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An On-Line Budget Tracking System for Massachusetts

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Abstract

Officials in both executive and legislative branches of state government need up-to-date knowledge of the status of the state budget as it progresses from Governor to House to Senate to Conference Committee. Basic information is required on what is happening in the 1500-odd accounts that make up the budget. Especially valuable are simple, but timely, ad hoc analyses, such as changes from one version of the budget to another and special subtotals of accounts by particular programs. A flexible on-line computer system written in a high-level language provides these services.

The system and its evolution may be analysed from the point of view of four contributing management science methodologies (1) implementation theory, (2) information systems technology, (3) models, and (4) planning and control systems. Simple but important principles from each area are conspicuous in the system development.

Although the system came into operation late in the FY 75 budgeting process, it was used for several tasks and the results to date are evaluated. The costs of the system have been small in money and people's time. The major, if somewhat intangible, benefit is the injection of certain analytic capabilities into the Fiscal Affairs Staff of the Department of Administration and Finance (A&F). More concretely, a knowledge of the budget numbers and, especially, changes in them was acquired in a timely fashion by A&F officials, the Senate Ways and Means Committee, the House-Senate Conference Committee, and the press. Members of the Fiscal Affairs staff developed a greater understanding of the FY75 budget and an increased ability to interact with it. In addition, the system appeared to contribute to good relations between A & F and the legislature by being a source of timely information. This, in part, was the result

of a system-induced change in process because budget data went from Senate Committee to A&F, an executive branch department, and then back to the legislature. Finally, the system probably produced a small amount of labor reduction by performing certain functions with less than human effort. However, this has been balanced by additional tasks performed (just the tasks that make the system important).

1. Introduction

> The Massachusetts budget-making process is a shell game. And over 5.7 million Massachusetts residents are the losers.
>
> Lack of information, confusion and politics wreak havoc on fact-seeking legislators and citizens alike.
>
> A privileged few with budgetary knowledge based on many years of experience leaves others to make blind decisions. Their mastery of the budgetary maze with its Alice in Wonderland qualities effectively eliminates meaningful participation by others.

So declares the Massachusetts Taxpayers Foundation in a report on the Massachusetts budget-making process [1]. The report goes on to analyze the present system and make a variety of recommendations for changing it. Some of these call for better information and better access to it. Others ask for better revenue projections, explicit estimates of continuing costs and the gradual implementation of a program management system. Implicit throughout and explicitly recommended are improved financial information systems.

Certain steps to improve the budgeting process have already been taken. In August 1974 the legislature passed a budget reform act [2]. The following excerpt illustrates the data expectations thereby made law:

> ...recommendations for appropriations... submitted by the governor...shall be classified to show the request of each officer having charge of an office, department or undertaking, including priorities assigned to each program by said officer, the recommendation of the [relevant] secretary..., the recommendation of the governor, the prior year appropriation, if any, and shall indicate the number, if any, of permanent positions proposed, ... and the number of persons to be served or the number of actions to be taken by such officer...

The clamor for information to increase public accountability and managerial control shows through this wording. To implement the law, data will have to be collected, collated, analyzed and tabulated. This implies the need for some kind of computerized information system.

Yet caution is required. As much experience has shown, numbers in a computer do not an information system make nor stacks of printout a sage. The best systems often start modestly and evolve. Furthermore, different actors in the budget process have different needs and may best be served by different means.

Therefore, within a general goal of developing aids to the budgeting process, we have defined an initial task. This is to develop an experimental but operational and useable budget preparation and tracking system. It is intended specifically to assist at least one group, the analysts in the Fiscal Affairs section of the Executive Office of Administration and Finance. However, at the same time, it is hoped and intended that the system will be helpful to others and that, more generally, we shall learn what will aid policy analysis in state government.

In this paper we first describe the budgeting process in Massachusetts and then the tracking system that has been built. From there we go on to present four views of the system from the standpoints of four different management science methodologies. Finally we attempt to evaluate the system as it has progressed so far.

2. The Budgeting Process and the Budget

2.1 The Process

Setting a budget for the Commonwealth of Massachusetts is a year long process. The cycle begins in the summer when the Comptroller sends each state

agency a computer printout showing its prior year expenditure and current appropriation. This is broken down by account and subsidiary account. (An account is a line item in the budget and a subsidiary account is a subdivision thereof.) Using the past as a base, the agency prepares a request for the next fiscal year (starting July 1 of the following calendar year). The agency's proposal is reviewed by the relevant cabinet secretary, and by September 15, all budget requests are supposed to be submitted to the Director of the Budget Bureau, although in fact many are not in his hands by this date. When the agency requests are submitted, courtesy copies are sent to the House and Senate Ways and Means Committees.

In the late fall the requests are reviewed by Budget Bureau analysts and by the Commissioner of Administration (the state's top fiscal officer). These reviews verify the accuracy of the budget requests and assess the merits of any proposed increases. In recent years the reviews have resulted in cuts of 10-15% from the requested amounts. The resulting budgets go to the Governor as input to his budget recommendations.

The state constitution requires that the Governor recommend a budget to the General Court within three weeks of its convening. The Governor usually files his budget message with the House Clerk on the fourth Wednesday in January. His recommended budget (known as House 1) is presented in line item appropriation account form and includes:

- the prior year's expenditures
- the current year's appropriation
- agency budget requests for next year, and
- the Governor's budget recommendations for next year.

Supporting schedules show account breakdowns to the subsidiary level and include personnel counts. The Governor's recommendations automatically go to the House Ways and Means Committee. This version of the budget does not include recommended capital expenditures, which arrive later in a separate capital budget, nor does it include recommendations for new programs, which the Governor usually sends in supplementary budgets.

In the period from January until about April, the House Ways and Means Committee analyzes the recommended budget. This process frequently includes closed hearings with cabinet secretaries and the heads of spending agencies. The outcome of these meetings is a draft appropriation bill which the Committee Chairman reports to the House in late April. The Committee's bill is debated on the House floor, often ammended, and eventually (usually in May) is passed by the House.

Once the House passes the appropriation bill it is sent to the Senate and there referred to the Senate Ways and Means Committee. While this committee is sent a copy of the Governor's budget messag at the same time as is the House Committee, the Constitutional requiremen that all appropriation bills originate in the House prevents the Senate from doing more than analyzing the Governor's message until the House bill is passed. Once the House bill arrives, the Senate Ways and Means Committee examines it, makes the amendments it wants, and reports the bill out to the full Senate. Because of the statutory requirements to enact an appropriation bill before the beginning of the fiscal year (July 1), the time spent on the bill by the Senate is usually considerably less than that spent by the House.

After the Senate passes its bill, the House and Senate must reconcile any differences. Normally this means a conference committee, composed of members

of both Ways and Means Committees. After revision the bill goes back to each house, and after both accept it, the measure goes to the Governor for his signature. The Governor may sign the bill, veto it, veto specific line items, or reduce specific line items through the "item reduction veto" (seldom used, since the same result can be obtained more flexibly by withholding funds via the allotment process). If the bill is signed, it becomes law. In the case of any type of veto, the Governor must notify the House within ten days of his receiving the budget; a two-thirds vote of both houses overrides the Governor's veto.

To sum up the process, after a full year of work, the spending agencies' original budget requests have passed through a half dozen versions and finally emerged as the budget for the Commonwealth. The appropriation act, however, is not the full story of state spending. Capital expenditures are not included, but rather appear in a separate capital budget that follows a process closely paralleling the one described above (athough in miniature). In addition, not all current spending is included in the appropriation act. The Governor has the power to recommend supplementary (for new programs) and deficiency (for agencies whose initial funds are found to be insufficient) budgets. In recent years both of these devices have been used extensively.

2.2 The product

The basic component of the budget is the line item appropriation account. Each such account represents a part of the activity of one spending agency. Accounts are further broken down into one to twenty subsidiary accounts which represent particular types of expenditures -- eg., salaries, travel, office and administrative expenses.

The budget is hierarchical; that is, accounts aggregate into agency totals, agencies into departments, and departments into secretariats. Paralleling the budget is the Personal Services Book, which gives the number of positions included in each line item account. Similarly, the capital outlay budget describes proposed capital expenditures by account. State revenues are grouped into funds (e.g., the General Fund, the Highway Fund), and each account in House 1 shows which fund or funds supply its moneys.

The form and nature of the budget document and the budget process have certain implications. First, only those people who spend a great deal of their time working with the budget can truly understand how the state is spending its money. This tends to put the average legislator at a disadvantage relative to a Ways and Means Committee member, and results in relatively little input from the floor of either branch of the legislature. A related problem is that of understanding program efficiency and effectiveness. Since the budget does not include any unified indication of what programs each expenditure is to support, it is difficult to track the size of particular programs or to determine their success in meeting their goals. The problem is compounded by the practice of starting with the current budget as a base, and focusing attention only on changes in level of spending.

3. Computer System Description

Specifications for the system are given in Section 3.1 and its current state of realization in Section 3.2.

3.1 Specifications

(1) Input and storage of various versions of the state budget (e.g. those of Governor, House, Senate and working versions of same). Up to ten versions should be possible.

The budget is made up of about 1500 accounts. For each account the system must contain

- a dollar amount (which can differ for different versions)
- an identifying number
- a verbal description
- the associated Secretariat
- the associated Department
- one or more associated Funds and percentage figures for each indicating what fraction of the money for the account comes from that Fund.

To give an example, Account 2611-1300, Maintenance-Salisbury Beach, has a recommended amount for FY1975 of $370,665 in the Governor's budget. The account is part of the Department of Natural Resources under the Secretary of the Environmental Affairs. 100% of the money comes from the Recreation Areas Fund.

For some versions of the budget, subsidiary account data (breakouts by salaries, supplies, travel, etc.) may be required. The system should accomodate up to 6 active subsidiary accounts per main account.

Other data to be stored are personnel counts by department and secretariat and departmental revenues.

It should be possible to input a budget version quickly, in a matter of a few hours if necessary. This means the ability to type the data in online and implies prompting, editing, display and other features to facilitate input. In addition versions of the Budget that arrive in machine readable form (e.g. tape and cards) should be installable within 24 hours of receipt.

Input, especially of online versions or small changes, should not require computer skills beyond an hour or two of training. For example, a

secretary should be able to type in a budget; a policy analyst should be able to create new, modified budgets from one presently stored by changing accounts or blocks of accounts.

(2) Manipulation and analysis capabilities. Typical operations needed are to:

- change numbers individually
- change them in groups according to present rules (eg. increase all accounts of a certain type by 10%)
- form standard aggregations. (Departmental and Secretariat totals should be routinely calculated and stored)
- compare budgets by taking differences of different versions.
- select accounts by Boolean criteria (e.g. identify those accounts that have more than 10% increase over last year and are also greater than $50,000).

The manipulations should be easy enough to do so that a policy analyst can do them with a few hours training.

(3) Output of informal and formal reports:

- informal tables, graphs, intermediate steps in analyses, etc.
- extraction of budget details on an ad hoc basis
- special purpose analysis
- Formal reports including
  - (a) Frequently used summaries (see Fig. 1)
  - (b) Basic information for
    - House 1 (Fig. 2 shows a sample page)
    - Appropriations Bill (Fig. 3 shows a sample page)

Informal tables should be readily constructable by a relatively non-technical person. A flexible report generator should be available so that a technical person can set up formal reports relatively easily. Standardized formal reports should be executable by one or a few simple macro commands.

Fig. 1. Example of Frequently Used Summary

TRANSPORTATION AND CONSTRUCTION

DEPARTMENT	APP74	REC75	REC75.A	H5550.A	SENATE	SEN.HOU
SECT AND COMMISSION..	$766,236	$784,203	$748,522	$713,095	$774,200	$61,105
PPC.....	$1,499,926	$1,464,209	$1,423,486	$1,531,648	$1,490,108	$-41,540
DPW PERSONAL SERVICES	$49,291,550	$50,504,488	$48,206,532	$49,[illegible],000	$49,[illegible],000	$0
ADMIN AND ENG.....	$4,276,623	$4,699,738	$4,486,882	$4,187,888	$4,187,888	$0
HIGHWAYS AND BRIDGES.	$18,644,783	$19,066,500	$19,488,024	$19,045,500	$19,045,500	$0
WATERWAYS.....	$2,588,909	$976,795	$932,351	$954,495	$954,495	$0
CONSTRUCTION.....	$6,070,000	$1,050,000	$1,002,225	$1,050,000	$1,050,000	$0
SOLID WASTE DISPOSAL.	$175,492	$160,600	$153,293	$160,600	$160,600	$0
LOCAL AID.....	$35,750,000	$0	$0	$0	$10,750,000	$10,750,000
MBTA SUBSIDY.....	$0	$35,000,000	$33,407,499	$35,000,000	$35,000,000	$0
TOTAL.....	$119,063,519	$114,606,533	$109,848,814	$111,943,226	$122,712,791	$10,769,565

EDUCATIONAL AFFAIRS

DEPARTMENT	APP74	REC75	REC75.A	H5550.A	SENATE	SEN.HOU
SECT AND OTHER.....	$3,046,606	$4,378,208	$4,178,999	$4,216,049	$4,355,250	$139,201
BD OF EDUCATION.....	$7,608,439	$8,592,286	$8,201,334	$7,641,505	$8,787,375	$1,145,870
SPECIAL EDUCATION....	$24,015,406	$32,581,410	$31,098,955	$32,516,636	$32,280,836	$-235,800
LOCAL AID.....	$217,818,265	$305,789,713	$306,337,102	$309,789,713	$310,850,675	$-12,539,034
BD OF HIGHER ED.....	$12,582,511	$12,595,007	$12,021,933	$13,595,007	$15,710,007	$2,115,000
STATE COLLEGES.....	$55,366,037	$59,603,896	$56,977,818	$60,823,127	$60,575,899	$-247,228
LTI.....	$9,903,132	$10,644,861	$10,160,518	$11,026,246	$10,538,246	$-488,000
SMU.....	$8,807,358	$9,337,008	$8,912,174	$10,261,827	$9,264,838	$-996,989
U MASS.....	$85,560,327	$93,327,101	$89,080,712	$94,399,701	$93,992,794	$-406,907
COMM COLLEGES.....	$34,494,345	$38,255,941	$36,515,293	$40,077,599	$39,717,249	$-360,350
TOTAL.....	$459,292,426	$575,195,431	$563,484,838	$597,347,410	$585,823,169	$-11,524,237

Item No.	Organization Unit	Fund	Citation of Statute	1973 Expenses	1974 Appropriation	1975 Requested	1975 Recommended
	DEPARTMENT OF MENTAL HEALTH						
	Function: To assume responsibility for the care, control and treatment of all mentally ill, epileptic and mentally deficient persons, and of alcoholics and drug addicts, the care of whom is vested in the Department by law. To supervise and control all public institutions which receive such persons and to have general supervision of all private institutions for mentally ill persons. To establish clinics, nurseries, day care programs and mental health centers for mentally ill and deficient persons. To furnish psychiatric advice to courts and to correctional institutions. To handle collections for all services rendered to patients. To engage in research and to maintain statistical data relating to the admission and treatment of patients.						
5011-0000	Administration		G.L.19, §§ 1, 17; 123, § 17	$ 6,342,986	$ 6,695,395	$ 9,634,502	$ 6,808,343
5011-0001	Medical examinations for mentally retarded			80,743	165,000	–	250,000
5011-0702	Upgrading services to the mentally retarded		1973, 1181		75,000	–	139,292
5011-1010	Certain public social services			902,227	975,000	–	–
5012-9101	Research	*Federal*		*283,850*	*417,000*	–	–
5012-9103	Public Service Training Program	*Federal*		*751*	–	–	–
5012-9104	Library Improvement Grant	*Federal*		*2,794*	–	–	–
5013-0100	Division of Drug Rehabilitation		G.L.123, §§ 38-55; 19, § 8A	3,275,438	3,425,769	5,524,065	3,425,769
5014-0100	Programs for the mentally retarded			–	2,401,750	9,416,035	4,361,040
5015-0100	Special projects			–	–	–	200,000
5016-0100	Mental retardation institutions – service upgrading			–	–	–	3,000,000
		–State		$10,601,394	$13,737,914	$24,574,602	$18,184,444
		Federal		*$ 287,375*	*$ 417,000*	–	–
	REGION ONE						
5111-0000	Administration		G.L.19, §§ 17, 26	$ 203,582	$ 232,571	$ 193,363	$ 244,500
5121-0000	Mental health and retardation services		G.L.19, §§ 17, 26	1,359,143	1,785,713	3,583,580	2,178,213
5121-1509	Prep. of plans for a mental health center, Springfield			60,000	–	–	–
				$ 1,621,725	$ 2,018,284	$ 3,776,943	$ 2,422,713
	Northampton Center for Children and Families Location – Northampton						
5161-0000	Administration		G.L.19, § 123	$ –	$ –	$ –	$ 500,000

Item		
	three hundred and sixty-four permanent positions. Notwithstanding the provisions of section twenty-three of chapter twenty-nine of the General Laws, no monies shall be advanced to the department from this account except for necessary travel for departmental personnel	$3,883,524
	Total	$4,801,325

Bureau of After-care, Delinquency Prevention and Community Services.

4250-1100	For the commonwealth's share of delinquency prevention programs through grants-in-aid to cities and towns and to other public agencies, and through purchases of services from private non-profit agencies; provided, that expenditures from this item shall be contingent upon the prior approval of such programs by the commissioner of administration and shall be expended with at least an equivalent amount of city, town, county, federal or private funds; and provided further, that no expenditure or commitment made pursuant to this item shall be incurred in excess of funds which have been appropriated herein	$1,130,000
	Total, Department of Youth Services	$16,976,042

Department of Correction.

4311-0001	For administration, provided, that the persons employed under the division of classification of prisoners shall not be subject to the civil service law and rules; and, provided further, that, notwithstanding any provision of law to the contrary, the director of civil service shall certify to the commissioner of correction, on receipt of permanent requisitions, names of correction officers to fill permanent vacancies, and the salaries of such employees for the official training period shall be paid from this item; including not more than seventy-three permanent positions	1,525,150

For the maintenance of and for certain improvements at the following institutions under the control of the department of correction.

4311-0002	For the necessary hard cash to be used in conjunction with L.E.A.A. program funds; provided, that expenditures from this item shall be contingent upon the prior approval by the proper federal authorities of the program for which these funds are to be expended	172,245
4312-0001	Correctional institution at Bridgewater, including not more than five hundred and eighty-six permanent positions	9,903,225
4313-0001	Correctional institution at Walpole, including not more than three hundred and twenty-seven permanent positions	4,636,777
4313-2001	Correctional institution at Walpole, industries; provided, that the commissioner of correction shall determine the cost of the manufacture of motor vehicle registration plates and certify to the comptroller the amounts to be transferred therefor from the Highway Fund to the General Fund; and including not more than thirty-five permanent positions	1,996,465
4313-9001	For flame resistant mattresses	20,000
4313-9002	For certain wall tower search lights	6,000
4314-0001	Correctional institution at Concord, including not more than two hundred and eighty-five permanent positions	4,240,275
4314-2001	Correctional institution at Concord, industries, including not more than fifteen permanent positions	409,110
4315-0001	Correctional institution at Framingham, including not more than one hundred and thirty-four permanent positions	1,799,309
4315-2001	Correctional institution at Framingham, industries, including not more than ten permanent positions	193,850
4315-9005	For certain repairs to power plants	23,500
4316-0001	Correctional institution at Norfolk, including not more than three hundred and nine permanent positions	4,983,484
4316-2001	Correctional institution at Norfolk, industries, including not more than thirty-one permanent positions	729,330
4316-9001	For certain repairs and renovations to the water tank — oval area	18,000
4316-9002	For certain repairs and renovation to the water tank — farm area	18,000
4317-0001	Correctional institution camps, including not more than forty permanent positions	819,564
4341-0001	For a receptions diagnostic center	499,180
4342-0001	For a pre-release guidance center	242,479
4343-0001	For a pre-release center at Shirley, including not more than twenty-seven permanent positions	818,277
	Total	$31,529,070

Parole Board.

4380-0001	For the office of the board; provided, that the position of employment officer, parole board, shall not be subject to the provisions of chapter thirty-one of the General Laws; including not more than one hundred and three permanent positions	1,503,840

3.2 Current Status of System

The system has a developmental version and a production version. The developmental version is on an IBM 360-67 at Brown University which can be accessed by local call from MIT and the State House through the NERCOMP communications network. The production version is on a commercial time-sharing facility, TYMSHARE. The computer is an IBM 370-158 and can be accessed by a local call in Boston.

The system is programmed in EXPRESS, a high level language that has been designed to facilitate the development of models and flexible information systems. Many of the features required, including online input, prompting, editing, data base management, array manipulation, and display are automatically provided. A program called DATA READER converts machine readable input with any standard format into a data base accessible to EXPRESS commands.

The basic definitions of most key budget variables were laid out and declared to the system in March 1974. Data for several versions of the FY75 budget were put in during spring 1974 and the system was used in ways described later in the paper. The budget versions included:

APP74	Appropriations for FY74 as appearing in House 1, Jan. 74
REC75	Governor's recommendations for FY75 as appearing in House 1, Jan. 74.
REC75.A	FY75 recommendations as ammended.
H5550.A	House bill including floor amendments.
SENATE	Senate Ways and Means Committee recommendations

In addition, several special programs have been written:

(1) Input facilitation. These routines provide special prompts and permit entering numbers in the form that users are most comfortable with.

(2) Reporting. A basic command aggregates accounts by department within each secretariat and lays out headings for departments and secretariats. An adaptation permits handling the Constitutional Officers. An overall title and grand total is provided. Appendix 2 shows a sample report of this type. A more general command permits "department-like" and "secretariat-like" entities to be defined, titled, and reported. An additional command can be invoked to save the definitions for subsequent use.

System source listings as of June 74 are given in Appendix 3.

4. Four Methodological Views of the System

A fuller understanding of the system emerges from viewing it from the perspectives of four different management science methodologies -- implementation theory, information systems technology, models, and planning and control theory. Each of them contributes to the working of the system.

4.1 Implementation Theory

Management Science has suffered many growing pains -- limited or no use of study results, systems which quickly become obsolete, 'good' solutions which are modified so extensively before being put into practice that they become unrecognizable. To a large extent these problems stem from our lack of an effective theory of implementation, leaving us without the knowledge needed to manage our applications. Recently, however, researchers have started to study the implementation process itself, and a number of paradigms have emerged. Those that look most promising contend that MS/OR implementation is a specific instance of organizational change and bring the results of research in this area into play. We have actively attempted to do this. By using the organizational change model as a guide to implementation and carefully recording the events taking place throughout the process, we hope to learn more about both the nature of implementation and the usefulness of the theory as a management tool.

4.1.1. The Organization Development Model

The theory we shall use is the Kolb-Frohman organization development (OD) model of the consulting process. Variations have previously been applied to MS/OR implementation (Lucas and Plimpton [5], Urban [8]). The variation employed here breaks the implementation process into seven steps and puts in a number of loops to make the process iterative. The theory is normative; i.e., it tries to say what people should do, not necessarily what they do do.

The process (Figure 4) begins with Scouting. The manager and management scientist assess each other's needs and capabilities, and attempt to determine whether a 'fit' exists. The management scientist attempts to 'unfreeze' the organization so as to establish a basis for change. At the same time the organization tries to influence the management scientist and make him cognizant of its special needs (Munson and Hancock, [6]).

During Scouting the management scientist tries to determine an appropriate Entry into the organization. Entry aims at developing an initial relationship and basis for trust between the management scientist and manager. A formal legal contract may or may not be developed between the parties but a "psychological contract" (Schein, [7]) emerges that encompasses each party's expectations, resources, and willingness to influence and be influenced during the implementation. Client and consultant develop an initial, tentative statement of problems, goals, and objectives. Note that the relationship is between the management scientist and specific individuals or groups in the organization, not the organization as a whole.

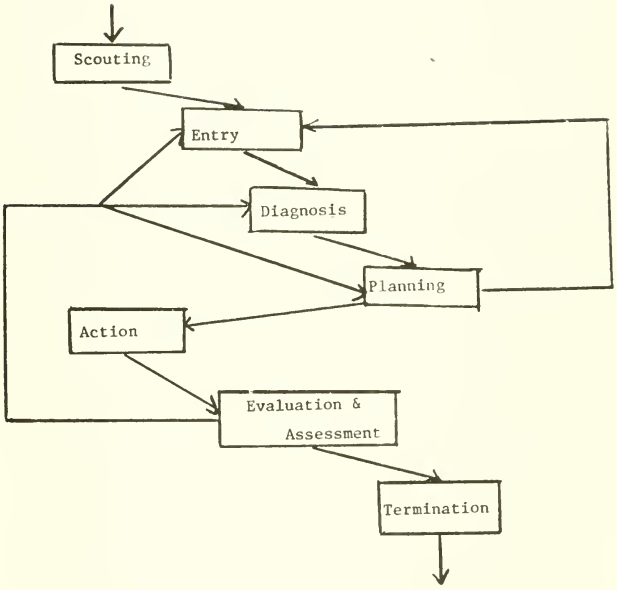

Figure 4: The Organization Development Model of Implementation

If entry is successful, the process moves to Diagnosis. This focuses on refining the statement of problems, goals, and objectives developed in rough form during entry. The manager and management scientist jointly agree upon criteria and measures for evaluating any proposed solutions or actions taken. These criteria will function in both the Planning and the Evaluation stages.

Planning seeks alternative ways to solve the problem. Each alternative is evaluated according to the criteria agreed upon, the resources required, and, most critically, the effects on various individuals and groups in the organization. If the desired alternative involves people or groups not already included in the 'contract', the participants must cycle back and renegotiate entry.

When an acceptable alternative emerges and all relevant parties are 'brought on board', the process moves to Action. This entails the actual intervention and corresponds to what is traditionally called implementation.

Assuming no serious disruption during the Action phase, the process enters Evaluation and Assessment. Client and consultant evaluate the new situation against the previously set criteria and make a careful analysis of possible further changes. If necessary, the process cycles back to an earlier phase. Otherwise the process moves to Termination and the management scientist and manager cease active work on the situation.

We wish to stress certain characteristics of implementation that are implicit in the OD model. The process covers the entire span of system development, not just that part traditionally termed implementation. The process is evolutionary, arriving at a good, workable solution by a series

of iterations. Throughout the entire process both management scientist and manager play active roles, each making important contributions to the final outcome. The outcomes involve more than simply success or failure as usually recognized in the MS/OR literature because many types and degrees of systematic change are possible.

4.1.2. Chronology of implementation at A&F

In a certain sense implementation had been underway for three years prior to the apparent start of the project. During this time members of the Management Science Group at the Sloan School (primarily Professor Little and various graduate students) had worked on several projects to provide members of the executive branch with simple management science tools for policy analysis. Out of this background grew a series of informal meetings among the authors between November 1973 and February 1974. They discussed simple decision support systems to aid state planning and control processes. A particular system emerged as a good starting point; this was a simple interactive system that would enable A&F to retrieve and manipulate budget data easily and flexibly. A number of current problems that the system could alleviate were stated by Smith*:

*Although a system with ostensibly the same capabilities as the one described here already exists within state government (the Budget Bureau's Budget Prep system), it does not meet A&F's needs. Largely, this is because the Budget Prep system was designed to be a source of highly accurate historical information. It can only function with data broken down to the subsidiary account level, and this data is not normally available until near the end of the budgeting cycle. A&F needs a system which can provide flexible support to the budget making process as it progresses.

1. A constant difficulty in keeping track of the impact of supplemental and deficiency allocations on the overall budget of the Commonwealth;
2. A lack of any existing mechanism for systematically comparing budgets or for projecting future budgets from existing ones; and
3. A difficulty in matching sources and uses of funds in any given budget. (This problem is exacerbated when there are frequent changes in one or the other side of the budget, as is the case in Massachusetts.)

The meetings together with our history of working with A&F and other state agencies comprised the Scouting phase. We emerged with a clear notion of where to start (both in terms of the particular system and the appropriate people to be working with -- Smith and Dr. Edward Moscovitch, Deputy Commissioner for Fiscal Affairs in the Department of Administration and Finance), and with a definite 'felt need' for change among parts (at least) of the primary client group.

Between mid-February and mid-March, 1974, we engaged in the Entry phase. Moscovitch was identified as the 'ultimate user' of system output and thus became the focus of entry activities. A member of the M.I.T. team coded up a very simple data manipulation capability, and we demonstrated it to Moscovitch. By means of this and subsequent meetings we reached a consensus that we would develop a Phase I system, having limited capabilities, but meeting some of the objectives which had been outlined. The system was to be a first step, and our experience with it would permit us to define extensions.

Much of the activity classified as Diagnosis and Planning actually

occurred during Scouting and Entry in our case. However, certain Diagnosis and Planning activities did take place after Entry had been successfully negotiated. Thus Moscovitch, Smith, and Ginzberg refined our mutual understanding of goals and objectives, and developed an initial (and rather rough) set of criteria for system evaluation in late March and early April. These steps, in fact, overlapped the Planning and Action stages.

As the bulk of Planning activities had taken place in earlier stages, there was no distinct Planning phase before the physical implementation, the Action stage, began. This arrangement seemed adequate, since all those directly affected by the system took part in the decision to implement. However, in parallel with the systems' physical development, we began to consider groups who were not of necessity involved, but nevertheless might benefit from the system. The outcome was a series of low key meetings and conversations between members of the A&F policy Analysis Staff and key members of legislative and executive branch staffs. The aim was to introduce the system, show them how it might help them, and offer to let them use it. Underlying this desire to broaden the system's user base was the assumption that this would lead to better coordination among all the actors, and hence, larger benefits. As a final step in attempting to "sell" the system to additional audiences, Moscovitch held a press briefing at which the system produced (and he discussed) a comparison report of three budget proposals (Senate vs. House vs. Governor) just one day after the Senate Ways and Means Committee had reported out their proposal.

System use was relatively heavy from mid-April to late May. This history plus the previously defined evaluation criteria provide inputs to Evaluation and Assessment. We shall review this more fully in a later

section of the paper. Here we highlight certain aspects of the evaluation process. A&F's efforts to gain a wider audience for this system were quite successful; other executive branch offices, legislative staff members, and and the press have all responded favorably. As a result, we found it necessary to rethink our definition of the clients. The A&F Fiscal Affairs Staff is still the major client and, indeed, the only user of the physical system. However, the legislative and executive aides who wish to use the system's output are now seen as important groups. The emergence of new clients leads us back to the entry stage; we must identify the needs and wants of these groups and negotiate a "contract" among the various parties -- the staff groups, A&F, M.I.T., etc. This requires a new cycle through the process with interviews and discussions with appropriately identified people.

In conjunction with this "cycling through" with the new clients, we must also look at A&F's next level of needs. The system evolves iteratively. We have learned something about A&F's needs for analytic support, and we have begun sketching out possible directions for extending the Budget Preparation and Tracking System and for developing independent, but related, systems.

To summarize our discussion of implementation theory we should ask what, if anything, we have learned about implementation. Since we were intimately involved, we cannot make the objective statements of dispassionate researchers. However, we feel the OD model helped. The benefits manifested themselves largely through the "Oh, yeah" phenomenon: when one of us would raise an issue suggested by the OD model, another would say, "Oh, yeah, we should have thought of that". If the model is rich enough to give experienced implementors insight into the process, then, we contend, it can be a useful tool in the management science bag.

4.2. Information Systems Technology

From an information systems point of view the budget system is both very high and very low technology. It is high technology in that it uses sophisticated machines and software. It is low in the sense that the functions to be performed are, at least superficially, simple.

The system has been developed on an IBM 360-67 at Brown University, accessed as a local Boston call through the Nercomp network. A production version is running on TYMSHARE, a commercial facility. The system is programmed in EXPRESS, a high level "system building system". This is an interactive language used to build on-line models and flexible information systems designed to assist managers in the solution of relatively unstructured problems. EXPRESS provides

(1) data base management: easily used commands to organize, access, and maintain online data

(2) commands to manipulate, display, and analyze data

(3) a user-oriented language for interfacing with data and programs and for creating new data bases, programs, models, and commands that customize the system for the user.

The philosophy behind contemporary computer use is to make the computer solve its own internal problems without a great deal of instruction from the user. Thus, to see the first 10 accounts in an amended Senate budget, named SENATE.A, the user types

```
ACCT 1 TO 10
TBL SENATE.A
```

The computer then displays the account numbers and budget figures, solving the formating problem by itself. If the user does not like the particular format, commands are available to override it and do something else. In executing a simple request like the above the computer is also solving many internal problems that the user does not begin to want to know about.

Experience in building models and systems for managers over the past few years has led to the approach taken here: Start simply and evolve. So far we have built a budget display and comparison system. As users request further capabilities, we shall add them. No attempt has been made to foresee all needs in advance. The use of a high level language permits redesigning and adapting the system with relative ease.

The information system functions now being performed in the Budget Tracking System are:

1) Data Input
2) Editing
3) Display (for informal purposes)
4) Reporting (in special formats for formal purposes)
5) Aggregation (Various totals and subtotals)
6) Manipulation (For example, the calculation of differences between versions of the budget)

These are simple, standard operations but the details are subject to change without notice.

As time goes on, the system will be extended to handle "program budgets". A program budget collects individual accounts relevant to a specific purpose from individual agency budgets and displays them together as a single entity. An illustration of this is the so-called Children's

Budget which pulls together items from Welfare, Education, etc. into an overall view of state activity for children.

4.3 Models

At present the system is virtually devoid of formal models in an operations research sense. Of course, the budget itself is an abstract structure of dominating importance to the operation of government and, in a sense, is a financial model of the state. However, we treat this artifact more as a special form of reality than as a model of it.

The current system does have certain capabilities which can be considered models of a very elementary form. The ability to define groups of accounts into meaningful entries (e.g., departments, secretariats, or programs), and to display and operate on these entities separately from other budget accounts, is about the extent of models at this point. However, this is only the present state. The system can expand to incorporate more sophisticated models. Our view for the future is of a central budget module which is fed by (and may in turn feed) several specialized models (e.g., tax revenue, welfare expenditure, etc.). The central structure now exists, and models will be added as the client perceives their usefulness and learns to handle their mechanics.

4.4. Planning and Control Systems

The literature on the design and implementation of planning and control systems has largely focused on profit making organizations, and frequently on only a sub-set of these, the large divisionalized corporations. The need for planning and control activities, however, exists in all organizations, public and private, small or large.

To understand the planning and control issues addressed by our system, it is necessary to consider both the current planning and control activities in A&F and some normative views of the appropriate structure for these processes. Anthony [3] provides a simple, but useful, normative framework. He divides planning and control into three related sets of activities (Figure 5). Strategic Planning decides organizational objectives or missions, and the policies governing the acquisition and use of resources. Management Control assures the efficient and effective use of resources in meeting the organization's objectives; and Operational Control is "the process of assuring that specific tasks are carried out effectively and efficiently" (Anthony, p. 18). These three sub-processes

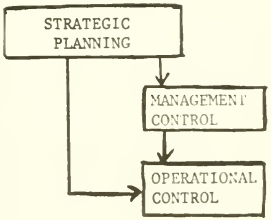

Figure 5: Anthony's Framework

form a heirarchy, each lower process (see Figure 5) being constrained by the ones above it.

The Department of Administration and Finance deals principally with Management Control and Operational Control. That is, A&F's mission is the analysis and control of the fiscal affairs of the Commonwealth, and it must operate within the constraints set down by the legislature and other parts of the executive branch.

The planning and control systems existing in A&F prior to the development of the budget tracking system focussed primarily on issues of operational control -- e.g., tracking of expenditures against the enacted budget. The budget tracking system provides A&F for the first time with a tool to support the management control process, i.e., to assist budget making as opposed to expenditure tracking. The system assembles data from diverse sources into meaningful forms, enables identification of needs for more or better data, and allows the manipulation of this data to examine the impacts of different policies on resources and probable outcomes.

5. Evaluation of the System

5.1 Measures of Performance

We consider three categories of performance -- costs, including both money and time; short run benefits or changes in operations; and potential future benefits.

On the cost side, three variables are of particular interest. First, is money. The actual dollars expended on system development and use to date have been quite small, totaling less than $10,000, and the bulk of this going for computer time for productive system use. Even so, there is a tradeoff between monetary cost and time cost, and by our selection of a high level modeling language we have opted to spend dollars in return for

ease of physical implementation and use (though cost was actually rather low because of our using the relatively inexpensive Brown University system during the research phase of our project). The next cost is the time required by particular individuals. On the M.I.T. side three of us were involved -- Little, Johnson, and Ginzberg. Our average involvement ranged from three to six hours/week from mid-March through June, and it is doubtful that any of us ever spent more than ten hours in a week. On the A&F side two people (Smith and Huston) were the primary participants, and spent an average of about ten hours/week each on system maintenance, use, and related activities. The final cost is the calendar time required for system development. The chronology presented earlier shows that calendar time was minimal; the capabilities desired for phase I as determined in mid-March plus a few additional ones were available by the last week of April. We should note, also, that an initial "bare bones" capability became available within two days of the decision to implement a phase I system. This speed is a direct result of the high level language.

The second area of performance is that of short run observable benefits and changes. These are the changes that occurred in the budgeting period ending July 1, 1974. We divide them into five classes -- capabilities provided, knowledge and understanding gained, process changes, improved inter-organizational relationships, and labor displacement.

In the first area, the capabilities provided, we have already suggested that the phase I system provides A&F with enhanced analytic capabilties. Their use so far has included comparisons among proposed and existing budgets and production of hierarchically organized summary reports. While this may seem modest, it is more than was previously available, and the capacity for more sophisticated work now exists.

In the case of knowledge and understanding gained there appears to be some considerable progress. Key figures in A&F (particularly Moscovitch) seem to have a better understanding of the budgeting process and of the contents of specific budgets. Such increased understanding permits better control and intervention.

The third area, change to the budgeting process, has not been particularly noticeable. Obviously, any use of a new system where none existed before reflects change. However, this is minimal compared to the possibilities. The inertia of an existing budgeting process, is, of course, monumental and it should be noted that the tracking system was brought up quite late in the year's cycle; hence, any use of it had to be ad hoc.

Some initial signs of change are showing in the fourth area, improved inter-organizational relationships. The A&F Fiscal Affairs Staff was a new (one year old) and, in some sense, experimental group within the exucutive branch. The development and use of the phase I system helped the group to show its usefulness to the legislature. That this was successful can be inferred in part from the legislature's action in approving an increased budget for this group's activities in the coming year (earlier in the year it was not certain that the group would obtain a budget to continue at all).

The final area, labor displacement, is minor. Certainly some manual tasks -- e.g., adding up budget numbers for policy analysis -- have been transferred to the computer. However, the additional tasks which the system makes possible more than offset any labor savings.

When we turn to the third basic category of performance measures, potential future benefits and changes, we find the same five classes of

When we turn to the third basic category of performance measures, potential future benefits and changes, we find the same five classes of variables as for existing changes. In each instance we expect to see future progress along lines already started:

1. Further analytical capabilities, assuring greater consistency of assumptions, and hopefully, more realistic budgets;
2. Increased understanding of the budget and the budgeting process on the parts of all key figures involved;
3. Greater use of the computer as an integral aid to the budgeting process;
4. Greater inter-departmental cooperation in producing the budget; and
5. More new tasks being performed, both by humans and by machines.

5.2 Progress towards predefined criteria.

The OD model implies evolution should take place in the context of predefined, mutually agreed upon criteria. Has this happened?

Two sets of objectives were established. The first, longer range group included:

-specific system capabilities, including those of phase I, but going well beyond;
-developing a greater understanding of the budget and the budgeting process;
-developing specific analytical models which would enhance understanding of cause-effect relationships in the budget; and
-developing mutual understanding and cooperation between A&F and the legislature.

As can be seen, we have made good progress towards these long-range objectives. The second set of objectives, defined for phase I, were more modest.

-being able to add up and cross check the budget on a computerized system;

-being able to compare different versions of the budget;

-being able to generate reports on the budget's status more quickly than was previously possible, and being able to update these reports more frequently;

-establishing the basis for a better relationship between A&F and other sections of the state government.

The evidence indicates that all of these objectives have been met. The success in meeting the phase I objectives and the progress towards the long term objectives leaves us in a good position to begin the next cycle of system development.

5.3 On diagnosing the status of the implementation

A key aspect of the OD model is its diagnostic orientation; favorable implementation outcomes can only be reached if we know where we are, how we got there, and can devise strategies and tactics to move forward.

Our self diagnosis begins by identifying "incompletions" in the implementation along three dimensions -- attainment of organizational objectives, learning of new task procedures and roles, and refreezing these changes into the organization's operations. We look briefly at each. The original objectives have been achieved; however, objectives are evolving and will require further efforts. Learning of new task procedures and roles has been good within A&F, but these too are evolving and so additional

learning will have to take place and, as yet, there has been little learning or change in other departments. Finally, it is too early for refreezing. Within A&F there is significant commitment to a system, but with the system still evolving, we do not expect, nor do we want, commitment to the current version of the system. Outside of A&F there is no commitment to any system, but there is also no apparent hostility to the concept.

Turning to strategies and tactics, some straightforward suggestions emerge. We should continue with a second iteration through the OD model. In doing this we must remember that we have identified new groups of clients, and must involve them in the process. Since no problems have appeared, we need not take special corrective action, but we should continue to monitor progress to assure a successful conclusion.

6. Summary and Conclusions

With the help of a high level computer language, an online system for the storage, retrieval, and easy manipulation of the data in the Massachusetts state budget has been developed and put into use in a short time at little cost. Conscious use of organizational development methodology has smoothed the introduction process. The system has performed up to expectations and seems well on the way to becoming an integral part of the budget preparation and analysis process.

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Appendix 1. Herald American Clipping

Computer Compares Budget Plans

By BOB CREAMER

In a corner outside the State House office of Edward Moscovitch, a teletype machine clattered throughout the afternoon yesterday, pumping out vital statistics on the proposed record-high state budget.

Moscovitch, deputy commissioner for fiscal affairs in Administration and Finance, hovered happily over the machine as it produced a new, computerized summary of the House and Senate budgets and how they compare with the $2.758 billion one requested by Gov. Sargent.

The new computer system was developed jointly by Moscovitch's staff and a management studies group at MIT, and figures produced yesterday were courtesy of a Brown University computer.

If Moscovitch's new toy continues to think correctly, it hopefully will produce comparisons of how Sargent, the House and Senate stand on all 1200 items in the new budget.

The House has voted a $2,743 billion budget and the Senate version, $2.747 billion, comes up for debate Monday.

Moscovitch said he hopes by then that the computer will have produced a variety of figures and comparisons that can be used by the 40 senators.

When the House voted on the budget, he said, members had only the Ways and Means Committee figures and nothing on the 1974 budget and the new one from the governor.

The computer figures showed Moscovitch that the major changes in the Senate budget are reductions in Medicaid funds and increases for the State Police, economic development and a series of management improvements in administration and finance.

He said that the Senate budget, like Sargent's calls for across-the-board cuts which would have the effect of reducing the amounts actually available to state agencies by about four percent below the amounts appropriated.

While Moscovitch appeared more pleased with the Senate figures, as compared to the House's, he predicted that the Senate's $27 million cut in Medicaid funds "may mean the funds will run out before the year is finished" because Medicaid costs will rise some five percent next year due to inflation and other reasons.

In a slap at the House, he pointed out that the figures show the Senate accepted most of the new State Police troopers recommended by Sargent "to provide extra patrol during high-drinking hours and thereby reduce fatalities caused by drunken driving."

The governor asked for 210 new troopers but the House provided for only 50. In the bill before the Senate, there is money for 107 troopers.

APP74 APPROPRIATIONS AS APPEARING IN HOUSE 1, JAN 1974
REC75 1975 RECOMMENDATIONS AS APPEARING IN HOUSE 1, JAN 1974
REC75.A 1975 RECOMENDATIONS AS AMENDED

H5550.A HOUSE BILL INCLUDING FLOOR AMENDMENTS
SENATE SENATE WAYS AND MEANS COMMITTEE RECOMMENDATIONS
SEN.HOU SENATE RECS - HOUSE RECS

CONSTITUTIONAL OFFICERS

DEPARTMENT	APP74	REC75	REC75.A	H5550.A	SENATE	SEN.HOU
LEGISLATURE.....	$15,990,304	$15,910,078	$15,186,166	$15,996,788	$15,878,760	$-118,028
JUDICIARY.....	$16,079,954	$16,309,317	$17,551,928	$17,650,136	$18,104,987	$454,851
EXECUTIVE.....	$6,290,325	$6,568,359	$6,271,370	$6,436,504	$6,532,307	$97,763
SECRETARY.....	$2,642,460	$3,406,110	$3,727,506	$3,596,407	$3,958,851	$362,824
TREASURER.....	$58,472,972	$63,397,105	$63,955,225	$63,422,320	$63,323,642	$-98,658
LOTTERY COMMISSION...	$7,350,482	$9,655,866	$9,655,866	$9,655,866	$9,640,666	$-15,200
DEBT SERVICE.....	$197,199,144	$201,833,840	$201,833,840	$201,833,840	$201,833,840	$0
AUDITOR.....	$2,555,204	$2,651,570	$2,530,983	$2,811,687	$2,708,070	$-103,617
ATTORNEY GENERAL.....	$3,462,550	$3,061,179	$2,921,895	$3,061,179	$3,067,409	$6,230
TOTAL.....	$310,049,455	$324,793,424	$322,534,719	$324,456,787	$325,045,452	$588,665

ADMINISTRATION AND FINANCE

DEPARTMENT	APP74	REC75	REC75.A	H5550.A	SENATE	SEN.HOU
COMM AND OTHER.....	$5,768,948	$5,110,373	$6,419,151	$6,668,178	$6,747,898	$327,818
FISCAL AFFAIRS.....	$2,209,450	$2,701,099	$2,666,821	$2,092,523	$2,614,405	$521,882
CENTRAL SERVICES.....	$6,875,128	$12,309,722	$11,997,765	$9,676,980	$9,923,587	$246,607
GROUP INSURANCE.....	$25,000,295	$32,722,741	$32,637,138	$32,687,291	$32,687,291	$0
MCCI.....	$900,498	$1,170,172	$1,116,929	$961,959	$1,146,041	$184,082
COPPS AND TAXATION...	$16,906,992	$19,075,881	$18,907,928	$18,193,491	$17,655,986	$-537,505
LOCAL AID.....	$2,857,575	$5,337,575	$17,242,075	$16,822,575	$17,072,575	$250,000
CIVIL SERVICE.....	$3,905,600	$4,499,169	$4,294,457	$4,127,237	$4,291,457	$164,220
MISCELLANEOUS.....	$517,396	$76,500	$73,587	$76,500	$76,500	$0
RESERVES.....	$35,000,000	$68,035,591	$59,042,972	$34,535,591	$40,035,591	$5,500,000
TOTAL.....	$99,941,874	$148,057,823	$154,596,823	$125,634,417	$132,432,088	$6,797,671

TRANSPORTATION AND CONSTRUCTION

DEPARTMENT	APP74	REC75	REC75-A	H5550-A	SENATE	SEN-HOD
SECT AND COMMISSION..	1766,236	1784,203	1784,528	$713,095	$770,900	$61,105
PPC.....	$1,499,926	$1,466,209	$1,423,496	$1,531,640	$1,400,100	$-41,540
IPW PERSONAL SERVICES	$40,391,550	$50,504,408	$48,226,532	$49,300,000	$49,300,000	$0
/IMIN AND ENG.....	$6,276,623	$8,699,738	$6,486,082	$6,187,808	$6,187,808	$0
HIGHWAYS AND BRIDGES.	$18,644,783	$19,966,500	$19,808,824	$19,045,500	$19,045,500	$0
WATERWAYS.....	$2,588,909	1976,795	1932,351	$954,895	$954,895	$0
CONSTRUCTION.....	$1,270,000	$1,050,000	$1,002,225	$1,050,000	$1,050,000	$0
SOLID WASTE DISPOSAL.	$175,892	$160,600	$153,293	$160,600	$160,600	$0
LOCAL AID.....	$35,750,000	$0	$0	$0	$10,750,000	$10,750,000
MASS SUBSIDY.....	$0	$35,000,000	$33,407,499	$35,000,000	$35,000,000	$0
TOTAL.....	$119,963,519	$114,606,553	$109,808,014	$111,943,226	$122,713,791	$10,769,565

EDUCATIONAL AFFAIRS

DEPARTMENT	APP74	REC75	REC75-A	H5550-A	SENATE	SEN-HOD
SECT AND OTHER.....	$5,006,406	$6,378,200	$6,178,999	$6,816,049	$6,355,250	$139,201
BD OF EDUCATION.....	$7,698,439	$8,592,286	$8,201,334	$7,641,585	$6,707,375	$-1,145,870
SPECIAL EDUCATION....	$26,015,406	$32,811,410	$31,098,955	$32,516,636	$32,280,636	$-235,800
LOCAL AID.....	$217,638,865	$305,789,713	$94,347,102	$322,789,713	$310,250,675	$-12,539,038
BD OF HIGHER ED.....	$15,582,511	$18,565,007	$18,021,933	$16,565,007	$15,710,007	$-855,000
STATE COLLEGES.....	$55,366,037	$59,693,896	$56,977,818	$60,853,127	$60,545,809	$-307,318
LTI.....	$9,909,192	$10,646,861	$10,160,516	$11,026,246	$10,918,246	$-108,000
SBU.....	$8,807,958	$9,337,008	$8,918,174	$10,261,837	$9,954,837	$-307,000
U PASS.....	$83,560,327	$93,327,101	$89,080,718	$94,007,701	$93,995,794	$-11,907
COMM COLLEGES.....	$34,466,305	$38,255,041	$36,515,293	$40,077,509	$39,717,249	$-360,260
TOTAL.....	$459,292,426	$575,195,431	$369,484,838	$597,347,410	$585,826,169	$-11,521,241

ENVIRONMENTAL AFFAIRS

DEPARTMENT	APP74	REC75	REC75-A	H5550-A	SENATE	SEN-HOU
SECT AND OTHER.........	$414,588	$557,731	$617,853	$435,000	$528,395	$93,395
MDC GEN ADM AND CONST	$4,687,487	$4,909,050	$4,685,688	$4,671,400	$4,701,400	$30,000
MDC WATER.............	$7,963,500	$8,034,200	$7,668,640	$7,512,250	$7,902,250	$390,000
MDC SEWERAGE..........	$7,755,050	$8,246,600	$7,871,378	$8,010,500	$8,000,500	$-10,000
MDC PARKS.............	$25,688,450	$28,888,000	$27,573,593	$27,701,000	$27,229,500	$-471,500
DEPT OF AGRICULTURE..	$3,393,912	$3,414,884	$3,351,344	$3,300,400	[illegible]	$-19,693
DEPT OF NAT RES.......	$5,464,900	$4,760,248	$4,583,642	$4,335,210	$4,628,147	$292,937
DIV FORESTS AND PARKS	$9,539,932	$11,405,861	$10,856,751	$10,740,675	$11,070,704	$330,029
FISH AND GAMES........	$2,069,426	$2,216,029	$2,115,199	$2,124,888	$2,240,996	$116,108
WATER POLL CONTROL...	$2,496,036	$2,568,795	$2,503,663	$2,511,995	$2,511,995	$0
TOTAL..........	$67,373,281	$75,170,598	$71,887,751	$71,431,707	$72,198,023	$766,316

COMMUNITIES AND DEVELOPMENT

DEPARTMENT	APP74	REC75	REC75-A	H5550-A	SENATE	SEN-HOU
SECT AND OTHERS.......	$139,660	$181,763	$173,493	$126,763	$176,763	$50,000
ELDERLY HOUSING.......	[illegible]	$14,533,640	$14,533,640	$14,533,640	$14,533,640	$0
VETERANS HOUSING......	$7,500,000	$8,514,038	$8,514,038	$8,514,038	$8,986,634	$472,596
RENTAL ASSISTANCE....	$4,200,000	$5,000,000	$5,000,000	$7,000,000	$6,000,000	$-1,000,000
HOUSING DEFICITS.	$5,001,820	$6,766,790	$6,766,790	$5,266,790	$5,266,790	$0
FED URBAN RENEWAL....	$3,500,000	$3,500,000	$3,500,000	$3,500,000	$3,500,000	$0
STATE URBAN RENEWAL..	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$0
MHFA INTEREST SUBSIDY	$3,256,000	$3,275,000	$3,125,987	$3,275,000	$3,275,000	$0
CAP STATE SHARE.......	$2,000,000	$3,000,000	$2,863,500	$5,000,000	$5,000,000	$0
OTHER DEPT COMM AFF..	$3,557,737	$3,754,960	$3,504,109	$2,998,100	$4,149,530	$1,151,430
TOTAL..........	$30,595,147	$49,527,185	$49,061,551	$51,214,305	$51,908,347	[illegible]

HUMAN SERVICES

DEPARTMENT	APP74	REC75	REC75-A	H5550-A	SENATE	SEN-HOU
SEC AND OTHER.........	$5,207,928	$5,541,455	$5,317,835	$5,444,755	[illegible]	[illegible]
CORP FOR THE BLIND...	$9,662,587	$10,614,654	$11,129,716	$11,625,884	$11,800,678	[illegible]
OFFICE FOR CHILDREN..	$6,112,311	$8,090,560	$7,710,902	$7,099,958	$7,509,858	$409,900
VETERANS SERVICES....	$29,607,254	$30,113,785	$29,506,867	$30,005,973	$30,005,973	$0
YOUTH SERVICES........	$17,861,819	$16,198,431	$15,518,816	$16,310,979	$16,802,180	$491,201
CORRECTIONS...........	$32,622,722	$35,394,951	$33,751,451	[illegible]	[illegible]	[illegible]
PUBLIC WELFARE........	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PUBLIC HEALTH.........	$68,655,631	$76,246,330	$68,105,569	$68,747,740	[illegible]	[illegible]
MENTAL HEALTH.........	$188,308,827	$188,619,969	$188,190,755	$186,558,907	[illegible]	[illegible]
TOTAL..........	$1,370,626,418	$1,423,920,584	$1,404,541,721	$1,392,166,487	$1,383,889,526	[illegible]

PUBLIC SAFETY

DEPARTMENT	APP74	REC75	REC75.A	H5550.A	SENATE	SEN.HOU
SECRETARY.....	$220,600	$252,333	$240,852	$247,333	$247,333	$0
POLICE TRAIN COUNCIL.	$77,765	$73,225	$143,116	$0	$0	$0
PUBLIC SAFETY ADMIN..	$1,228,323	$1,320,770	$1,477,629	$1,472,724	$1,320,170	$-152,554
STATE POLICE.....	$15,034,188	$18,692,485	$17,106,019	$15,958,550	$17,989,980	$2,031,350
DIV OF INSPECTION....	$1,218,128	$1,316,910	$1,466,991	$1,230,400	$1,230,400	$0
OTHER DEPT P S.....	$552,427	$570,291	$544,341	$550,291	$550,291	$0
REG OF MOTOR VEH.....	$19,454,751	$20,185,527	$19,267,066	$19,499,125	$20,027,919	$528,794
MARINE AND REC VEH...	$1,144,335	$1,175,778	$1,122,280	$1,145,123	$1,192,662	$47,539
TOTAL.....	$38,930,517	$43,587,219	$41,309,296	$40,103,546	$42,558,675	$2,455,129

MANPOWER ELDER AND CONSUMER AFFAIRS

DEPARTMENT	APP74	REC75	REC75.A	H5550.A	SENATE	SEN.HOU
SECT AND OTH MANPOWER	$181,895	$311,564	$297,387	$152,460	$311,564	$159,104
IND HEALTH AND SAFETY	$1,662,568	$2,268,081	$2,164,883	$1,911,898	$2,175,081	$263,183
DIV OF IND ACCIDENTS.	$5,670,785	$6,217,653	$5,934,749	$5,985,495	$5,985,495	$0
OTH LABOR AND INDUST.	$1,737,715	$3,366,466	$3,213,291	$1,823,151	$1,823,151	$0
COMMERCE AND DEVELOP.	$2,500,406	$3,126,510	$3,484,253	$2,945,510	$3,445,510	$500,000
ELDER AFFAIRS.....	$3,063,162	$5,055,010	$4,825,006	$3,378,007	$3,522,757	$144,750
SECT AND OTH CONS AFF	$4,767,805	$5,177,657	$5,165,224	$4,884,955	$5,283,390	$398,435
BANKS AND LOAN AGEN..	$2,933,068	$3,195,517	$3,650,121	$3,057,674	$3,195,517	$137,843
INSURANCE DIVISION...	$3,845,873	$3,180,810	$3,036,089	$3,637,750	$3,693,792	$56,042
DEPT OF PUBLIC UTIL..	$1,621,077	$1,670,297	$1,594,298	$1,670,297	$1,670,297	$0
TOTAL.....	$27,990,354	$33,569,565	$32,765,295	$29,447,197	$31,116,554	$1,669,357
GRAND TOTAL	$2,534,862,991	$2,788,435,366	$2,749,669,077	$2,743,745,102	$2,747,714,625	$3,969,527

Appendix 3. System Source Listings as of June 1973

```
->SOURCE BUDSYS

DCL BUDSYS USER LEVEL 10000
LO BUDGET PREPARATION AND TRACKING SYSTEM

DCL ACCT USER SUBSCRIP SMIN 1 SMAX 2000 SYN ACCT.N

DCL ACCT.DES USER CHAR < ACCT >
LO ACCOUNT NAME

DCL ACCT.NAM USER CHAR < ACCT >
LO ACCOUNT NUMBER WITH DASHES
ILP PUT
BPNUM &ACCT.NAM
END

DCL ACCT.NUM USER INTEGER < ACCT >
LO ACCOUNT NUMBER (NUMERIC)

DCL DEF74 USER REALD < ACCT >
LO 1974 DEFICIENCY RECOMMENDATION, MARCH 13, 1974

DCL AMEND75 USER REALD < ACCT >
LO 1975 AMENDED RECOMMENDATION, MARCH 13, 1974

DCL FEDERAL USER REAL < ACCT >
LO $ FROM FEDERAL FUNDING

DCL HIGHWAY USER REAL < ACCT >
LO $ FROM HIGHWAY FUNDING

DCL GENERAL USER REAL < ACCT >
LO $ FROM GENERAL FUNDING

DCL BPNUM USER ILP
ILP
ENTER ACCT.NUM 10000*&ILPARG(1) + &ILPARG(3)
END

DCL SEC USER SUBSCRIP SMIN 1 SMAX 10 SYN SEC.NAM

DCL DEP USER SUBSCRIP SMIN 1 SMAX 100 SYN DEP.NAM

DCL SEC.NO USER INTEGER < ACCT > VSUB SEC
LO SECRETARIAT NUMBER

DCL DEP.NO USER INTEGER < ACCT > VSUB DEP
LO DEPARTMENT NUMBER

DCL SEC.NAM USER CHAR < SEC >
LO SECRETARIAT

DCL DEP.NAM USER CHAR < DEP >
LO DEPARTMENT

DCL [illegible].CI USER CHAR
LO -
VALUES:
```

```
BP.CNTR &BP.CT
END
DCL BP.CNTR USER ILP
ILP
ENTER APP74 &ILPARG(1)
ENTER REC75 &ILPARG(2)
END

DCL B.ENTER USER ILP
ILP
FOR ACCT
DO
ASK BP.CJ
BP.CNTR &BP.CJ
DOEND
END
DCL BUDREP USER ILP
ILP
ENTERL RNAME &ILPARGPR(1)
SET NRNAM LENGTH(RNAME)
LIST 1 TO NRNAM
FOR LIST
DO
SPACE 5
PV RNAME
SPACE 1
PU &RNAME
TYPEL
DOEND
FOR SEC
DO
BLANK
TITLE &SEC.NAM
BLANK
TYPEL 1
SET BP.D1 IF SEC EQ 1 THEN 1 ELSE SEC*10 - 10
SET BP.D2 IF SEC EQ 1 THEN 9 ELSE  BP.D1 + 9
ROW .W 25 CTR 'DEPARTMENT' .W 14 .SPACE 3 -
FOR LIST: .CTR <RNAME>
FOR DEP BP.D1 TO BP.D2
DO
IF DEP.NAM EQ 'NONE', GOTO NONAM
ROW INDENT 4 .DOIFILL DEP.NAM DEC 0 RIGHT 5 FOR LIST: TOTP(DEP)
NONAM: DOEND
ROW INDENT 10 ' TOTAL'  OVERLINE DEC 0 RIGHT 9 FOR LIST: TOTP(SEC)
BLANK 2
DOEND
ROW SKIP REPEAT NRNAM DBLINE ' '
ROW 'GRAND TOTAL ' RIGHT 5 FOR LIST: TOTP(SEC)
BLANK 2
END

DCL PTA USER FUNCTION INTEGER
ARG 1 REAL VALUE
END
DCL RNAME USER IDN < LIST >
LU REPORT NAME LIST

DCL NRNAM USER INTEGER
LU NUM ILP ARGS
DCL BP.DI USER APPEND INTEGER
LU BEGINNING DEPARTMENT NUMBER
```

```
LO ENDING DEPARTMENT NUMBER

DCL ACCT.N USER IDN < ACCT >
LO ACCOUNT NUMBER

DCL BF.CJ USER CHAR
LO -
*ACCT.NAM-
 :
DCL IOIF USER FUNCTION REALD
ARG 1 INTEGER VALUE ALWAYS '1'
ARG 2 SUBSCRIP
END
DCL IOIF0 USER FUNCTION REALD
ARG 1 INTEGER VALUE ALWAYS '1'
ARG 2 SUBSCRIP OPTIONAL VARYING
END
DCL APP74 USER REALD < ACCT >
LO APPROPRIATIONS AS APPEARING IN HOUSE 1, JAN 1974
SO 1974 APPROPRIATIONS

DCL REC75 USER REALD < ACCT >
LO 1975 RECOMMENDATIONS AS APPEARING IN HOUSE 1, JAN 1974
SO 1975 RECOMMENDATIONS

DCL IREL USER SUBSCRIP SMIN 1 SMAX 20 SVN REL.NAM

DCL REL.NAM USER IDN < IREL >
LO ENTER THE NAME OF THE SUBSCRIPT:

DCL REL.NA USER IDN < IREL >
LO ENTER THE NAME OF THE LIST OF CATEGORY NAMES:

DCL BTITLE USER CHAR

DCL REL.NUM USER IDN < IREL >
LO ENTER THE NAME OF THE RELATION CODE VARIABLE:

DCL RS1 USER IDN
LO ENTER NAME OF MORE AGGREGATE SUBSCRIPT

DCL RS2 USER IDN
LO ENTER NAME OF LESS AGGREGATE SUBSCRIPT

DCL RNM1 USER IDN

DCL RNM2 USER IDN

DCL REL.GEN USER CHAR < IREL >
LO ENTER THE GENERIC CLASSIFICATION TITLE:

DCL SEQ USER INTEGER < ACCT >

DCL H555J USER REALD < ACCT >
LO HOUSE WAYS AND MEANS RECS. FOR FY75

DCL HELPU USER APPEND
LO /

DCL DEFREF USER ILP
ILP
IREL ALL
```

```
SET BP.D1 LENGTH(&REL.S)+1
&REL BP.D1
ASK REL.NAM
ASK REL.NA
ASK REL.NUM
ASK REL.GEN
RELATION &REL.NUM
PU RELMSG
END

DCL RELMSG USER
LU /-
IF YOU WISH TO SAVE THIS REPORT DEFINITION /-
TYPE 'RELFILE' /

DCL RELFILE USER ILP
ILP
FILEV REL.NAM
FILEV REL.NA
FILEV REL.NUM
FILEV REL.GEN
FILEV &RELATE
END
DCL FILLE USER PROC
ARG 1 INTEGER VALUE
END

DCL B.ERR1 USER ERROR
LU /-
ARGUMENTS (VARIABLE NAMES) MUST BE /-
SUPPLIED TO BUDREP

DCL RGN USER CHAR

DCL ALREP USER ILP
ILP
IF ILPARGS EU ' ' SIGNAL B.ERR1
ENTERL RNAME &ILPARGPR(1)
SET NRNAM LENGTH(RNAME)
ASK RS1 RS2
TYPEL 3
&REL &RS1
SET RNM1 &REL.NA
&REL &RS2
SET RNM2 &REL.NA
SET RGN &REL.GEN
LIST 1 TO NRNAM
FOR LIST
DU
SPACE 5
PV RNAME
SPACE 1
PU &RNAME
TYPEL
DUEND
TYPEL 2
FOR SEC
DU
BLANK
FILLE &RS1
TILLE &BILLE
BLANK
TYPEL 1
SET BP.D1 IF &RS1 EU 1 THEN 1 ELSE &RS1*10 - 10
SET BP.D2 IF &RS1 EU 1 THEN 9 ELSE  BP.D1 + 9
```

```
FOR &RS2 BP.D1 TO BP.D2
DO
IF &RNM2 EQ 'NONE' GOTO NONAM
ROW INDENT 4 .D.FILL &RNM2 DEC 0 RIGHT 5 FOR LIST: TOTP(&RS2)
NONAM: DOEND
ROW INDENT 14 ' TOTAL' OVERLINE DEC 0 RIGHT 5 FOR LIST: TOTP(&RS1)
BLANK 2
DOEND
ROW SKIP REPEAT WNAM OBLINE ' '
ROW 'GRAND TOTAL ' RIGHT 5 FOR LIST: TOTAL(TOTPG(&RS1))
BLANK 2
END

DCL TOTPG USER FUNCTION REALD < CALL GIVEN > NAME TOTP OBJ TOTP
ARG 1 REALD OPTN ALWAYS 'APP75'
ARG 2 SUBSCRIP OPTIONAL VARYING
END

DCL DEP.NO2 USER INTEGER < ACCT > VSUB DEP2

DCL DEP2 USER SUBSCRIP &MIN 1 &MAX 100 &VN DEP.NAM2

DCL DEP.NAM2 USER CHAR < DEP2 >

DCL PCTCUT USER REAL < ACCT >
LG PERCENTAGE CUT APPLIED TO FY75 RECOMMENDATIONS

DCL HOUSE.A USER REALD < ACCT >
LG HOUSE BILL INCLUDING FLOOR AMENDMENTS

DCL REC75.A USER REALD < ACCT >
LG 1975 RECOMMENDATIONS AS AMENDED

DCL SENATE USER REALD < ACCT >
LG SENATE WAYS AND MEANS COMMITTEE RECOMMENDATIONS

DCL SEN.HOU USER REAL < ACCT >
LG SENATE RECS - HOUSE RECS

DCL SENATE.A USER REALD < ACCT >
LG SENATE BILL INCLUDING FLOOR AMENDMENTS

DCL HOU.GEN. USER REAL < ACCT >

DCL SEN.GEN USER REAL < ACCT >

DCL HOU.GEN USER REAL < ACCT >

DCL H.HIWAY USER REAL < ACCT >

DCL G.HIWAY USER REAL < ACCT >

DCL G.GOV USER REAL < ACCT >

DCL APP75 USER REALD < ACCT >
LG FY 75 APPROPRIATIONS AS PASSED BY THE LEGISLATURE
DCL GOV.A USER REAL < ACCT >
LG HOUSE I AMENDED

DCL CONF.GOV USER
LG CONFERENCE COMMITTEE - GOVERNOR

DCL CNFR.GOV USER REAL < ACCT >
```

```
DCL GEN.GOV USER REAL < ACCT >
LU GENERAL FUND FOR GOV. BUDGET

DCL GEN.APP7 USER REAL < ACCT >
LU GENERAL FUND FOR GNER.COMMITTEE

DCL GEN.DIFF USER REAL < ACCT >
LU DIFF BETWEEN GOV AND GNER.COMM GENERAL FUND
->QUIT

GOOD-BYE
FILENAME  FILETYPE  MODE  NO.REC.  DATE
DEF74     BUDSYS    F1       21     4/19
PROFILE   EXEC      F1        1     3/28
FIX       TEXT      F1        2     3/28
BUDSYS    PROGRAM   F1        6     3/25
FILE      DATA      F1        1     4/30
SEN.GEN   BUDSYS    F1       31     5/13
HOU.GEN   BUDSYS    F1       31     5/13
BUDSYS    USERDCLS  F1       12     6/26
FIX       FORTRAN   F1        1     3/28
```