating costs to agencies for the 2003 biennium. The two columns under the heading "Changes from Base Amount" show the change from the fiscal 2000 actual allocation paid by agencies for fiscal years 2002

				Changes from Base Amount		Budget Allocation Multiples of Base	
Agency	Actual Fiscal 2000	Budget Allocation Fiscal 2002	Fiscal 2003	Fiscal 2002	Fiscal 2003	Fiscal 2002	Fiscal 2003
Legislative Branch	$14,215	$38,399	$38,843	$24,184	$24,628	2.7	2.7
Consumer Counsel	687	1,567	1,585	880	898	2.3	2.3
Judiciary	13,338	32,240	32,613	18,902	19,275	2.4	2.4
Governor's Office	6,303	16,198	16,385	9,895	10,082	2.6	2.6
Secretary of State	18,323	13,644	13,802	(4,679)	(4,521)	0.7	0.8
Political Practices	720	1,558	1,576	838	856	2.2	2.2
State Auditor	8,670	20,911	21,153	12,241	12,483	2.4	2.4
OPI	40,916	43,785	44,291	2,869	3,375	1.1	1.1
Crime Control	5,287	6,542	6,617	1,255	1,330	1.2	1.3
Justice	94,923	233,361	236,061	138,438	141,138	2.5	2.5
PSC	4,046	12,304	12,447	8,258	8,401	3.0	3.1
Bd of Public Ed	831	1,246	1,260	415	429	1.5	1.5
Comm. of Higher Ed	16,573	30,122	30,471	13,549	13,897	1.8	1.8
University System	79,814	190,000	190,000	110,186	110,186	2.4	2.4
School for the Deaf and Blind	9,663	25,443	25,738	15,781	16,075	2.6	2.7
Arts Council	3,117	2,181	2,206	(936)	(911)	0.7	0.7
State Library	7,331	13,706	13,865	6,375	6,534	1.9	1.9
Historical Society	9,897	22,615	22,877	12,718	12,980	2.3	2.3
FWP	176,029	198,697	200,996	22,668	24,967	1.1	1.1
DEQ	86,290	128,501	129,987	42,211	43,697	1.5	1.5
Transportation	374,157	675,880	683,700	301,723	309,543	1.8	1.8
Livestock	19,009	42,894	43,390	23,885	24,381	2.3	2.3
DNRC	104,005	157,813	159,639	53,808	55,634	1.5	1.5
Revenue	210,336	206,139	208,524	(4,197)	(1,812)	1.0	1.0
Administration	580,630	331,080	332,596	(249,550)	(248,034)	0.6	0.6
Appellate Defender	458	935	945	477	487	2.0	2.1
State Fund	97,326	73,125	73,971	(24,201)	(23,355)	0.8	0.8
PERS	8,005	8,722	8,823	717	818	1.1	1.1
TRS	3,962	4,361	4,411	399	450	1.1	1.1
Agriculture	20,017	34,848	35,251	14,831	15,234	1.7	1.8
Corrections	121,189	347,598	351,620	226,409	230,431	2.9	2.9
Commerce	77,572	114,558	115,883	36,986	38,311	1.5	1.5
Labor and Industry	258,560	205,155	207,528	(53,405)	(51,032)	0.8	0.8
Military Affairs	23,738	47,205	47,751	23,467	24,013	2.0	2.0
DPHHS	476,484	870,254	880,322	393,770	403,838	1.8	1.8
General fund appropriation	476,314	-	-	(476,314)	(476,314)		
	$3,448,734	$4,153,586	$4,197,128	$1,181,166	$1,224,708		

Table 2
SABHRS Operating Costs

and 2003. The two columns under the heading "Budget Allocation Multiples of Base" show what the budget allocation would be in the number of multiples of the fiscal 2000 expenditure. For the Department of Administration the multiple for 2002 is 0.6, which means the fiscal 2002 allocation would be roughly two-thirds the amount actually allocated in fiscal 2000. For the Legislative Branch, the fiscal 2002 allocation would be 2.7 times the fiscal 2000 actual allocation. The changes for each agency include the aggregate changes that would result from three factors:

- change in allocation methodology;

- elimination of direct general fund appropriation; and

- program increases.

In fiscal 2002, the agencies with the highest dollar increase from the fiscal 2000 allocation are the Department of Public Health and Human Services ($393,770),

Department of Transportation ($301,723), and Department of Correction ($226,409). Likewise, the Department of Administration ($249,550), Department of Labor and Industry ($53,405), and State Fund ($24,201) would see the largest dollar reductions from the fiscal 2000 allocation.

Database Size

Efforts in the Works to Manage the Size of the Database

Earlier it was identified that the size of the SABHRS database has grown significantly since the system was implemented. Database size was identified as a contributing factor for system performance delays encountered by system users during fiscal year-end closing. Since SABHRS has the capability of searching historical data from prior fiscal years, as well as current year data, the problem of a growing database should be addressed.

Records Committee

A committee has been formed to evaluate the data that is currently being stored on the SABHRS data tables. The purpose for this committee is to categorize the data contained in the SABHRS database to determine how to minimize the impacts of database size on system performance. Some of the issues the committee will evaluate are:

- what historical data must be retained and what data can be removed from the database;

- how long the data must be retained on the production database or in a reportable format;

- what form is most appropriate for retaining the data; and

- what is the most appropriated medium for storing or archiving system data?

Through this effort, the committee is looking at options for reducing the current and future size of the SABHRS database and identifying alternate strategies for archiving and managing SABHRS data. Some of the options include:

- a system for archiving data;

- a separate database server for non-current year data;

- generating reports for storage on the report distribution server;

- housing the databases on separate database servers or on the existing server; and

- duplicating production data for query on a data warehouse server.

Regardless of the strategy selected, there is likely to be a fiscal impact associated with its implementation. For example, if separate database servers are used to house each

database the cost of implementation would be several hundred thousand dollars for each server. This initial implementation cost would be in addition to the additional annual operating and maintenance costs and replacement costs.

Database Administrator

As the complexity and amount of data stored on databases continues to grow, it becomes increasingly more important to manage the database. A likely outcome from this would be the need to increase staff to administer the databases. As such, it is likely that the legislature will see requests for additional database administration staff.

Infrastructure

Separate Database server

System architecture was identified as a contributing factor for delays experienced by SABHRS users during the fiscal year-end period. Bottlenecks caused by system architecture are analogous to a congested road system during rush hour. The more cars that are on a given road at a given time, the longer it takes to get to your destination and the longer you wait for system movement. Likewise, as more users attempt to enter new accounting transactions or query existing accounting data, the congestion increases and the system response is adversely impacted. The effects of this system congestion were compounded during the fiscal year-end period for two primary reasons: 1) the fiscal year-end period is typically a time when large numbers of users are attempting to access the system; and 2) there was a backlog of transactions that had previously failed to process and required cleanup.

The number of concurrent users accessing the system during the fiscal year-end period will continue to be an issue during subsequent fiscal years. This is not a problem isolated to SABHRS but to the accounting process. On the other hand, the number of transactions requiring cleanup during the fiscal year-end period should decrease for subsequent fiscal years. As the system matures software and business process issues that result in transactions requiring cleanup should be reduced and not impact subsequent closing periods as much as they did during fiscal 2000 closing. Furthermore, many of the system problems that caused the buildup of transactions requiring agency action to cleanup during the fiscal 2000 year-end period have been resolved.

New Server for HR 7.5

Currently, the SABHRS financial module, human resources, and MBARS are housed on one common database server. When the next release of the SABHRS human resources version (HR 7.5) is implemented in December 2000, SABHRS anticipates moving the human resources system to a separate database server. By implementing this move the system response to users should be improved. These improvements are anticipated because the users accessing human resources data and processing payroll transactions will no longer be competing for system resources with users performing financial transactions. Consequently, users of the human resources database and financial database should see improved system performance.

As discussed earlier, the separation of the human resources and financial databases from one server to two will have a fiscal impact because of the acquisition and operating costs associated with the new server. A used server purchased for this purpose cost roughly $120,000.

Conclusion

SABHRS has completed its first full fiscal year of use. The closing of this first fiscal year was delayed from the published closing date by two weeks. This delay appears to have had minimal impacts on the development of the Executive Budget for the 2003 biennium. The Office of Budget and Program Planning was most impacted by this delay. However, no statutory deadlines appear to be impacted.

The SABHRS system factors that contributed to the delayed closing either have been addressed or are being evaluated. The most significant problems that plague the system appear to be database growth and system capacity. The remedies for these problems will likely have fiscal impacts.

During fiscal 2000, the SABHRS operating costs paid by agencies were higher than the total of agency allocated costs and the direct general fund appropriation authorized by the legislature and contained in HB 2. Authority for the increased cost recovery was granted by the budget director and funded by contributions by agencies. The increase funded upgrade efforts to prepare for implementing an upgraded version of PeopleSoft software. A portion of the increased costs was for the addition of 7.0 FTE who will be dedicated to supporting the continued upgrade effort. SABHRS operating costs will increase for the 2003 biennium. The additional staff to support upgrades is the primary factor to the growth. In addition to the growth of the costs, two changes are being proposed for allocating the costs to user agencies. One change is to the methodology for determining the basis for allocating the costs to agencies. The second change is that a portion of the costs that were funded via an appropriation of general fund would be included in the amount allocated to agencies. The effect of these changes is that most agencies will see significant increases for supporting SABHRS.

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