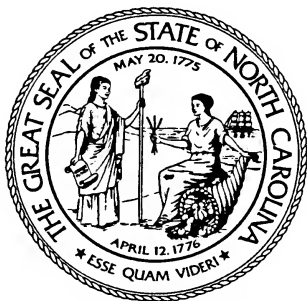


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**REPORT OF THE
STATE INFORMATION PROCESSING
NEEDS AND COST STUDY COMMISSION**



**REPORT TO THE
1989 GENERAL ASSEMBLY
OF NORTH CAROLINA**

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STATE OF NORTH CAROLINA
STATE INFORMATION PROCESSING
NEEDS AND COST STUDY COMMISSION

STATE LEGISLATIVE BUILDING

RALEIGH, NC 27611



Senator Kenneth C. Royall, Jr.
Co-Chairman

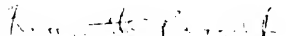
Representative Martin L. Nesbitt
Co-Chairman

January 11, 1989

TO THE MEMBERS OF THE 1989 GENERAL ASSEMBLY:

The State Information Processing Needs and Cost Study Commission reports in this document to the 1989 General Assembly under the authority of Chapter 873 of the 1987 Session Laws (House Bill 1430).

Respectfully submitted,


Senator Kenneth C. Royall


Representative Martin L. Nesbitt

Cochairmen
State Information Processing Needs and Cost Study Commission

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INTRODUCTION

Section 14.1 of Chapter 873, Session Laws of 1987, created the State Information Processing Needs and Cost Study Commission. This section incorporated the intent and contents of the 1987 Session's House Bill 1430, "An Act to Create the State Information Processing Needs and Cost Study Commission," introduced by Representatives Hunter, Crawford, Murphy, Enloe, Beall, Perdue, S. Hunt, Bowman, and Wiser. (The contents of Section 14.1, Chapter 873, are in Attachment 1.)

Section 65 of Chapter 738, Session Laws of 1987, created a reserve for certain information systems projects at the Department of Revenue. Affiliated Appropriations Committee reports directed the State Information Processing Needs and Cost Study Commission to "consider the manner in which (the Department of) Revenue should automate and process application systems and store data for processing, and to what degree there should be an automated interface between the Department of Revenue and the State Information Processing Services." (The contents of Section 65 of Chapter 738, Session Laws of 1987, and the text of the relevant Appropriations Committee report are in Attachment 1.)

Pursuant to the enacted legislation, the Speaker of the House of Representatives and the Lieutenant Governor appointed the following members to the Study Commission:

Senator Kenneth C. Royall, Jr. (Co-chairman)
Room 300, Legislative Office Building
Raleigh, NC 27611

Senator William Goldston, Jr.
P.O. Box 307
Eden, NC 27288

Senator J. K. Sherron, Jr.
Suite 302
4208 Six Forks Road
Raleigh, NC 27609

Representative Martin Nesbitt (Co-chairman)
Suite 700, 29 North Market Street
Asheville, NC 28801

Representative Robert C. Hunter
Post Office Drawer 1330
Marion, NC 28752

Representative Daniel T. Blue
P.O. Box 1730
Raleigh, NC 27602

Mr. Robert Winfree (appointed by the Lieutenant Governor)
Associate Vice President for Health Affairs
Duke University Medical Center
P.O. Box 2901
Durham, NC 27710

Mr. William Clontz (appointed by the Speaker of the House)
Box 3
Old Farms Road
Wilkesboro, NC 28697

Mr. Glenn Newkirk, Mr. Richard Bostic, and Ms. Louise Young provided staff assistance, assigned by the Legislative Services Officer and approved by the Legislative Services Commission. Ms. Gail Osborne served as Committee Clerk.

MEETINGS

The Study Commission met in full session on:

December 10, 1987
January 29, 1988
March 4, 1988
April 8, 1988
May 4, 1988
May 23, 1988
June 2, 1988
October 7, 1988
November 4, 1988
January 10, 1989

The minutes of all meetings and documents presented to the Study Commission are in the Commission Notebooks filed by Ms. Osborne in the Legislative Library.

Additionally, the Study Commission created a Subcommittee consisting of Mr. Winfree and Mr. Clontz, staffed by Mr. Newkirk. This Subcommittee met on numerous occasions to conduct discussions with various parties to study topics, prepare a variety of research memoranda, and to review documents presented to the Study Commission.

RESEARCH REPORTS AND MEMORANDA

During its meetings, the Study Commission received a number of reports and memoranda addressing directly the study topics in the legislation that created the body.

"Scope of Work for the Study Commission." Staff memorandum prepared by Mr. Newkirk. October 14, 1987.

"Annual Information Processing Report and Plan." Report prepared by the State Information Processing Services. January, 1987.

"Limited Scope Review: Monitoring and Control over State Agency Computer Operations." Prepared by the Office of the State Auditor. October, 1987.

"North Carolina Department of Revenue Management Letter." Prepared by the Office of the State Auditor. June, 1987.

"North Carolina Department of Revenue: Review of General Data Processing Controls." Prepared by the Office of the State Auditor. March 27, 1987.

"State Information Processing Services: Review of General Data Processing Controls." Prepared by the Office of the State Auditor. February 7, 1986.

"Request for Proposals: Computer Operations Merger Study." Prepared by Commission Staff. December, 1987.

"Information for Computer Study Commission." (A research memorandum containing the numbers of personal computers and computer terminals, printers, data communications modems, and disk drives in state government.) Prepared by Mr. Jack Barnes, Office of Administrative Analysis, Department of Administration.

"Reports on Increased Computer Charges." Research memorandum prepared by Commission Staff. January 29, 1988.

"Evaluation of Proposals for the Computer Merger Cost Study." Research memorandum prepared by Mr. Clontz, Mr. Winfree, and Mr. Newkirk.

"Status Report on the DoR/SCC Merger Study." Information memorandum prepared by Commission Staff. March 4, 1988.

"Information Systems Organization in Other States." Research memorandum prepared by Commission Staff. March 4, 1988.

"Microcomputers in State Government." Research memorandum prepared by Commission Staff. March 4, 1988.

"Study Commission Planning Agenda." Information memorandum prepared by Mr. Winfree, Mr. Clontz, and Mr. Newkirk. March 4, 1988.

"Maintenance Cost Avoidance Strategies at UNC-CH." Research memorandum prepared by Mr. Erwin M. Danziger. March 1, 1988.

"Interim Report to the Joint Legislative Commission on Governmental Operations on the Study of Maintenance Contracts for Equipment in State Government." Research memorandum prepared by Mr. Jack Barnes, Office of Administrative Analysis, Department of Administration, January 13, 1988.

"Department of Revenue/SIPS Computer Operation Merger Study." Information memorandum prepared by Commission Staff. April 8, 1988.

"Data Processing in Departments of Revenue and Taxation." Research Memorandum prepared by Commission Staff. April 8, 1988.

"Information Systems Contract Study." Research memorandum prepared by Commission Staff. May 4, 1988.

"Maintenance Contract Study Recommendations." Information memorandum prepared by Commission Staff. May 4, 1988.

"Various Information Systems Budget and Cost Statistics." Research memorandum prepared by Commission Staff. May 4, 1988.

"Study of State Information Systems Plans and Planning." Research memorandum prepared by Mr. Winfree and Mr. Clontz. May 4, 1988.

"Legislative Alternatives for SIPS Organization." Research memorandum prepared by Commission Staff. May 4, 1988.

"A Comparative Analysis of Costs and Associated Considerations for Department of Revenue Information Systems Processing by the State Computer Center and the Department of Revenue." Research report prepared by Applied Management Systems, Incorporated, under contract to the Study Commission. May 17, 1988.

"Recent State Accounting Systems Development Projects." Research memorandum prepared by Commission Staff. May 23, 1988.

"Department of Revenue/SIPS Status Report." Information memorandum prepared by Mr. Clontz, Mr. Winfree, and Mr. Newkirk.

"Impact of Technological Trends on the Cost of Information Resource Management In General State Agencies." Research report prepared by the State Information Processing Services, Office of the State Controller and the Department of Administration. September, 1988.

"Study of State Information Processing Services Cost Chargeback Structure." Research memorandum prepared by Mr. Clontz, Mr. Winfree, and Mr. Newkirk. November 4, 1988.

"Request for Proposals: Evaluation of the State Accounting System Business Review." Prepared by Commission Staff. October 11, 1988.

"Request for Proposals: Preproposal Conference Summary of Questions and Answers." Prepared by Commission Staff. October 25, 1988.

"Costs for Administrative Data Processing in the University of North Carolina." Prepared by Mr. Jay Robinson.

"Evaluation of the State Accounting System (SAS) Business Review." Prepared for the Study Commission by Price Waterhouse. January 10, 1989.

OTHER PRESENTATIONS TO THE STUDY COMMISSION

The Study Commission received these memoranda and reports accompanied by verbal presentations from the authors and other interested parties. Additionally, the Study Commissions heard presentations, testimony, and comments from other State Government officials, staff, and private citizens.

Among them were:

Mr. Charles Williams
State Information Processing Services
Office of the State Controller

Mr. Edward Renfrow
State Auditor of North Carolina

Ms. Janet Blalock
Office of the State Auditor

Mr. Jack C. Barnes
Office of Administrative Analysis
Department of Administration

Mr. Carl Byrd
Office of Administrative Analysis
Department of Administration

Mr. Jay Robinson
University of North Carolina

Mr. William Hunt
Management Information Systems Division
Department of Revenue

Mr. Tom Marston
Applied Management Systems, Inc.

Mr. Edward Dalton
Applied Management Systems, Inc.

Mr. Fred Talton
State Controller of North Carolina

Mr. Bradley Buie
Office of the State Controller

Mr. John Robbins
Arthur Andersen & Company

Mr. Rob Berton
Arthur Andersen & Company

Mr. J. D. Foust
Department of State Treasurer

Mr. Carl Barnes
Price Waterhouse

Mr. Elwood Walker
Price Waterhouse

DEPARTMENT OF REVENUE/STATE INFORMATION PROCESSING SERVICES RELATIONSHIP

Of all the topics reviews by the Study Commission, the information systems relationship between the Department of Revenue and the State Information Processing Services (SIPS) proved to be one of the most complex, difficult to resolve, and time consuming. What was to have been a small part of the work of the Study Commission involved numerous and lengthy meetings of both the Study Commission and its Subcommittee. The Study Commission hired the consulting firm of Applied Management Systems to provide assistance in examining this issue.

Because of the critical and detailed nature of the consultant's work on this matter, Attachment 2 contains the consultant's final report. The Study Commission adopted the report and found that the ideal situation rested not in having the Department of Revenue conduct its data processing in an environment that is completely separate from SIPS and not in having the Department of Revenue merge its data processing largely into SIPS' operation. Rather, the Study Commission recommended adoption of a "distributed" data processing model. It recommended release of the \$1.66 million reserve fund to the Department of Revenue to pursue its office automation plan and to develop, refine, and document a distributed data processing model. The Study Commission directed staff to draft a special provision for 1988 General Assembly consideration to (1) exclude the Department of Revenue from the requirement to consolidate its data processing at SIPS; (2) direct the Department of Revenue to commence implementation of a distributed model; and (3) direct SIPS and the

Department of Revenue to draft a plan for critical applications disaster recovery inside a distributed model.

Even though the Study Commission had been directed to prepare findings and recommendations for the 1989 Session, the General Assembly deemed the matter so important that it handled the legislation in 1988. The resulting legislation, adopted by the 1988 Session of the General Assembly, is in Attachment 3.

SIPS ORGANIZATION AND REPORTING STRUCTURE

Because of the structure of legislation adopted by the General Assembly in 1987, the State Information Processing Services found itself reporting to the Office of the State Controller for data processing and data communications and to the Department of Administration for voice communications. After hearing from parties affected by this arrangement, the Study Commission directed staff to draft legislation for consideration in the 1988 Session to continue this reporting arrangement until August 1, 1989.

The resulting legislation, adopted by the 1988 Session of the General Assembly, is in Attachment 4.

STATE ACCOUNTING SYSTEM DEVELOPMENT PROJECT

In May, 1988, the Office of the State Controller was prepared to deliver a report to the Joint Legislative Commission on Governmental Operations concerning a Business System Review of the State Accounting System. Accompanying the Review was a recommendation that the State spend approximately \$26 million over the next five years on development of the system. The Joint Legislative Commission on Governmental Operations referred the matter to the Study Commission.

After hearing the State Controller's report and recommendations developed with the assistance of Arthur Andersen & Company, the Study Commission directed staff to draft legislation that would (1) authorize the Study Commission to conduct a "second opinion" study of the State Controller's recommendation and (2) provide sufficient funds to hire a consultant to assist in the "second opinion" study.

The resulting legislation, adopted by the 1988 Session of the General Assembly, is in Attachment 5.

Pursuant to this legislation, the Study Commission contracted with Price Waterhouse to conduct the "second opinion" study. Because of its importance and critical nature, the contents of the Price Waterhouse report are in Attachment 6.

The main recommendations from the report were:

1. "Overview--Although the Existing State Accounting System (SAS) and Departmental Accounting System (DAS) have functioned for many years, it appears that good reasons exist for replacing them."

2. "First Action Step--North Carolina State Government would benefit from a 'Financial Systems Master Plan' that answers the key questions addressed adequately by the Business Review."
3. "Second Action Step--Simultaneous with developing the Master Plan, The Office of the State Controller (OSC) should proceed with installing MSA's FRED to replace the existing SAS (not DAS) and interfacing it with DPE and DAS."
4. "Third Action Step--An effort should be initiated soon by the Office of the State Controller, separate from developing new systems, to identify and develop approaches to solving major policy and procedural problems."
5. "Accounting Issues--The state should make several more detailed policy decisions regarding what types of financial data should be prepared for particular uses."

The Study Commission approved the consultant's report and requested the Office of the State Controller to respond to the General Assembly with plans to carry out the recommendations.

FUTURE WORK FOR THE STUDY COMMISSION

Because of the substantial time required for the Study Commission to deal with the Department of Revenue/SIPS situation and because of the unplanned, large study delegated to the Study Commission by the Joint Legislative Commission on Governmental Operations, the Study Commission has found its original scope of work to be the tip of an iceberg.

As an example of the scope of the problem, the Study Commission adopted two recommendations concerning information systems planning in State government:

"The State's Departments and Agencies should develop a consistent format and content outline for information systems strategic plans that go substantially farther than do the current formats toward reflecting both department-wide and statewide information systems strategic plans."

"The State Information Processing Needs and Cost Study Commission should develop legislation to amend the current laws that govern statewide and departmental information systems planning (including G.S. 143-341(9) and G.S. 143B-426.21). The proposed legislation would provide more specific direction concerning (1) the information systems strategic planning operation in State government, and (2) the formats and contents of statewide and individual agency information systems strategic systems plans."

But the Study Commission has found that it is not practical to go beyond these recommendations in piecemeal legislation without a much broader review of the operations of the State Computer Commission, SIPS planning capabilities, SIPS policies, procedures, and guidelines, and the State Computer Commission's broader policies concerning information systems management in State government.

Because the topic has proven to be substantially larger than foreseen by the General Assembly, because the General Assembly has referred other large, time-consuming information systems projects to the Study Commission in the last year, because one of these major projects still pends before the General Assembly and controversy still surrounds the other, and because broader, comprehensive legislation is required (rather than a series of stop-gap measures) to address current information systems problems in State Government, the Study Commission makes the following recommendation to the 1989 General Assembly:

The General Assembly should extend the membership and operations of the State Information Processing Needs and Cost Study Commission, with a deadline to present another report to the 1991 General Assembly. In so doing, the General Assembly should allow the Study Commission to carry forward the balance of the funds already appropriated to it to support continuing studies, but providing no additional funds--unless other large studies involving consultants are referred or mandated to the Study Commission. The General Assembly should expand formally the mandate of the Study Commission to allow it to engage in other studies and analyses referred to it by the General Assembly, its committees, other legislative commissions, and the Joint Legislative Commission on Governmental Operations.

Proposed legislation to carry out this recommendation is in Attachment 7 and will be introduced early in the 1989 Session of the General Assembly.

ATTACHMENT 1
STUDY COMMISSION AUTHORIZING LEGISLATION

**CHAPTER 873, SECTION 14.1, SESSION LAWS OF 1987
RATIFIED VERSION OF HOUSE BILL 1430
CREATING THE STATE INFORMATION PROCESSING NEEDS AND COST
STUDY COMMISSION**

PART XIV.-----STATE COMPUTER STUDY COMMISSION

Sec. 14.1. The State Information Processing Needs and Cost Study Commission is created. The Commission shall consist of three members of the Senate appointed by the President of the Senate; three members of the House of Representatives appointed by the Speaker of the House of Representatives; one citizen of the State of North Carolina who has a background in and familiarity with information systems or data communications appointed by the President of the Senate; and one citizen of the State of North Carolina who has a background in and familiarity with information systems or data communications appointed by the Speaker of the House of Representatives. All initial appointments shall be made by September 15, 1987. Vacancies on the Commission shall be filled in the same manner as initial appointments.

Sec. 14.2. The President of the Senate shall designate one Senator as cochairman and the Speaker of the House of Representatives shall designate one Representative as cochairman. The cochairmen shall call the initial meeting of the Commission.

Sec. 14.3. The Commission shall study:

(1) Policies and procedures at the State Information Processing Services and other executive agencies governing computer equipment purchase and lease contracts, equipment maintenance contracts, software support and maintenance contracts, contract programming services, and data communication contracts;

(2) Opportunities for containing the State's cost of computer equipment purchase and lease contracts, equipment maintenance contracts, software support and maintenance contracts, contract programming services, and data communication contracts;

(3) Current charge structures for information processing in North Carolina State government, particularly charge structures at the State Information Processing Services;

(4) Information systems use and needs in North Carolina State government;

(5) Potential demands for additional information staff, equipment, software, data communications, and consulting services in North Carolina State government in the next 10 years;

(6) Abilities of executive agencies to analyze, project, and plan State government's information needs and capabilities; and

(7) Policies and organizational structures used in other states to contain government information processing costs and the potential use of those policies and structures in North Carolina State government.

Sec. 14.4 Upon the Commission's request, all State departments and agencies shall provide the Commission with documentation of data processing systems and other information deemed necessary by the Commission.

Sec. 14.5. The Commission shall submit a final report on the topics mentioned above, other findings, and recommendations for legislation before the first day of the 1989 Session of the General Assembly by filing the report with the President of the Senate and the Speaker of the House of Representatives. Upon filing its final report, the Commission shall terminate.

Sec. 14.6. Upon approval of the Legislative Services Commission, the Legislative Administrative Officer shall assign professional staff to assist in the work of

the Commission. The expenses of employment of the clerical staff shall be borne by the Commission. The Commission may meet in the Legislative Building or the Legislative Office Building, upon approval of the Legislative Services Commission.

Sec. 14.7. During the course of its study, the Commission may at its discretion and upon approval of the Legislative Services Commission, hire consultants to provide technical assistance to it and the Commission's staff.

Sec. 14.8. Members of the Commission who are also members of the General Assembly shall be paid subsistence and travel expenses at the rate set forth in G.S. 120-3.1. Members of the Commission who are officials or employees of the State shall receive travel allowances at the rate set forth in G.S. 138-6. All other members of the Commission shall be paid per diem and allowances at the rates set forth in G.S. 138-5.

Sec. 14.9. There is appropriated from the General Fund to the General Assembly the sum of seventy-five thousand dollars (\$75,000) for fiscal year 1987-88 to fund the State Information Processing Needs and Cost Study Commission. These funds shall not revert at the end of the 1987-88 fiscal year but shall remain available for use by the Commission until its termination.

SECTION OF CHAPTER 738, SESSION LAWS OF 1987 RELATING TO INFORMATION SYSTEMS RESERVE FUNDS FOR THE DEPARTMENT OF REVENUE

PART XI.-----DEPARTMENT OF REVENUE

Requested by: Rep. Hunter

-----DEPARTMENT OF REVENUE RESERVE

Sec. 65. Funds in the amount of one million six hundred sixty thousand seven hundred fourteen dollars (\$1,660,714) are appropriated for the 1988-89 fiscal year in Section 2 of this act to a Reserve Fund for Management Information Systems Division of the Department of Revenue. The State Budget Office shall allot this sum to the Department of Revenue only after the Secretary of the Department of Revenue, the State Controller, and the Chief of the State Information Processing Services have presented a report and Information Systems Plan for the Department of Revenue to the Joint Legislative Commission on Governmental Operations. This joint report from these agencies shall be presented to the Joint Legislative Commission on Governmental Operations not sooner than January 1, 1988, but not later than March 1, 1988. The report's contents shall include, but not be limited to, a detailed description of how these funds will be expended from the line item budget codes 4200 and 5200 for the acquisition of computer equipment and services to support the information systems operation at the Department of Revenue. The report and Information Systems Plan shall include, but not be limited to, a detailed plan for any merger of functions, operations, and computer processing between the Department of Revenue Computer Center and the State Computer Center operated by the State Information Processing Services. The Department of Revenue may not commit prior to July 1, 1988, any of these funds for expenditure.

**LANGUAGE FROM THE GENERAL GOVERNMENT SUBCOMMITTEE
OF THE JOINT APPROPRIATIONS COMMITTEE
REPORT TO THE 1987 GENERAL ASSEMBLY
RELATING TO THE STUDY COMMISSION'S STUDY OF THE RELATIONSHIP
BETWEEN THE DEPARTMENT OF REVENUE
AND THE STATE INFORMATION PROCESSING SERVICES**

Department of General Assembly

3. State Information Processing Needs and Cost Study
Commission funds for an outside consultant to consider the manner in which Revenue should automate and process application systems and store data for processing, and to what degree there should be an automated interface between the Department of Revenue and the State Information Processing Services.....\$75,000

ATTACHMENT 2
APPLIED MANAGEMENT SYSTEMS STUDY
OF
DEPARTMENT OF REVENUE/SIPS
INFORMATION PROCESSING OPERATIONS

COMPUTER OPERATIONS MERGER STUDY

A COMPARATIVE ANALYSIS
OF
COSTS AND ASSOCIATED CONSIDERATIONS
FOR
DEPARTMENT OF REVENUE INFORMATION SYSTEMS PROCESSING
BY
THE STATE COMPUTER CENTER
AND
THE DEPARTMENT OF REVENUE

Prepared For:

STATE OF NORTH CAROLINA
STATE INFORMATION PROCESSING NEEDS AND COST STUDY COMMISSION

By:

APPLIED MANAGEMENT SYSTEMS, INC.

MAY 17, 1988

APPLIED MANAGEMENT SYSTEMS, Inc.

5821 Park Road
Charlotte, North Carolina 28209
704 - 554-8720

May 17, 1988

State of North Carolina
Information Needs and
Cost Study Commission
State Legislative Building
Raleigh, North Carolina 27611

Gentlemen:

We are pleased to present this report which summarily compares total proposed data processing costs for the Department of Revenue (DOR) over the next five years that would result from the execution of one or another alternative course of action, i.e., either merging or not merging a portion of DOR's data processing workload into the State Computer Center operations that are managed by the State Information Processing Services (SIPS) organization.

Comparisons of estimated costs along with associated determinant considerations are presented to assist the Commission in making its decision that will direct a course of action for DOR and the State. For this reason, and in accordance with RFP directives, Applied Management Systems, Inc. does not herein present any of its own recommendations that might support or assail the Commission's ultimate decision.

It is important to note that total proposed costs for funding either alternative are significantly higher than current levels of expenditures for information systems processing. This is because DOR desires to rectify some serious deficiencies in its existing automated systems capabilities by the earliest practicable date.

The cost models we have delivered for each of the two alternatives include unique sets of input data, assumptions, and calculations that are designed to support the findings of this specific study. These models also may be used to support on-going budgeting activities within DOR. They have been designed for user-friendly menu-driven operations through liberal use of LOTUS MACROS and provide date and time-stamped notation if changes to any spreadsheet fields are entered.

The modeling conceptual approach uses estimated costs of resources by type that enable the major functions within an entire spectrum of data processing operations. This approach is generally applicable to budgeting for automation costs within any end-user organization.

AMS appreciates the opportunity to have served the State through performance of this most interesting and important Study. We are especially grateful for the able assistance and professional courtesies extended to us by Messrs. Hunt, Williams, Newkirk, Covington and the others within many State organizations with whom we have "reasoned together".

Sincerely,

APPLIED MANAGEMENT SYSTEMS, INC.

A handwritten signature in cursive script that reads "Tom Marston". The signature is written in dark ink and is positioned above the typed name and title.

Tom Marston
Vice President and
Corporate Director

COMPUTER OPERATIONS MERGER STUDY

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APPENDIX

SECTION

- A Results of Interviews
- B Partial List of Documents Reviewed
- C DOR Data Processing Baseline Requirements Within Major Functions
- D Assumptions and Calculations Relating to DOR Baseline and Projected Computer Resource Requirements
- E SIPS Estimated Rate Schedules and Associated Assumptions and Rationale
- F Standalone Scenario Description and Related Cost Models
- G Merged Scenario Description and Related Cost Models
- H Models - User Instructions
- I Project Contract/Amendments/Qualifying Directives
- J Project Status Reports and Attachments

COMPUTER OPERATIONS MERGER STUDY

BACKGROUND

In 1987, the North Carolina General Assembly created the State Information Processing Needs and Cost Study Commission. The impetus for this legislation arose out of legislators' concerns over increasing costs for information processing services and equipment in State government and that these costs were rising without adequate planning and control.

The State operates its information systems according to plans collected and prepared by the State Information Processing Service (SIPS) and approved by the State Computer Commission. One of the plans adopted by the Commission calls for merger and centralization of major computing operations at the State Computer Center (SCC) under the jurisdiction of the Commission. Exceptions to such merger and centralization disposition are computing operations in the Judiciary Department, the University System, and the General Assembly.

Since approximately 1983-85 major computing operations, including those for the Employment Security Commission and for the Department of Transportation, to name two of the larger computing operations, have been consolidated into SCC operations. Those computing operations at the Department of Revenue (DOR) that were planned to be merged into the SCC have been partially merged. Other computing operations at DOR such as Data Entry and Office Automation were not planned to be merged into the SCC.

During the 1987 Session, some legislators and others became concerned about the following possible circumstances relating to the merger of DOR operations into the SCC:

1. Were plans for the merger complete and adequate?
2. Would the security and confidentiality of tax data be at greater risk if it were housed outside of DOR facilities?
3. Would the large budget requests for DOR's computer operations, if approved, be used to fund a merger operation rather than to meet all the computing needs of the Department?

The General Government Subcommittee of the Joint Appropriations Committee then reviewed a memorandum which analyzed options for meeting DOR's budget requests and also documented the need to rectify serious deficiencies in its current systems. Attachments to this memorandum also documented a significant difference between estimated costs to DOR as calculated by the management of DOR and as calculated by the management of SIPS for merged versus non-merged operations.

BACKGROUND (Continued)

As a result of these concerns and activities, the General Assembly appropriated funds to perform this Computer Operations Merger Study. The general purpose of the Study is to complete an analysis of the costs and associated other important circumstances that might result from the merger of a portion of DOR computing operations into the State Computer Center operations.

PROJECT OBJECTIVES

The primary objectives of this Study project were to provide the Study Commission with:

- 1) A complete description of the human and machine computing resources at the Department of Revenue Computer Center and the resources at SIPS that will support DOR information system needs.
- 2) A complete listing and analysis of the major policy and organizational arguments for merging a portion of the Department of Revenue Computer Center with SIPS.
- 3) A complete listing and analysis of the major policy and organizational arguments against merging a portion of the Department of Revenue's computing operations into the SCC.
- 4) An analysis of the fiscal impacts of providing computer resources to the Department of Revenue if the Department does or if it doesn't merge a portion of its computing operations into the computer operations at the SCC.

WORK PERFORMED

The Project Team consisted of three AMS Consultants with the Director of Legislative Automated Systems Division as Project Coordinator for the Study Committee. Work activities with resulting interim and final deliverables were scheduled in general conformance to those outlined in AMS' proposal. Actual performance was monitored as documented in Project Status Reporting. (See Appendix, Section J.)

Systems and operational documentation at DOR and at SIPS was reviewed. Other relevant documentation containing the minutes of State Computer Commission meetings, (SIPS) Information Management Policies, Procedures, and Guidelines, and the like, also were reviewed. (See Appendix, Section B).

Based upon their understanding of the project purpose and objectives, and combined with their own prior professional experience and relevant rationale, AMS Consultants identified the nature of the major and determinant considerations for deriving advantages and disadvantages for each of the alternative scenarios to be both quantitative and qualitative. The determinant considerations used were: Cost/Benefit, Performance, Security, and Management Control. These are further described in the Appendix, Section A.

An interview guideline document was developed and interviews were conducted with Legislators, Council of State Members, Senior Representatives of Executive Agencies, Senior Legislative Staff Members, and Directors of Data Processing for the three largest SIPS' user agencies. (See Appendix, Section A).

DOR computing operations were classified and described within twelve major information processing services functions along with the types of resources required to enable each function. That portion of computing operations that were planned for merger into the SCC and that portion which was not planned for merger were separately identified according to the designated primary provider of the resources required for each of the functions. This process and its resulting definition for each of the alternative scenarios was reviewed and approved by both DOR and SIPS management and constitutes the basic structure used to identify DOR baseline functional requirements and to develop the respective cost models for each scenario. (See Appendix Section J, Status Report Number 4).

DOR baseline functional requirements were identified and described. (See Appendix, Sections C and D).

The Cost Models for the Standalone Scenario and associated considerations were developed. (See Appendix, Section F).

WORK PERFORMED (Continued)

SIPS rate schedules were obtained. (See Appendix, Section E).

The Cost Models for the Merged Scenario and associated considerations were developed. (See Appendix, Section G).

Cost Models for each scenario and associated considerations were extensively reviewed by DOR and SIPS Management in working sessions with AMS Consultants. Through this process, model assumptions and calculations were refined along with associated considerations to the extent that AMS deemed appropriate.

This report along with all other contractually specified deliverables was prepared and presented to the Project Coordinator.

SUMMARY OF FINDINGS

The paramount findings of the Computer Operations Merger Study are:

1. Total estimated proposed costs to the Department of Revenue (DOR) over the next five years would be \$2 million to \$3 million less if the merger of its computer operations into the State Computer Center (SCC) is not completed.

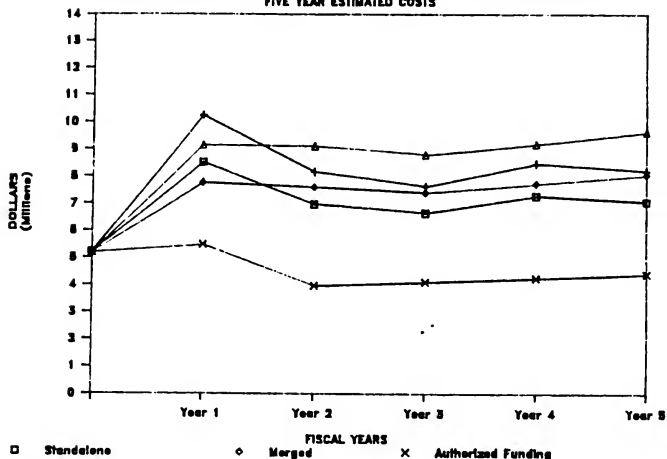
This spread of costs to DOR might be only \$1.4 million to \$2.4 million if the merger is completed and if it were decided that DOR would not have to bear the cost of a specific type of Database Management System that is not currently installed at the SCC.

2. Estimated proposed costs to DOR, in either alternative scenario, are significantly higher than currently authorized funding levels because DOR desires to rectify some serious deficiencies in its computer systems capabilities.
3. The comparatively lower costs to DOR for not merging operations into the SCC are partly resultant of a marketplace that continues to offer significantly better bargains in computing power.
4. Merging computing operations into the SCC would provide DOR with a larger total complement and diversity of ready-reserve resources; however, it also would require more communications with and performance by staff members of external organizations. This merger also would place a greater reliance upon the use of telecommunications equipment.
5. In regard to concerns for security, merging operations into the SCC would require that more individuals would have a "need to know" and that electronic and physical security safeguards would need to be extended to include the SCC location and its resident DOR computer programs and databases.
6. A more definitive resolution of the fundamental issues of management control of information systems resources at both the State-wide and departmental levels would facilitate a more efficient resolution of incidental issues such as centralized versus decentralized data processing.

The remainder of this Report, including its Appendix, presents the full findings of the Merger Study and documents the general rationale, assumptions, and calculations used in their preparation.

COMPARISON OF STANDALONE AND MERGED

FIVE YEAR ESTIMATED COSTS



ANALYSIS OF ESTIMATED COSTS FOR THE FIVE YEAR PERIOD

Fiscal Year	Standalone		Merged		Authorized Funding Level*
	Min	Max	Min	Max	
88/89	\$8,527,875	\$10,259,071	\$7,786,666	\$9,159,299	\$5,485,547
89/90	\$6,976,307	\$8,171,097	\$7,614,997	\$9,114,848	\$3,961,151
90/91	\$6,651,695	\$7,635,382	\$7,413,394	\$8,811,403	\$4,104,588
91/92	\$7,296,060	\$8,487,333	\$7,752,131	\$9,206,411	\$4,253,426
92/93	\$7,078,069	\$8,216,867	\$8,095,650	\$9,659,731	\$4,409,693
TOTAL	\$36,530,005	\$42,769,749	\$38,662,838	\$45,951,692	\$22,214,405

DIFFERENCES

Min to Min	Max to Max	Min to Budget	Max to Budget
(\$2,132,832)	(\$3,181,942)	(\$14,315,600)	(\$23,737,287)

*NOTE:

Provided by the Fiscal Research Division and is based on presently authorized funding levels (including legislative salary increase, permissible transfers, etc.) By definition, this assumes no continuation of merger activities.

ASSOCIATED CONSIDERATIONS

REASONS FOR MERGER AND AGAINST STANDALONE

1. Re: Performance - Shared use of a larger total complement of hardware, systems software, and technical talent provides a greater diversity and ready reserve of available resources for technical performance measurement/improvement, application development support, and production systems operations.
2. Re: Management Control - Better State-wide management of information systems resources if economy of scale rationale is assumed.

REASONS FOR STANDALONE AND AGAINST MERGER

1. Re: Performance
 - a. More favorable ratio of provider to user staff members within same (user) organization, and therefore less reliance upon communications with and performance by external organizations.
 - b. Required interfacing among computer data bases may be accomplished with less use of point-to-point remote telecommunications lines and other equipment.
2. Re: Security - Less individuals have "need to know" and less physical locations in which computer programs and data bases need to be secured.
3. Re: Management Control - Direct control by the user agency over selection and use of a greater portion of its total required resources, and therefore lesser influence or control by other State or Federal organizations.

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	624 1 - 88-33		624 2 - 87-39		624 3 - 87-31		624 4 - 81-32		624 5 - 82-33		Total for all years		Incremental created at the following date
	Run	Max	Run	Max	Run	Max	Run	Max	Run	Max	Run	Max	
1. Standard and Quality Assurance	846,157	844,384	848,318	844,253	845,133	846,578	844,022	846,895	846,805	850,513	821,718	8258,183	12-May-88 06:20:16 AM
2. Application Systems Development	81,962,442	82,183,815	82,378,271	82,284,456	82,720,381	82,816,125	82,743,221	82,822,176	82,885,414	82,972,594	83,015,861,756	814,458,277	12-May-88 08:20:16 AM
3. Data Base Administration	850,853	848,056	849,380	847,222	848,132	849,663	846,671	847,274	848,567	852,618	841,289,638	81,448,244	12-May-88 06:20:16 AM
4. Telecommunications	841,287	848,843	837,774	841,876	838,988	842,329	846,268	844,723	841,628	846,216	8195,928	8284,796	12-May-88 06:20:16 AM
5. Computer Generation	81,956,320	82,346,084	8448,627	8958,095	8672,741	8988,684	81,164,235	81,672,236	8816,328	81,251,994	84,894,295	87,216,673	12-May-88 06:20:16 AM
6. Disaster Avoidance and Recovery	833,380	836,994	87,777	816,613	88,322	811,238	88,325	811,437	86,640	811,888	846,884	844,471	12-May-88 06:20:16 AM
7. Technical Systems Support	8622,799	8722,146	8676,488	8752,845	8693,778	8766,887	8718,812	8788,058	8774,689	8856,225	85,484,326	83,895,189	12-May-88 06:20:16 AM
8. Security Administration	879,323	846,422	848,828	847,388	841,728	849,289	844,689	851,329	847,724	852,895	8212,444	8249,625	12-May-88 06:20:16 AM
9. User Education and Training	818,183	822,728	814,313	818,984	814,862	815,712	815,439	820,477	816,845	821,281	876,763	8184,152	12-May-88 06:20:16 AM
10. Data Entry	81,151,359	81,357,889	81,314,575	81,889,861	81,281,888	81,424,568	81,288,122	81,384,181	81,425,852	81,581,776	86,728,311	87,672,295	12-May-88 06:20:16 AM
11. Office Automation	81,741,257	82,844,278	8162,698	8193,874	8185,372	8172,286	8193,638	8167,659	8142,432	8164,614	82,327,628	82,788,822	12-May-88 06:20:16 AM
12. Management and Facilities	874,137	8824,281	8752,878	8838,987	8789,216	8887,262	8828,326	8798,886	8652,449	8761,168	83,878,726	84,449,656	12-May-88 06:20:16 AM
TOTAL	88,357,875	88,259,871	88,378,387	88,171,897	88,431,885	88,432,282	87,256,868	88,487,333	87,878,869	88,216,667	81856,328,885	842,783,749	

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TOTAL FOR ALL FUNCTIONS
FUND:

FUND	2002 - 2003			2003 - 2004			2004 - 2005			2005 - 2006			2006 - 2007		
	NO.	AMOUNT	%	NO.	AMOUNT	%	NO.	AMOUNT	%	NO.	AMOUNT	%	NO.	AMOUNT	%
1. Standards and Quality Assurance	66,307	664,238	64.220	66,250	645,287	64.270	66,342	634,487	64.242	66,435	633,742	64.234	66,528	633,000	64.226
2. Application Services Development	6,955,642	67,187,615	64.750	6,779,679	65,244,645	64.720	6,603,723	63,299,673	64.690	6,427,767	61,354,705	64.660	6,251,811	59,409,735	64.630
3. Data Base Administration	6,955,862	66,874,658	64.742	6,779,922	64,929,682	64.712	6,603,966	62,884,716	64.682	6,427,910	60,939,748	64.652	6,251,954	58,994,780	64.622
4. Telecommunications	66,320	648,640	62.774	66,373	649,163	62.828	66,426	649,686	62.882	66,479	650,209	62.936	66,532	650,732	62.990
5. Computer Operations	6,027,665	61,786,117	61.770	6,027,678	61,786,131	61.770	6,027,691	61,786,145	61.770	6,027,704	61,786,159	61.770	6,027,717	61,786,173	61.770
6. Computer Assistance and Recovery	67,207	628,976	61.202	67,207	628,976	61.202	67,207	628,976	61.202	67,207	628,976	61.202	67,207	628,976	61.202
7. Technical Systems Support	679,622	6,981,602	67.800	679,622	6,981,602	67.800	679,622	6,981,602	67.800	679,622	6,981,602	67.800	679,622	6,981,602	67.800
8. Security - Construction	67,766	677,626	65.222	67,766	677,626	65.222	67,766	677,626	65.222	67,766	677,626	65.222	67,766	677,626	65.222
9. User Education and Training	678,123	677,728	66.213	678,123	677,728	66.213	678,123	677,728	66.213	678,123	677,728	66.213	678,123	677,728	66.213
10. Data Entry	61,351,659	61,287,808	61.516	61,351,659	61,287,808	61.516	61,351,659	61,287,808	61.516	61,351,659	61,287,808	61.516	61,351,659	61,287,808	61.516
11. Office Automation	61,351,659	61,287,808	61.516	61,351,659	61,287,808	61.516	61,351,659	61,287,808	61.516	61,351,659	61,287,808	61.516	61,351,659	61,287,808	61.516
12. Management and Facilities	677,627	682,261	66.227	677,627	682,261	66.227	677,627	682,261	66.227	677,627	682,261	66.227	677,627	682,261	66.227
TOTAL	67,780,666	65,135,793	67.614	67,780,666	65,135,793	67.614	67,780,666	65,135,793	67.614	67,780,666	65,135,793	67.614	67,780,666	65,135,793	67.614

DEPARTMENT OF REVENUE REQUESTED FIVE YEAR TOTAL COSTS BY RESOURCE TYPE

STIMULINE

Major Resource Type	YEAR 1 - 1983		YEAR 2 - 1984		YEAR 3 - 1985		YEAR 4 - 1986		YEAR 5 - 1987		TOTAL for All Years	
	Dollars	Num	Dollars	Num	Dollars	Num	Dollars	Num	Dollars	Num	Dollars	Num
Employee Personnel	83,138,892	83,726,720	85,847,395	84,516,254	84,252,886	84,653,737	84,473,325	85,116,789	84,784,276	85,381,462	829,416,383	823,612,374
Contractor Personnel	81,189,426	81,314,638	81,744,888	81,551,481	81,346,225	81,467,586	81,231,417	81,427,265	81,184,339	81,267,563	86,726,845	87,449,524
Software Purchase and Maintenance	81,303,168	81,467,238	82,779,473	823,229	842,493	844,493	858,848	854,621	853,444	867,263	85,204,895	83,781,843
Hardware and Maintenance	85,136,334	85,284,288	85,722,220	84,811,524	849,878	858,754	867,022	841,216,444	8516,099	8765,317	84,734,237	86,149,317
Miscellaneous IP Supplies and Equip	853,538	871,528	872,838	877,578	878,748	883,158	888,278	893,297	898,328	903,347	816,385	8181,463
ITPS Services	843,281	876,114	811,824	847,318	818,388	848,778	818,278	844,138	816,438	841,389	8477,784	8544,284
Physical Facilities, Support,	8282,897	8284,533	8183,545	8131,848	8186,299	8123,145	8134,199	8111,095	8129,448	8129,448	8694,137	8829,193
Supplies, Service & MIS Training												
TOTAL	88,327,876	88,229,871	86,974,397	88,171,897	86,631,695	87,626,382	87,296,048	88,467,320	87,879,869	88,216,867	858,238,085	842,765,719

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STATEMENT OF REVENUE ANALYSIS - FIVE YEAR TOTAL COSTS BY RESOURCE TYPE

NOTE:

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Major Resource Type	YEAR 1 - 88/89		YEAR 2 - 89/90		YEAR 3 - 90/91		YEAR 4 - 91/92		YEAR 5 - 92/93		TOTAL FOR ALL YEARS	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Electric (normal)	\$1,076,920	\$1,213,237	\$1,071,994	\$1,216,227	\$1,039,768	\$1,187,748	\$1,203,733	\$1,355,487	\$1,144,852	\$1,298,214	\$1,153,253,265	\$1,317,499
Contractor (normal)	\$1,129,472	\$1,274,329	\$1,194,800	\$1,342,453	\$1,246,282	\$1,407,916	\$1,371,617	\$1,537,282	\$1,244,826	\$1,407,242	\$1,252,882	\$1,417,529
Software (normal)	\$62,499	\$69,132	\$102,410	\$112,248	\$157,228	\$175,272	\$172,272	\$178,272	\$172,272	\$178,272	\$1,022,272	\$1,022,272
Miscellaneous (normal)	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444
Establishment of Supplies and Equip	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444
ITC Services	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444
Physical Facilities, Budget,	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444
Capital Services & Maintenance	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444	\$1,071,764	\$1,217,444
TOTAL	\$1,254,444	\$1,407,444	\$1,254,444	\$1,407,444	\$1,254,444	\$1,407,444	\$1,254,444	\$1,407,444	\$1,254,444	\$1,407,444	\$1,254,444	\$1,407,444

ANALYSIS OF ASSOCIATED CONSIDERATIONS

The analytical processes used to derive comparisons of associated considerations yield both quantitative and qualitative results. Four major determinant considerations were addressed to assist the Study Commission in deciding whether or not a portion of DOR's computing operations should be merged into the State Computer Center. These are:

- Cost/Benefit: That is to minimize cost and financial risk while maximizing benefit to the user agency in attaining the greater effective use of more powerful automated computer capabilities and data processing technical talent. NOTE: The benefit aspect of this consideration is assumed to be the continued satisfaction of DOR's normal information systems processing requirements while also rectifying some serious deficiencies in its current data processing functions within the next five years. The question of whether or not this benefit justifies the costs proposed in either scenario is not addressed in this report.
- Performance/Delivery: That is to consistently provide to the user agency the greater, more responsive level of reliable information systems processing services.
- Security: That is to effectively prevent any inadvertent or intentional unauthorized access, reproduction, manipulation, or destruction of any data or information that is to be so secured under the law or according to the policies and practice of the user agency primarily responsible for such safe custody of the data or information. Additionally, effective Security and Performance, should include the establishment of disaster avoidance and recovery procedures that would prevent, or at least minimize, the possibility and effect of any untimely interruption in the normally scheduled processing of data or information.
- Management Control: That is to promote and maintain a work environment in which the user agency is able to select and direct the more effective and judicious use of those data processing resources it may require to accomplish its own specific and legitimate business objectives. Such objectives may include the legally directed and duly authorized sharing or dissemination of data or information with other State and Federal agencies or the public at large.

ANALYSIS OF ASSOCIATED CONSIDERATIONS (Continued)

Quantitative comparisons relating to costs to DOR were derived through development and execution of the two Cost Models followed by various observations of their respective results.

Qualitative comparisons relating to the other, or associated considerations were derived by AMS consultants through (objectively) applying axioms or principles of the behavioral or physical sciences to the consultants' (subjectively) perceived relevant facts and circumstances to yield results that were limited in their quantitative expression to "less than/greater than" relationships. Offsetting relationships were then also recognized in order to logically "filter out" invalid comparisons.

For example, AMS consultants perceived that the physical facilities housing the State Computer Center are better pre-disposed to effecting physical security than those at DOR which also must accommodate "walk-in" clients. However, in recognition of the fact that in the Standalone Scenario, the SCC would not house DOR tax files or programs plus the co-existing fact that in the Merged Scenario such information would need to be secured at both DOR and SCC locations, then the fact that the SCC Building is better pre-disposed to effecting physical security becomes offset in the compared circumstances of the two scenarios. Therefore, in regard to physical security considerations, the Standalone Scenario has the advantage.

Similarly, in regard to considerations about electronic security, the perceived circumstances were that in the Merged Scenario, more persons would "have a need to know" and more data files and programs would need to be secured. Therefore, the advantage is placed with the Standalone Scenario. Note that an absolute quantification of the magnitude of such an advantage is not attempted in presenting these comparisons. Also note that AMS consultants clearly perceive that under properly administered management control directives, electronic and physical security safeguards certainly may be effected in the locations of both organizations as would be required within the Merged Scenario.

These reasoning processes also were extensively applied by the consultants in deriving comparisons relating to the considerations of Performance and Management Control. The resulting complete list of determinant considerations culled through these logical filtrations has been presented in the SUMMARY OF FINDINGS Section and is discussed further in the following paragraphs.

Estimated costs of both the Standalone and Merged Scenarios assume an aggressive schedule by DOR relative to its time-phased

ANALYSIS OF ASSOCIATED CONSIDERATIONS (Continued)

implementation of new application systems and the provision of office automation capabilities to its users. As a result, total costs are higher than the currently authorized funding levels as provided by the Fiscal Research Division. Additionally, in the Merged Scenario, SIPS projects early and significant reductions to charge rates. These rate reductions have the effect of "flattening" the expenditure level line for DOR but at a level above the total estimated expenditure level of the Standalone Scenario. These combined circumstances appear to support the building of a reserve fund by SIPS for an equipment purchase required to satisfy increased demand by DOR and other users in later years.

From the user department's perspective, controlling costs in a merged environment has an unique set of problems. Budgeting funds for SIPS' anticipated charges is based upon historical utilization as a primary factor for projecting anticipated user processing load.

In a Merged Scenario, if a significant increase in an organization's user-generated demand is experienced in a given year, SIPS' charges to the user organization may exceed budgeted cost levels while the user's MIS Department may have little control over the users' demand for such resources. In the Standalone Scenario, when user demand exceeds budgeted cost levels, performance may be degraded, but costs more likely will be controlled. In either case, an increase in processing capability to meet increased demand levels will result in increased costs to the State.

It should be noted that approximately \$600,000 for a Database Management System in the Merged Scenario is disputed by SIPS. DOR states their research and needs assessment will probably lead to the selection of a Database Management System that is not presently available at the SCC. Our analysis of the facts surrounding this issue leads to our assumption that a new Database Management System will be purchased and that DOR will bear the cost of the new system. Additionally, based upon our further assumption that in a Merged Scenario, SIPS' present database users of the DB2 and IMS databases will not redesign existing systems to take advantage of the DOR selected system, we have included this cost in both scenarios.

The objective of the State Computer Commission in establishing the State Computer Center was to provide to State information system users a large sharable resource of hardware, software and technical talent, which in turn would provide a diversity and ready reserve of resources for technical performance measurement and improvement, application system development support, and production systems operations. A merged environment might provide these features and potential savings to the State. At the same time, the Standalone Scenario offers a more favorable

ANALYSIS OF ASSOCIATED CONSIDERATIONS (Continued)

ratio of "providers to users" relationship in the same organization with a common mission. The establishment of in-house capabilities also lessens DOR's reliance upon external organizations for day-to-day operations through a precisely articulated correspondence between these two separate organizations.

In the Merged Scenario, reliance upon point-to-point remote telecommunication for interfacing among primary computer databases introduces minor risk possibilities which are absent in the Standalone Scenario. That is, the necessity of DOR to utilize remote telecommunication to gain access to their primary production database (resident at SIPS in the Merged Scenario) introduces another link in a relatively complex data flow structure upon which DOR must rely for day-to-day operations.

The effective security of taxpayer records is a very sensitive issue. Although an extensive security review was not performed as a part of this Study, AMS did carefully consider this issue and discussed specific concerns regarding security with the State Auditor.

In either scenario, additional steps will need to be taken to adequately secure tax payer records. With the proper precautions, these records may be reasonably secured in either scenario. However, certain facts and general principles will still apply that favor the Standalone Scenario. These are:

1. In the Standalone Scenario, fewer people have a "need to know" and thus gain access to the specific databases. Additionally, the Standalone Scenario offers a separation of security responsibilities which obviates the situation where one or more individuals at SIPS has security responsibility for not only tax records but also for sensitive data of other State agencies and departments. Compliance with security regulations is the primary responsibility of each individual custodial department and is routinely monitored by the State Auditor.
2. The Standalone Scenario requires fewer physical locations in which tax databases and computer programs need to be secured. Although the SCC facility is perceived to be better predisposed for maintaining physical security than the DOR building, the fact remains that in the Merged Scenario both DOR and the SCC must be secured, while in the Standalone Scenario security of taxpayer data is confined to DOR facilities. This concept is applicable not only to computer databases and programs but also to office automation databases and physical source document records maintained in the DOR building.

ANALYSIS OF ASSOCIATED CONSIDERATIONS (Continued)

Management Control is effected through the management "style" the State of North Carolina chooses to exercise over its information systems services resources. Obviously, the Merged Scenario probably facilitates a more centralized exercise of management control and the Standalone Scenario probably facilitates a more decentralized or departmental approach to management. Both approaches have distinct advantages and disadvantages. The merged alternative facilitates a broader span of control over the selection and utilization of resources to satisfy a State-wide mission with some savings benefit, if economies of scale are assumed. The standalone alternative facilitates more direct control over the selection of specific resources to satisfy the mission and unique objectives of individual departments.

DEPARTMENT OF REVENUE ESTIMATED FIVE YEAR TOTAL COSTS DIFFERENCES BY MAJOR RESOURCE TYPE

Major Resource Type	Total for ALL Years Standalone		Total for ALL Years Merged		Difference Merged less Standalone	
	Min	Max	Min	Max	Min	Max
Employee Personnel	\$20,418,903	\$23,612,974	\$19,526,086	\$22,571,695	(\$892,817)	(\$1,041,279)
Contractor Personnel	6,736,845	7,449,924	6,736,845	7,449,924	0	0
Software Packages & Maintenance	3,324,695	3,701,843	1,305,574	1,470,183	(2,019,121)	(2,231,660)
Hardware and Maintenance	4,734,737	6,149,517	3,149,555	3,719,272	(1,585,182)	(2,430,245)
Miscellaneous DP Supplies and Equipment	142,985	181,465	109,160	134,790	(33,825)	(46,675)
SIPS Services	477,704	844,834	7,159,531	9,790,285	6,681,827	8,945,451
Physical Facilities Support Supplies, Services, & MIS Training	<u>694,137</u>	<u>829,193</u>	<u>676,087</u>	<u>815,543</u>	<u>(18,050)</u>	<u>(13,650)</u>
TOTALS	\$36,530,005	\$42,769,749	\$38,662,838	\$45,951,692	\$2,132,832	\$3,181,942

Attachment

ATTACHMENT 3
LEGISLATION RELATING
TO
DEPARTMENT OF REVENUE/SIPS
INFORMATION PROCESSING OPERATIONS

CHAPTER 1086
SESSION LAWS OF 1987, 1988 SESSION
RELATING TO THE DEPARTMENT OF REVENUE
AND
THE STATE INFORMATION PROCESSING SERVICES

Requested by: Senator Royall, Representative Nesbitt

Sec. 34. (a) The funds appropriated in Chapter 738, Section 65, Session Laws of 1987, to a Reserve Fund to the Department of Revenue for expenditure in Fiscal Year 1988-89 shall be expended as follows: one million two hundred sixty thousand seven hundred fourteen dollars (\$1,260,714) for development of an office automation system and four hundred thousand dollars (\$400,000) for development of an agency distributed computer capability at the Department of Revenue in cooperation with the State Information Processing Services and in design, implementation, evaluation, and documentation of a distributed data processing model for State Government. The Department of Revenue shall report on (1) the development of the office automation system, (2) the planning and development of the distributed computer capability, pursuant to the requirements of G.S. 143-341(9) as rewritten below, and (3) the expenditure of funds for these purposes to a regular monthly meeting of the Joint Legislative Commission on Governmental Operations not later than December 31, 1988.

(b) G.S. 143-341(9) reads as rewritten:

"(9) Information Processing Services. -- With respect to all executive departments and agencies of State government, except the Department of Justice and The University of North Carolina:

a. To establish and operate information processing centers and services to serve two or more departments on a cost-sharing basis, if the Computer Commission decides it is advisable from the standpoint of efficiency and economy to establish these centers and services;

b. With the approval of the Computer Commission, to charge, on a time basis, each department for which services are performed its proportionate part of the cost of maintaining and operating the shared centers and services;

c. With the approval of the Computer Commission, to require any department served to transfer to the Department of Administration ownership, custody, or control of information processing equipment, supplies, and positions required by the shared centers and services;

d. With the approval of the Computer Commission, to adopt reasonable rules for the efficient and economical management and operation of the shared centers and services;

e. With the approval of the Computer Commission, to adopt plans, policies, procedures, and rules for the acquisition, management, and use of information processing equipment and personnel in the departments affected by this subdivision to facilitate more efficient and economic use of information processing resources in these departments; and

f. To develop and promote training programs to improve the technical and managerial capability of personnel in information processing functions.

The Department of Revenue is authorized to deviate from this section's requirements that departments or agencies consolidate information processing functions on equipment owned, controlled or under custody of the State Information Processing Services. All deviations from this section's requirements shall be reported in writing within 15 days

by the Department of Revenue to the Computer Commission and shall be consistent with available funding. The Department of Revenue is authorized to adopt and shall adopt plans, policies, procedures, requirements and rules for the acquisition, management, and use of information processing equipment, information processing programs, data communications capabilities, and information systems personnel in the Department of Revenue. If the plans, policies, procedures, requirements, rules, or standards adopted by the Department of Revenue deviate from the policies, procedures, or guidelines adopted by the State Information Processing Services, those deviations shall be allowed and shall be reported in writing within 15 days by the Department of Revenue to the Computer Commission. The Department of Revenue shall develop an information systems capability, in cooperation with the State Information Processing Services, that will distribute the Department's information processing resources and databases between the agencies' two information processing centers. The distributed system shall require that major computer production processing, data communications through the state data communications network, and major database activity shall occur on computer facilities maintained by the State Information Processing Services. The distributed system shall allow major data entry processing, computer program development, and computer program testing to occur on the Department of Revenue computer system. The Department of Revenue and the State Information Processing Services shall develop data communications capabilities between the two computer centers, subject to a security review by the Secretary of the Department of Revenue. The State Information Processing Services and the Department of Revenue shall prepare a plan to allow for substantial recovery and operation of major, critical computer applications at each agency's respective facility. The plan shall include the names of the computer programs, databases, and data communications capabilities from each facility, identifying the maximum amount of outage that can occur prior to the initiation of the plan and resumption of operation at the backup facility. The plan shall include the names of designated personnel from both information processing facilities to serve as a joint disaster recovery team in the event one of the facilities is rendered inoperable for a substantial amount of time. The plan shall be consistent with commonly accepted practices for disaster recovery in the information processing industry. The plan shall be tested as soon as practical, but not later than six months, after the establishment of the Department of Revenue information processing capability that is compatible with and partially redundant to the information processing capabilities at the State Information Processing Services.

No data of a confidential nature, as defined in the General Statutes or federal law, may be entered into or processed through any cost-sharing information processing center established under this subdivision until safeguards for the data's security satisfactory to the department head and the Secretary of Administration have been designed and installed and are fully operational. Nothing in this section may be construed to prescribe what programs to satisfy a department's objectives are to be undertaken, nor to remove from the control and administration of the departments the responsibility for program efforts, regardless whether these efforts are specifically required by statute or are administered under the general program authority and responsibility of the department. This subdivision does not affect the provisions of G.S. 147-58 or G.S. 143-340(14). Notwithstanding any other provision of law, the Department of Administration shall provide information processing services on a cost-sharing basis to the General Assembly and its agencies as requested by the Legislative Services Commission."

(c) This section is effective upon ratification.

ATTACHMENT 4
LEGISLATION RELATING TO
SIPS' ORGANIZATION REPORTING RESPONSIBILITIES

CHAPTER 1086
SESSION LAWS OF 1987, 1988 SESSION

RELATING TO THE ORGANIZATION REPORTING RESPONSIBILITIES
OF THE
STATE INFORMATION PROCESSING SERVICES

Requested by: Senator Royall. Representative Nesbitt

-----SIPS

Sec. 33. Section 23.1 of Chapter 876, Session Laws of 1987, reads as rewritten:

"Sec. 23.1 (a) The functions and powers of the Secretary of the Department of Administration relating to the administration of the State Information Processing Services are hereby transferred to the State Controller as follows: Those functions, powers and duties related to the authority to carry out the provisions of G.S. 143-341(9) and the staff and services provisions of G.S. 143B-426.21.

(b) This section is effective until August 1, ~~1988~~ 1989."

ATTACHMENT 5

**LEGISLATION RELATING TO
A STUDY OF CERTAIN RECOMMENDATIONS BY
THE OFFICE OF THE STATE CONTROLLER**

CHAPTER 1086
SESSION LAWS OF 1987, 1988 SESSION
RELATING TO A STUDY OF RECOMMENDATIONS
BY THE
OFFICE OF THE STATE CONTROLLER
FOR
DEVELOPMENT OF A NEW STATE ACCOUNTING SYSTEM

Requested by: Senator Royall

-----COMPUTER STUDY COMMISSION FUNDS

Sec. 35. (a) Of the funds appropriated to the Office of the State Controller in Section 2 of Chapter 738 of the 1987 Session Laws as amended, the sum of fifty thousand dollars (\$50,000) is hereby transferred to the State Information Processing Needs and Cost Study Commission. The funds shall be used by the Study Commission to evaluate the Office of the State Controller's request for funds to redesign and develop a State accounting system and to evaluate the research previously conducted on this topic.

(b) This section is effective upon ratification.

ATTACHMENT 6

**PRICE WATERHOUSE
STUDY OF CERTAIN RECOMMENDATIONS BY
THE OFFICE OF THE STATE CONTROLLER**





STATE OF NORTH CAROLINA

STATE INFORMATION PROCESSING NEEDS
AND COST STUDY COMMISSION

EVALUATION OF THE STATE
ACCOUNTING SYSTEM (SAS) BUSINESS
REVIEW

JANUARY 10, 1989

Price Waterhouse



January 10, 1989

State Information Processing Needs and Costs Study Commission
Legislative Office Building, Room 400
300 North Salisbury Street
Raleigh, North Carolina 27611

Gentlemen:

This report presents the results of our Evaluation of the State Accounting System (SAS) Business Review as specified by your Request For Proposals Number 811367, issued October 11, 1988. The evaluation has been conducted over the past six weeks by seven partners and staff from Price Waterhouse and one subcontractor. Approximately 700 hours of effort have been spent during this period.

We look forward to discussing further questions from you, your staff and the Office of the State Controller. Carl Barnes and Elwood Walker can be reached through the Raleigh office of Price Waterhouse (919-878-5700).

Thank you for the opportunity to serve the State of North Carolina.

Yours Very Truly,

Price Waterhouse

STATE OF NORTH CAROLINA
EVALUATION OF THE STATE ACCOUNTING SYSTEM (SAS)
BUSINESS REVIEW
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TAB I

I. SUMMARY REPORT

This report is the result of Price Waterhouse's evaluation of the State Accounting System (SAS) Business Review. The evaluation has been performed for the State Information Processing Needs and Cost Study Commission of the North Carolina Legislature. The five key findings/recommendations below summarize the results of the evaluation:

- **Overview** -- Although the existing State Accounting System (SAS) and Departmental Accounting System (DAS) have functioned for many years, it appears that good reasons exist for replacing them. Key benefits of new systems can include more effective management of state programs, more efficient procurement, improved internal controls, more efficient operation of the systems themselves, better cash management, and a reduced need for agency based systems. These benefits would be more difficult to achieve and costly by trying to improve incrementally existing systems. The SAS Business Review leaves too many questions unanswered, however, to serve as a basis for deciding (a) on the architecture of a new system, (b) on the implementation approach over a five-year period, or (c) how much effort and associated cost should be expended. Based on our experience with other states, we believe that considerably lower cost estimates should result from reexamining and revising the architecture and implementation approach as recommended in the Business Review.
- **First Action Step** -- North Carolina State Government would benefit from a "Financial Systems Master Plan" that answers the key questions not addressed adequately by the Business Review. The Master Plan should (a) address all statewide financial systems rather than just the general ledger, accounts payable, and purchasing, (b) present a coordinated architecture and implementation approach across all systems, (c) develop a better understanding of financial system requirements at both the line and central agencies, and (d) evidence a better understanding of Management Science of America's Government Expert Financial Application Package Software (MSA's FRED) system and state government accounting and financial management requirements in general. With qualified assistance, this project can be completed in six months at an estimated cost of \$200-\$300 thousand. The Office of the State Controller (OSC) would be the right focal point for developing such a Master Plan.
- **Second Action Step** -- Simultaneous with developing the Master Plan, the Office of the State Controller (OSC) should proceed with installing MSA's FRED to replace the existing SAS (not DAS) and interfacing it with DPE and DAS. The risk of such a project should be acceptable. If structured correctly, this installation should provide important information on how

a broader implementation could work. Some immediate benefits also will accrue to OSC and the State. An installation of MSA to replace SAS would leave flexibility to implement multiple versions of MSA at various major state agencies instead of the single version as recommended. This project could be completed in 6-9 months at a cost of \$1 - \$2 million. If begun in July 1989, results could be presented to the legislature in the 1990 short session as the basis of a supplemental appropriation request for fiscal year 1991. This supplemental appropriation would fund continued systems development, the structure and implementation plan of which would be based on (a) the pilot implementation of MSA to replace SAS, (b) the Financial Systems Master Plan and (c) the results of efforts to isolate and fix policy and procedural problems.

- **Third Action Step** -- An effort should be initiated soon by the Office of the State Controller, separate from developing new systems, to identify and develop approaches to solving major policy and procedural problems. Many of North Carolina's financial management problems are policy and procedural rather than system related. New systems are not necessarily required to solve policy and procedural problems. The risk of a failed system implementation can increase substantially by attempting to solve major policy and procedural problems at the same time a new system is being implemented.
- **Accounting Issues** -- The state should make several more detailed policy decisions regarding what types of financial data should be prepared for particular uses. We believe that budgetary accounting and reporting should continue on a cash basis, as it is being done presently. The use of encumbrance data for management purposes could be expanded. Accrual data for selected accounts (e.g. accounts receivable) should be prepared to supplement budgetary data where it can be demonstrated that these data will provide managers with the ability to manage programs more effectively. Financial statements prepared in accordance with Generally Accepted Accounting Principles (GAAP) should continue to be issued annually for external reporting purposes, as required by statute. While new systems can help collect certain accrual data, decisions regarding these bases of accounting questions are as much policy decisions as they are system design decisions.

* * * *

The report that follows answers directly the seven questions posed in your Request For Proposals (RFP). Section II-A addresses the first four questions regarding the evaluation of the Business Review itself. Section II-B discusses the fifth and seventh questions, which request alternatives and the implications of maintaining the status quo. Section II-C presents benefits, the subject of your sixth question.

TAB II

II. REPORT

This report presents the results of our evaluation of the State Accounting System (SAS) Business Review. The report of the SAS Business Review is dated March 28, 1988. In addition to the report of the Business Review, we had access to certain working papers located at the Office of the State Controller (OSC). Finally, we conducted interviews of Consultant, OSC and other state officials. A list of interviewees is included in Appendix A to this report.

This report represents an evaluation of the Business Review. The evaluation was not an attempt to perform the various steps necessary to develop a systems plan. Price Waterhouse professionals including four partners, two senior managers and one consultant, along with one subcontractor, have spent 700 hours performing this evaluation.

This report addresses directly the seven deliverable questions in your Request For Proposals (RFP) Number 811367, issued October 11, 1988. Questions one through four are answered in Section A, questions five and seven in Section B, and question six in Section C. Additional discussions regarding experiences of other states and benefits are in Sections B and C respectively. All exhibits referenced in this report are included in Appendix A.

TAB A

A. Evaluation of State Accounting System (SAS) Business Review

The purpose of the first four of the seven questions in your RFP is to evaluate the Business Review itself and these questions concern (1) soundness of the methodologies used, (2) adequacy of conclusions, recommendations and supporting workpapers, (3) reasonableness of the proposed implementation plan, and (4) reasonableness of the cost estimates. This section of our report addresses these first four questions of your RFP.

1. Methodologies (First RFP Question)

The RFP asks, "Does the SAS Business Review study methodology meet the requirements of competence and completeness for a review of this magnitude?" We have considered two aspects of this question. First, was the scope of the Business Review appropriate (i.e. limited to SAS general ledger, accounts payable and purchasing)? Second, given the limited scope of the Business Review, was the methodology sound?

a. Scope-- The scope of the Business Review was too narrow. Rather than review only general ledger, accounts payable, and purchasing, the Business Review should have been structured to provide a master plan for all statewide financial systems.

The General Statutes of North Carolina 143B-426.39 sets forth the powers and duties of the State Controller. The powers are straight forward regarding establishing, "a uniform state accounting system for all state agencies." The statute states that the accounting system shall be "maintain(ed) in accordance with generally accepted principles of governmental accounting," or GAAP.

Request for Proposals (RFP) 709415, "Review and Evaluation of the North Carolina State Accounting System", was issued September 4, 1987 for the Office of the State Controller . This RFP resulted in the SAS Business Review. The RFP specifically limited the scope of the Business Review " . . . only to focus on a review and evaluation of the general ledger, accounts payable and purchasing modules of the SAS" (page 10 of the RFP). Later in the RFP, the Departmental Accounting System (DAS) is included in the scope.

The Business Review also focused more on state agencies that use DAS for their internal accounting. A second set of agencies exist that do not presently use DAS but rather send monthly summary data only to SAS. The Business Review predicts that these agencies will not become part of the new SAS but will continue to interface with it. These "Interface Agencies" include the Universities, Department of Transportation (DOT), Department of Public Education (DPE), Employment Security Commission, and several others.

North Carolina State government has several statewide financial systems in addition to general ledger, accounts payable, and purchasing. These statewide systems each apply to different groups of state agencies. We did not perform an agency by agency evaluation of their use. These statewide systems include:

- **Payroll** -- operated by OSC.
- **Personnel Management Information System (PMIS)** -- operated by the Office of State Personnel (OSP).
- **Salary Control System (SCS)** -- operated by the Office of State Budget and Management (OSBM).
- **Budget Preparation System (BPS)** -- also operated by OSBM (with several OSBM systems feeding BPS).
- **North Carolina Automated Purchasing System (NCAPS)** -- operated by the Purchase and Contract Division (P&C).
- **Budget/Expenditure Monitoring Oversight System (BEMOS)** -- operated by the legislative Automated System Division (ASD).
- **Fixed Assets** -- presently multiple independent systems operated by the various state agencies.
- **Accounts Receivable** -- also presently multiple independent systems operated by the agencies.

With the exception of BEMOS and the multiple fixed assets and multiple accounts receivable systems, these systems are processed by the State Information Processing Services (SIPS).

These various systems are interrelated in several ways. First, they share a common chart of accounts. The effect of altering the chart of accounts used by the statewide general ledger within SAS can ripple substantially throughout these other systems.

Second, the various systems feed information to each other. For example, payroll provides salary and fringe benefit expenditures to SAS. Payroll interacts closely with PMIS and SCS. BPS receives spending data from SAS and in turn provides budget data back to SAS. Altering SAS can affect substantially these interfaces.

Third, these systems share functions. For example, employee data are contained within payroll, PMIS and SCS. Spending data are in SAS, payroll and NCAPS. It is possible that, taking a statewide perspective, some functions could more appropriately be grouped into systems differently than they are grouped presently. This re-grouping of functions might reduce redundancy of data, improve internal controls and increase efficiency. Functions could be re-grouped without loss of control of data by any of the organizations (e.g. OSBM, OSP, P&C, OSC) that presently operate independent systems.

Finally, these systems are related technically. Most are processed at the same data center (SIPS). It is likely that, for example, designing a terminal network for one system could be affected by the requirement for terminals of another system. It is likely that important efficiencies could be obtained by considering technical requirements across systems instead of for each system individually.

Rather than a study solely of general ledger, accounts payable, and purchasing functions, the state needs a Master Plan for development of all statewide financial systems. The Master Plan also should review in more depth requirements of the interface agencies and how these agencies might be integrated. Exhibit A-1 in Appendix A is the Table of Contents of such a Master Plan prepared for the State of Maine by Price Waterhouse. Only by considering all of these systems together can appropriate requirements, architectures and development priorities and schedules be developed. Two examples illustrate this point.

- The OSC has been upgrading the state's payroll system. The emphasis of the upgrade has been on improving the technical design of the system and has been conducted without expanding substantially the system's functionality. Without expanding the payroll system's ability to collect time, attendance and leave data, the payroll system cannot provide to the SAS vested leave accruals needed for GAAP accounting. If payroll system development was conducted under the guidance of a Financial Systems Master Plan, and if the Master Plan required GAAP accounting, perhaps the payroll development would be structured differently.
- In our work in other states, we sometimes have been surprised by the relative benefits and costs of various systems. It may be the case that replacing a statewide financial system other than SAS could have a higher benefit/cost ratio. In some states the immediate benefits of increasing payroll/personnel system functionality for example, outweigh benefits of a new accounting system.

For several reasons, the Office of the State Controller probably would be the right focal point for developing a Financial Systems Master Plan.

- The general ledger or SAS usually is viewed as the place where the work of the other systems ultimately comes together. OSC controls SAS.
- OSC also controls the payroll system and SIPS.
- OSC probably has the statutory authority required.
- By his position, the State Controller probably would be the natural leader of a steering committee of the officials affected by such a Master Plan.

b. Methodology -- Given the narrow scope of the project, the Business Review methodology, as set forth in the report and working papers and as explained further in interviews, appears deficient. Per the September 4, 1987 RFP, the Business Review was to include six activities, which are:

- Definition of SAS Structure -- define functional and technical financial reporting and accounting requirements.
- Definition of Agency and Central Management Needs -- define the financial management and reporting needs.
- Assessment of Current Capabilities -- determine how well the existing SAS/DAS meets needs.
- Recommendations for Improvement.
- Evaluation of DPE/MSA Project as a Prototype.
- Implementation Plan.

The Business Review project appears to have been organized generally on this basis.

Necessarily, a study such as the Business Review must stop short of actually designing the new systems. But in order to develop sound recommendations and acceptably accurate implementation plans, sufficient research should occur. This research should reflect an adequate understanding of (a) state government financial system requirements in general, (b) North Carolina specific financial system requirements, and (c) capabilities and applicability of the MSA software.

In response to the RFP's first question regarding soundness of methodology, nine problems appear to mar the Business Review's methodology. These problems are:

- **Understanding of the agency requirements** -- Neither the report nor the working papers indicate an adequate understanding of agency requirements, particularly management reporting requirements. Without knowing more about requirements, decisions are problematic regarding implementing a new chart-of-accounts, system performance due to agency reporting workloads, and implementation levels of effort.
- **Policy and procedure problems vs system problems** -- The report and working papers do not make an adequate distinction between problems regarding policies and procedures and problems regarding systems. This deficiency can lead to inappropriate recommendations of system solutions for procedural problems and a more risky system implementation.
- **Understanding of Generally Accepted Accounting Principles** -- How GAAP should be applied was not addressed in sufficient detail in the report or the working papers.
- **Understanding of MSA** -- An adequate understanding was not demonstrated in the report or working papers regarding how MSA's FRED system should be implemented in North Carolina. The report appears to confuse the present roles of SAS and DAS which confuses further the intent of how MSA will perform current SAS functions.
- **Performance questions** -- The benchmark test of MSA's performance (conducted after completion of the Business Review to determine if MSA could process projected transaction volumes) was not sufficiently conclusive to warrant risking the implementation of FRED in the way anticipated by the Business Review.
- **Inclusion of budget preparation** -- The report is confusing regarding budget preparation (as opposed to budget control) functionality. While developing budget preparation functionality is discussed in the report of the Business Review, the implementation plan appears not to include budget preparation.
- **Benefit analysis** -- The Business Review's report and working papers do not analyze benefits in sufficient detail to support the recommended system development. Benefits are discussed further in section II-C of this report below.

- **Report Presentation** -- The report on the Business Review (and to a lesser extent the working papers) presents poorly the recommendations and implementation plan. It is impossible to understand from the report many key aspects of the recommendations and implementation plan.
- **Consultant effort** -- The level of consultant effort and experience level of consultant staff devoted to the Business Review may have been inadequate relative to the size, complexity, and importance of the study.

2. Conclusions, Recommendations and Supporting Workpapers (Second RFP Question)

The second RFP question concerns adequacy of conclusions, recommendations and supporting workpapers. In order to be able to evaluate and comment on the conclusions and recommendations of the Business Review, an understanding beyond that available from the report was needed. The Business Review report does not describe adequately recommended system architecture (that is, more specifically how would the MSA software be applied in this environment), approaches to reporting, approaches to interfaces and application of the MSA chart of accounts. We obtained much of this understanding from interviews. Our understanding of the conclusions and recommendations of the Business Review therefore is presented below to serve as a basis for our critique.

a. Business Review recommendations -- Exhibit A-2 in Appendix A is a diagram of our understanding of the recommended system architecture. For comparison purposes, Exhibit A-3 in appendix A is a diagram of the current system environment. This architecture centralizes all processing, including the presently distributed edit and checkwriting functions. The distributed Mohawk minicomputer located within each agency would become redundant and would subsequently be replaced with terminals having access to the MSA FRED software residing on SIPS via a telecommunications network. The batching, proofing, authorization and reconciliation of agency specific data would remain the responsibility of each agency. The edit and validation of these data would be performed centrally using the statewide MSA master file information on SIPS. The vast majority of these edits would be performed "realtime", thus isolating most errors prior to their being accepted into the system. Each agencies' data would be easily accessible and identifiable with the use of a logically assigned agency coding structure.

We understand that The Business Review recommendation contemplates that all accounting and reporting presently performed by SAS and the multiple DAS versions would be preformed by a single version of MSA's FRED software, operating on SIPS. This one physical system composed of

many agency specific logical systems would process all transactions. Interface agencies would interface with MSA instead of SAS, but largely in the same way they have interfaced previously.

b. Difficulties with the Business Review recommended model – The system concept contemplated by the Business Review is attractive because all North Carolina financial information would be captured by one system and classified according to a common account code structure. In theory, this would make statewide financial reporting a low-cost by-product of agencies using the central system to accomplish their agency-specific accounting requirements. But the practical issues of lock-step coordination for all North Carolina's agency fiscal operations could be overwhelming. Problems would include:

- **Reporting** – All agencies residing in one version of the system would result in contention during reporting cycles. Opportunities to run multiple report requests in parallel would be limited. In addition, because of the architecture of Information Expert, many agency specific requests would result in the entire file of records for all agencies being processed.

Limited reporting was included in the MSA performance benchmark (discussed below) that was conducted and the results were borderline. If a statewide implementation of the type contemplated were attempted, performance issues in the reporting area alone could preclude acceptable service levels given available processing windows.

- **System Administration**– System level options for processing cycles, chart-of-accounts maintenance and security administration are a primary characteristic of the MSA software. Discipline over what can be done and when would have to be enforced on a statewide basis. This would represent a substantial cultural change from the current DAS environment.
- **Chart-of-accounts** – MSA could support the existing chart-of-accounts. But merely converting the existing chart to operate on the MSA system might not result in meeting the agency or statewide reporting requirements.

The Business Review recommendation appears (from the working papers and interviews) to use statewide the chart-of-accounts as implemented at the Department of Public Education. Without requirements definition beyond that documented in the Business Review's report and working papers, we cannot determine if the chart-of-accounts as implemented at DPE would meet the objective of the

Business Review for the MSA system to do substantial agency reporting or to do new statewide reporting. The DPE implementation does not make full use of the MSA chart-of-accounts.

The Business Review also does not address the implications of making substantial modifications to the existing chart-of-accounts so as to meet agency or statewide requirements. Modifying the chart substantially could have major effects on interfacing systems such as BPS, SCS, PMIS and NCAPS as well as systems from interfacing agencies such as the Universities. Finally, it is not clear whether the existing chart-of-accounts would be used for the State Model, where MSA would replace SAS. If initially MSA simply will process the existing chart-of-accounts, will the State Model require subsequent revision to accommodate a new chart-of-accounts?

- **Generally Accepted Accounting Principles** – The report and working papers of the Business Review appear confused with respect to how GAAP based accounting should be accomplished and what use would be made of these data. The Business Review does not distinguish well between the use of certain accrual data for internal management purposes as opposed to using full GAAP based financial statements for external reporting. The recommended model could not feasibly produce GAAP based financial statements monthly as is recommended by the Business Review. For example, the current payroll system cannot provide certain required data. Monthly reporting on a full GAAP basis probably is not necessary, however.
- **Performance** -- The implementation approach outlined in the Business Review probably would result in the creation of the single largest implementation to date of the MSA FRED software based on transaction volumes and master file sizes. During the Summer of 1988 a substantial effort was spent by OSC, MSA, and the consultant in determining whether such a large implementation could perform the necessary batch processing within the nightly "window" of system availability.

While the results of this simulation or benchmark appear to confirm that the MSA FRED software can process within the constraints of this window, it is not completely clear what data volumes or mix were used in the performance analysis. The workpapers to a degree, and particularly the JCL used to execute the simulation, were not specific as to the master file sizes, nor was there any evidence confirming the generation of statewide reports. The reporting process within MSA's FRED product is clearly a critical key in the search for realistic processing schedules. The simulation also does not document the assumptions made with regard to periodic purging of transaction and audit logging

data. This lack of regular purging has caused increased processing times at DPE for example. Even if all statistics were accurate, it is our opinion that implementing a system configuration which allows no overnight processing contingency time, assumes an unacceptable level of risk.

Further, the simulation allowed only weekly updating of the General Ledger which may be unacceptably infrequent, particularly if any agencies require daily reporting or inquiry capabilities concerning, for example, budget availability. Alternative implementation architectures using MSA's FRED probably can ameliorate these performance problems.

- **Vendor File** -- The goal of central vendor data collection is appropriate. The report and working papers of the Business Review do not provide sufficient discussion of two problems associated with vendor data in North Carolina, however. First, it is not clear how vendor data will be collected for interface agencies (those that will not use MSA). Use of the MSA vendor file by the interface agencies could involve substantial modification to their internal systems. Alternatively, exempting the interface agencies from reporting vendor data consistent with the MSA vendor file could reduce substantially the value or benefit ascribed by the Business Review to having a central vendor file. Second, the relationship is not described between SAS and NCAPS, the state's purchasing system. The MSA implementation as recommended in the report could exacerbate the problem of redundant data by requiring P&C to maintain two vendor files, one for NCAPS and one for MSA.
- **Statewide System Interfaces** -- The report of the Business Review and the working papers contain limited discussions of interfaces between SAS and other statewide systems -- specifically Payroll and BPS. The report and working papers do not address interfaces between DAS and Payroll, BPS, SCS, NCAPS or PMIS. More understanding of these interfaces would help in developing an approach to building them and estimating associated levels of effort.
- **System problems vs policy and procedural problems** -- The Business Review lists a number of problems with the existing SAS and DAS and then explains how MSA's FRED will solve these problems. The implication is that all problems require a system solution. The Business Review recommended model does not distinguish problems that have a policy or procedural element (e.g. certain applications of the chart-of-accounts) and it does not separate serious problems from less serious ones. Trying to solve policy and procedural problems with a system solution can increase the risk of failure of the system implementation.

Further, designing a system solution for policy and procedural problems can result in designing the wrong system solution.

- **Adequacy of supporting workpapers** -- We did not find in the workpapers provided to us substantial additional detail regarding requirements definition, system architecture, or evidence of the weighing of alternative solutions or architectures. Some additional information was provided in interviews with the consultant and OSC staff. The workpapers did provide some additional data on the implementation plan and cost estimates and we have used these additional data in discussions below.

3. Implementation Plan (Third RFP Question)

The third RFP question concerns the reasonableness of the proposed implementation plan. The report of the Business Review presents the five-year implementation plan as a single graphic of high-level projects with staffday estimates that aggregate OSC, SIPS, state agency and consultant time. One page descriptions of the projects are included. The report presents only limited discussions regarding how the implementation approach was chosen or why certain projects or tasks were grouped as they are.

a. Business Review implementation plan -- The workpapers for the Business Review contain documentation resulting from the use of the consultant's proprietary computer program. This program has been designed by the consultant to assist in the process of planning their system projects. The consultant's project planning program was used to develop project plans and related estimated levels of effort.

To prepare project plans and resources estimates, many assumptions must be provided to the consultant's computer program. These assumptions encompass a range of attributes relating to the size and complexity of a proposed system project. The assumed project attributes can vary significantly depending upon the anticipated system design. As a consequence, the estimates of level of effort required for a project are materially effected by the assumed attributes.

The total project estimates in the Business Review working papers are:

	<u>Resources -- Hours</u> <u>(@ 8 hours/day)</u>
Consultant	190,200
OSC/SIPS	192,400
Agency	179,500
Clerical	<u>55,400</u>
	617,500

These levels of effort would result in an average team size over the five year implementation of over 60 staff. This number would almost certainly be much greater during certain periods of the proposed project.

b. Difficulties with the implementation plan -- There are three main difficulties regarding the implementation plan. First, the Business Review report and workpapers do not provide enough information (regarding requirements or system architecture) to support either the implementation approach or the associated resource estimates. Even if this approach and these resource requirements are appropriate for the recommended architectural model, changing this model could affect substantially the implementation approach and resources required.

Second, while it appears from the working papers that the consultant's estimating program was applied consistently, opportunities for large economies of scale were missed. For example, the implementation appears to have been viewed as a large number (approaching 100) of independent projects without considering the economies of managing it as one large project. Some task estimates appear large. Contingencies appear to be overstated and over-used. Similar or identical project management, planning, organization, control and administration tasks appear to be duplicated. Some tasks are confusing and perhaps unnecessary at all (a separate task to obtain financing normally would not be viewed as an incremental effort of a project like this). Finally, the workplan does not appear to be adequately (a) North Carolina State Government specific, (b) design specific or (c) MSA specific.

Finally, the implementation plan, as presented in the report and working papers, does not include checkpoints to reassess workplans, resource estimates and legislative appropriation requirements.

4. Cost Estimates (Fourth RFP Question)

The fourth RFP question concerns reasonableness of the cost estimates. The cost summary of the Business Review was bound separately from the report. The cost summary shows implementation costs over five years, and ongoing costs for operating new systems. No underlying assumptions to the costs are discussed, no consideration regarding how accurate the costs may be is discussed, and in fact the costs are not qualified as estimates or projections. Limited additional data on costs are contained in the working papers.

a. Business Review recommended costs -- In round terms, estimated costs over the five years were as follows:

	<u>Dollars in Millions</u>
Consultant	\$ 15.9
Equipment/System Software	5.3
Processing	4.5
General and Administrative	<u>.8</u>
	\$ 26.5

b. Difficulties with the costs -- The main concern regarding costs is with the consultant costs. The first question regarding the recommended consultant costs should be whether the resource (staffday) estimates that underly them are appropriate. We have addressed this issue above. The second question should be the mix of consultant/OSC-SIPS/agency time. Our understanding of the Business Review is that this split (very roughly 1/3, 1/3, and 1/3) was made only at an aggregate level. No attempt was made to determine staffing for individual tasks. OSC has addressed this second concern in a revised November, 1988, presentation that is outside the scope of this evaluation. A third question involves hourly rates. An average hourly rate of about \$84 appears to have been used. We found no discussion of rates in the Business Review and workpapers.

The Business Review and workpapers do not appear to contain adequate information to support the equipment and processing costs. Given that the Business Review recommends replacing the Mohawk machines, the order of magnitude of equipment costs may be reasonable.

One final concern with the cost estimates is related to the lack of comparability of the numbers. We were told that these costs were presented

for appropriation purposes and for these purposes the presentation of the numbers may be appropriate. But these costs may individually affect the state differently, specifically:

- Consultant costs would be an **incremental** one time cost to the state,
- Equipment and system software would last several years and conceivably **some costs could be charged back** to the agencies over time,
- Processing would be largely a **transfer cost** from SIPS and might or might not really be incremental to the state, and
- **No costs for state staff** were included apparently under the assumption that no new staff would be hired for the project. However, a project of this magnitude (with an average of over 40 state staff FTE's), certainly will divert staff from other duties. It may very well be appropriate to recognize some incremental cost of these state staff.

TAB B

B. Alternatives to the SAS Business Review Recommendation

The fifth of the seven questions in your RFP asks for alternative implementation approaches to re-designing and re-implementing the State Accounting System. We have interpreted the term "alternative implementation approaches" to mean both (a) alternative conceptual architectures or models and (b) alternative implementation plans.

The seventh question in your RFP concerns the implications of keeping the existing accounting systems instead of developing new systems, or maintaining the status quo. Since both the fifth and seventh questions in your RFP essentially concern alternatives to the recommendations of the Business Review, this section of our report discusses them both. Finally, this section explores lessons learned by other states.

1. Alternative System Concept (Fifth RFP Question)

We believe that a preferable alternative to the approach recommended in the Business Review would be to implement multiple versions of the MSA system. This alternative would result in an overall architecture similar to the current DAS/SAS architecture (See Exhibit B-1 in Appendix A). This alternative concept would retain the benefits contemplated for the new SAS, yet avoid most of the lock-step coordination problems that would be inherent in the one-version-statewide architecture.

Under this approach, MSA would be adopted as the primary accounting software that will be the basis of North Carolina's accounting systems. The benefits of standardization would accrue to the state as personnel in multiple agencies develop expertise over time in the implementation and maintenance of the state's financial systems based on a common foundation.

OSC would implement a version of the MSA system to serve as the SAS replacement and to support agency accounting for the OSC serviced agencies. Individual agencies (or logical groups of agencies, depending on their accounting requirements and administrative structures) would implement other versions of the MSA system to serve as their agency accounting systems, much as the DAS versions do today.

To tie all of these versions together, interfaces would be developed to extract detail or summary information from the agency systems and translate this into transactions with the account code structure required for the SAS version operated by OSC. By uncoupling the agency MSA versions from SAS requirements through the interface, statewide account code requirements can be built into the the interface programs, leaving the account code structure in

the agency versions flexible for agency definition consistent with policies promulgated by OSC. This will provide substantial opportunities for implementation of coding reduction techniques.

By creating multiple agency versions, reporting cycles can be run in parallel, to make effective use of the available processing window. By stratifying data across files in multiple versions, redundant record processing will be minimized. Management control over accounting system administration can be placed in the hands of the managers responsible for the conduct of agency fiscal functions.

In general, uncoupling the effects of statewide requirements and agency requirements through implementation of multiple versions will insulate downstream implementation options from decisions made at the start of the project. It will result in a more flexible and controllable overall architecture.

This approach also provides flexibility in implementation phasing and approach. As Exhibit B-2 in Appendix A shows, a pilot implementation approach could be adopted whereby current SAS functions would be replaced by the new MSA/OSC system. Interfaces to existing DAS and other agency systems would be developed along with a new direct interface to the MSA/DPE system.

The MSA/OSC system, in conjunction with the MSA/DPE system, would represent an operational model for the MSA/OSC system and all the other MSA/AGENCY systems that might be implemented in subsequent phases. Through this approach, techniques for developing the interfaces would be developed. The degree to which agency and statewide requirements have related effects on account code design and other issues only an operational model can illuminate would be aired as part of the implementation. In addition, a rational basis for estimating the cost of accomplishing the remaining agency implementations would be established through the practical experience gained as part of the implementation.

Once the results of the pilot project are available, a deliberate decision could be made regarding subsequent funding of the SAS project. Considering the fundamental nature of the effort being undertaken and the open questions that remain, experience with the approach being contemplated is important before a firm conclusion can be drawn on the degree to which statewide agency implementation is practical and desirable.

Exhibit B-3 in appendix A provides preliminary estimates for the level of effort and timeframes that would be required to accomplish such an implementation.

2. Secondary Alternative Concept (Fifth RFP Question Continued)

Another approach we considered was to implement the MSA/OSC component as a replacement for the current SAS functions. The multiple DAS versions would be retained as the primary agency accounting systems under this secondary alternative. Because of obsolescence problems with the Mohawk computers that are a key component of DAS, it would be necessary to rewrite at least the front-end DAS programs and replace the Mohawk computers with modern machines if this secondary alternative were to be adopted. Varying degrees of enhancements also should be considered to the mainframe portions of DAS if this approach were to be taken. Exhibit B-4 in appendix A diagrams this alternative.

Under this alternative, statewide reporting problems would be addressed through the modern MSA replacement of the current SAS system. The operational problems and access to detail limitations of the existing agency DAS systems would remain, however, unless major enhancements were made to both the agency-based and mainframe portions of DAS.

Although this would be a possible alternative for North Carolina in the event that the results of the implementation described in '1' above proved to be unsatisfactory, accomplishing the objectives of the SAS project through this alternative would amount to undertaking a custom development effort based on the existing DAS architecture. Consequently, we recommend that the pilot implementation be undertaken with the objective of exploiting the facilities of the MSA software. Only in the event that MSA should prove to be undesirable for broad-based agency implementation should an attempt be made to address SAS objectives through this secondary approach.

3. Status quo as an alternative (Seventh RFP Question)

The existing SAS/DAS systems (as shown in Exhibit B-5 in appendix A) are technically obsolete and depend on discontinued hardware (Mohawks) and software (MOBOL). Ongoing maintenance of these systems is expensive. Processing is awkward in some cases and internal control weaknesses exist.

Expanding within the existing SAS/DAS reporting capabilities, developing enhanced online inquiry capabilities, correcting control weaknesses and improving reporting timeliness all may be feasible. The specific costs of these improvements would be difficult to estimate without a more in-depth requirements study and technical review of those systems.

Our experience is, however, that the costs could be substantial. As important, incremental upgrades to an existing obsolete system will not extend

substantially the productive life of the systems. Therefore, whatever costs were incurred would produce benefits over a much shorter period.

4. Experience of other states

The fiscal, legal and organizational environment varies dramatically among states. How systems are defined and what systems are expected to accomplish also varies among states. Nevertheless, comparing states can have value if the limitations to the comparisons are considered.

The Price Waterhouse participants in this evaluation of the Business Review have first hand knowledge in about 35 of the 50 state governments. Based on this experience, we developed the following somewhat rough statistics:

• Number of states reviewed	35
• Number with a statewide accounting system project presently in process at some stage	10
• Number that have completed a statewide accounting system project in the past 5 years	10
• Number of these that spent more than \$5 million	4
• Number of the 25 states that do not have a statewide accounting system project presently in process that have had some success centralizing agency accounting and management reporting (includes 4 of 10 with projects completed in the last 5 years)	6

Several conclusions probably can be drawn from the review. First, statewide financial system projects are underway or recently completed in a lot of states. Second, states have not been uniformly successful in centralizing agency accounting and reporting. Rather, our experience is that a number of states have had centralization of agency accounting and reporting as a specific goal but failed. The most frequent reason for this failure is, we believe, inadequate understanding of requirements and associated faulty planning. Finally, many states have implemented new systems for costs that are modest compared to the recommendation of the Business Review.

TAB C

C. Benefits

The sixth question (and final question in your RFP to be addressed in this report) concerns benefits. This section of our report looks at (a) benefits as explained in the Business Review and (b) some alternative benefits.

1. Benefits Per the Business Review

The Business Review report discusses benefits only on pages 13 and 14 of the Executive Summary. We found no substantial additional discussion of benefits in the working papers. No attempt was made that is evident in either the report or the working papers to quantify benefits except one. Finally, the report recognizes that both tangible and intangible benefits exist but does not attempt to designate any of the specific benefits listed as being tangible or intangible.

The report lists twenty benefits. They are, in the order presented in the report:

- **Four benefits of improved cash management** – these tangible benefits should be relatively easy to estimate, based at a minimum on samples of current transactions. The sizes of these benefits will not be clear without further analyses of (a) the extent to which current early payments of vendor invoices are offset by late payments, (b) volume of cash receipts not deposited timely and (c) the composition of accounts receivable balances and how much collection of any components could be speeded.
- **Three benefits of reduced personnel costs** – savings with respect to these tangible benefits could result only by reducing numbers of state employees. Our experience is that clerical staff sometimes can be reduced. But more frequently, implementation of new systems results in shifting staff from more clerical to more analysis oriented tasks.
- **One benefit of lower interest cost on state debt** by keeping a high bond rating – this tangible benefit could be estimated by calculating the effect of marginally higher interest rates on outstanding state debt, and multiplying this amount by an assumed probability that without improved financial statements the state's bond rating will be reduced
- **One benefit of reduced maintenance of Mohawk computers** that is tangible and quantified at \$225,000. Although the report does not state so, we assume this amount presently is an annual cost.

- **Four benefits involving improved financial management** -- an intangible benefit of better management can result from three "benefits" listed regarding information timeliness, accuracy and consistency. The fourth "benefit" which is improved controls could be more tangible.
- **Seven other benefits** -- these benefits involve (a) improved financial management (GFOA certification, improved accountability and responsiveness, increased shared information, better ad-hoc reporting, consistent application of controls) which is intangible, (b) enhanced public image which is more intangible, and (c) an improved foundation for new systems which is relatively intangible. Several of these benefits overlap others listed above.

On other than an intuitive basis, the treatment of benefits in the report does not appear to make a strong case for devoting a large amount of resources to new systems.

2. Other Benefits (Sixth RFP Question)

Estimating benefits is imprecise because (a) the estimates must be based on assumptions that can be difficult to verify, (b) after the fact it can be difficult to demonstrate the extent to which the benefits actually were achieved, (c) some benefits result in cash savings, others in productivity improvements and yet others in improved services from programs, and (d) achieving some potential benefits requires subsequent actions of state officials. These factors, however, do not make the benefits less real.

The following key benefits of implementing new general ledger, accounts payable, and purchasing system would accrue to North Carolina State Government:

- **More effective management of programs** -- The effectiveness of the state's programs in delivering services to North Carolina's citizens is related directly to the capabilities of managers at all levels. The key constraint on managers is resource availability. Better and much more timely information available to managers at all levels regarding the status of their resources (personnel, budgets, etc.) can make for better management and result in better service delivery. Over time, better information also can result in more responsibility and authority being placed on managers who are closer to where services actually are being delivered, which in turn enriches the jobs of these managers and can make them more effective managers. Assuming that better management resulting from better information would increase the effectiveness of programs by a marginal 0.5%, and based on assumed

annual operating and capital expenditures of \$2 billion, an annual benefit of \$10 million could be realized.

- **More efficient procurement** -- The value of a purchasing function depends on its ability to in fact procure more efficiently the goods and services needed by the state. Efficiency is achieved by obtaining lower prices through competitive bids and buying larger quantities, reducing quantities needed of some items by taking a statewide perspective, and developing better specifications of items needed. Achieving efficiency depends on the quality of information available to the purchasing function. Information that summarizes purchasing patterns statewide by vendors, commodity classes and service classes can make the purchasing function more effective. Assuming that with better data purchasing efficiency could be increased 1%, and assuming that the purchasing function has a real opportunity to affect \$100 million of an assumed \$250 million in state spending to purchase goods and services, an annual benefit of \$1 million could be realized.
- **Improved internal controls** -- Benefits also can accrue from improved system related internal controls over vendor payments, better data to increase federal cost recovery, and better payment scheduling to reduce late payment charges. Benefits resulting from improved system related internal controls depend on current levels of error and abuse and the extent to which (a) the controls themselves would identify such problems and (b) errors and abuses would decline simply because people are aware that better controls are in place. Assuming that improved controls would result in reduced errors and abuses equal to 0.1% of assumed operating and capital spending of \$2 billion per year, an annual benefit of \$2 million could be realized.
- **More efficient operation of systems** -- Savings can occur in both central and line agencies related to streamlining transaction flows and reducing redundant data entry. Assuming that statewide employment could be reduced by 25 staff at an assumed annual salary and fringe cost of \$20,000, an annual benefit of \$500,000 could be realized.
- **Better cash management** -- A new accounting system could lead to improved cash management through scheduling payment of accounts payable and improving management of accounts receivable. It also may be possible to withhold payments to state debtors. The magnitude of these benefits could be estimated based on an analysis of current payable and receivable balances.
- **Reduced need for agency based systems** -- If the new accounting system does in fact perform agency accounting and financial reporting functions

for several major agencies, savings may result from a reduced or eliminated need for agency based systems. This benefit could have a one-time saving because new systems presently may be planned that will not eventually be implemented. An annual saving could exist of reduced need to maintain existing systems. Without surveying (a) agency plans regarding new systems and (b) the use agencies make presently of existing systems, this benefit cannot be estimated. We have found this benefit to be material in other states.

These benefits have value and are material to the extent that the assumptions that underlie them are valid. They clearly are not precise. Our experience is that viewing benefits by quantifying them based on stated assumptions can be important to a legislative body because it provides a basic order-of-magnitude measure of the benefits.

TAB III

TAB A

APPENDIX A
LIST OF EXHIBITS

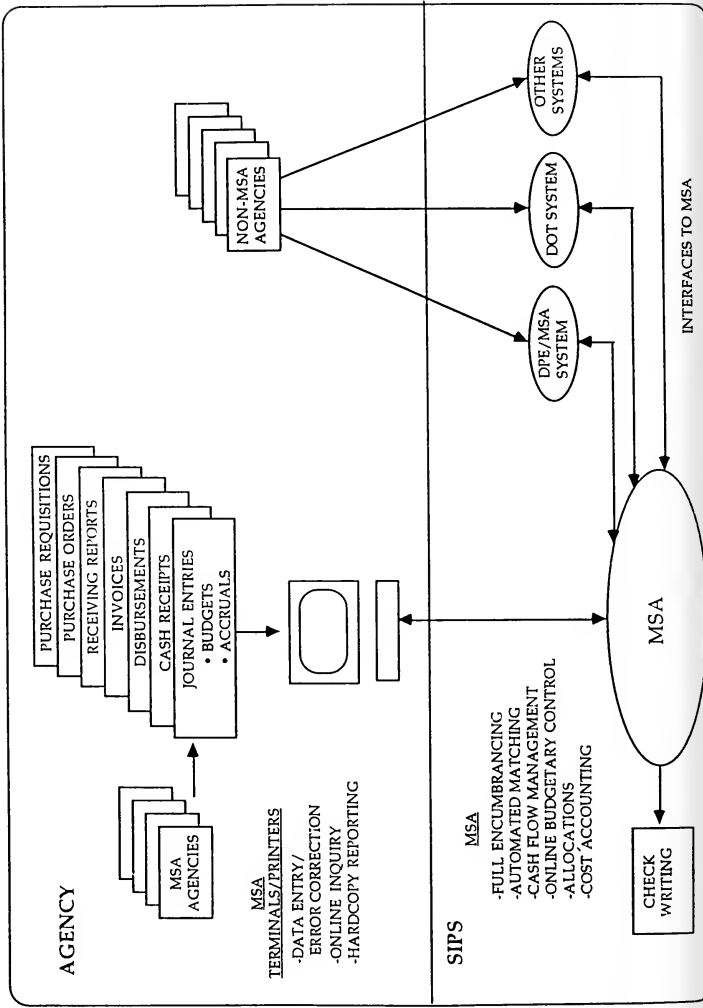
Exhibit A-1	State Government Financial and Administrative Systems Plan Table of Contents
Exhibit A-2	Business Review Proposed System Concept
Exhibit A-3	Current System Overview
Exhibit B-1	Primary Alternative System Concept
Exhibit B-2	Pilot Approach System Concept
Exhibit B-3	Primary Alternative - Pilot Approach System Concept Development and Implementation Plan
Exhibit B-4	Secondary Alternative System Concept
Exhibit B-5	Status Quo Alternative

STATE GOVERNMENT *
FINANCIAL AND ADMINISTRATIVE SYSTEMS PLAN
TABLE OF CONTENTS

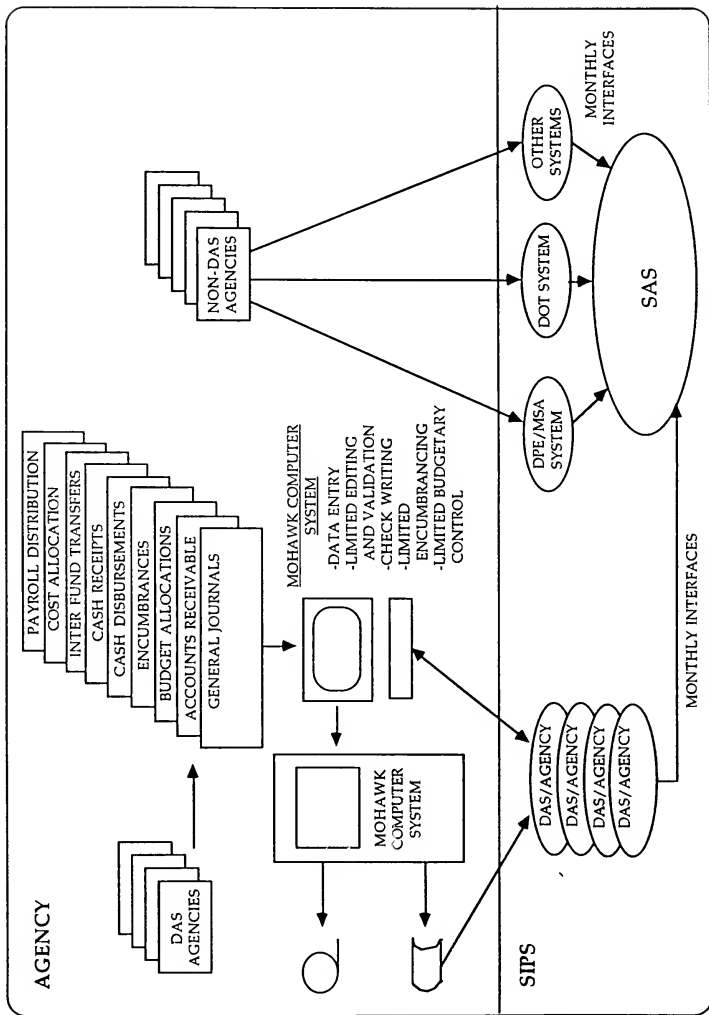
- I. EXECUTIVE SUMMARY
 - II. ADMINISTRATIVE SYSTEM OPPORTUNITIES
 - A. Mission Statement
 - B. Role and Scope of Central versus Agency-based Systems
 - C. System Standards
 - III. CURRENT SYSTEM ENVIRONMENT
 - A. The Need to Improve Existing Manual and Automated Systems
 - B. Short-Range Opportunities
 - IV. RECOMMENDED SYSTEM ENVIRONMENT
 - A. Payroll/Personnel/Position Control Application
 - B. Accounting System Application
 - C. Purchasing Application
 - D. Budget Preparation Application
 - E. Fixed Asset Application
 - F. Implementation Priorities
 - V. SYSTEM DEVELOPMENT EFFORT AND SCHEDULE
 - A. Implementation Plan
 - B. Project Organization and Key Manager Time Required
 - C. Workforce Assessment
 - D. Benefits of System Development
 - E. Costs of New Systems
- Appendices:
- A: Description of Existing Manual and Automated Systems
 - B: Description of Short-Range Opportunities
 - C: Agency Representatives Interviewed During Systems Planning Effort

* Model of actual plan done by Price Waterhouse for State of Maine - January, 1988.

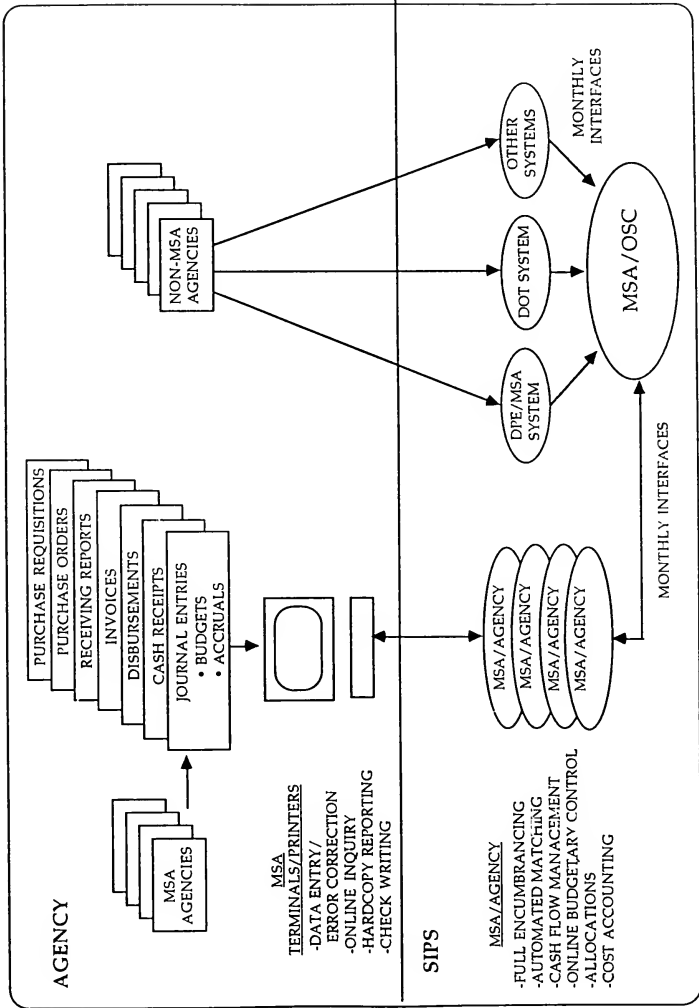
STATE OF NORTH CAROLINA
EVALUATION OF STATE ACCOUNTING SYSTEM (SAS) BUSINESS REVIEW
BUSINESS REVIEW PROPOSED SYSTEM CONCEPT



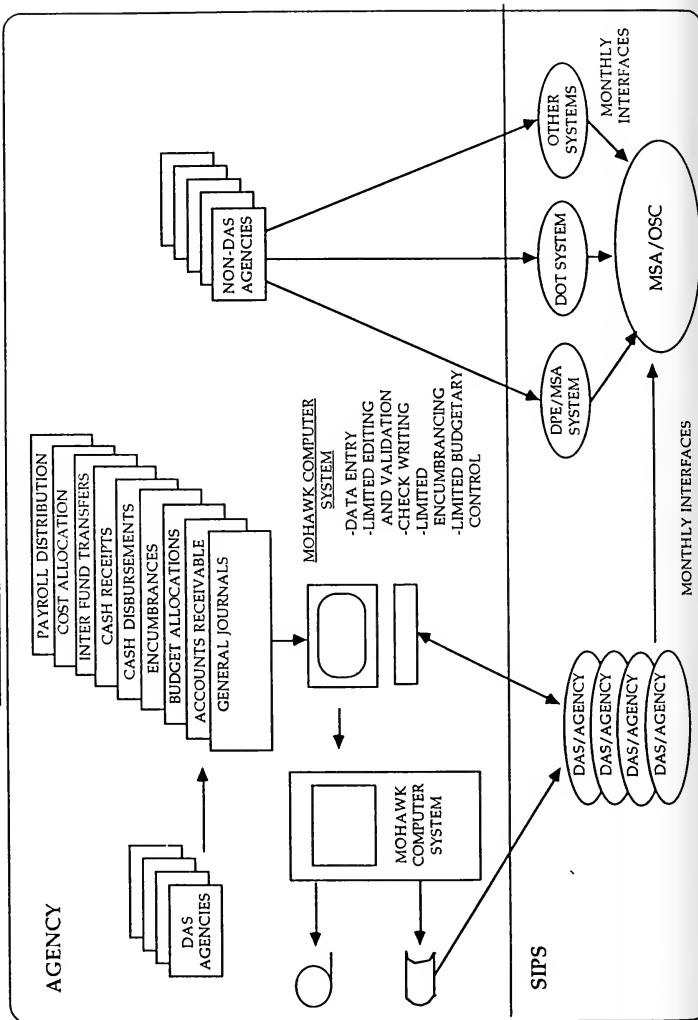
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EVALUATION OF STATE ACCOUNTING SYSTEM (SAS) BUSINESS REVIEW
CURRENT SYSTEM OVERVIEW



STATE OF NORTH CAROLINA
 EVALUATION OF STATE ACCOUNTING SYSTEM (SAS) BUSINESS REVIEW
 PRIMARY ALTERNATIVE SYSTEM CONCEPT



STATE OF NORTH CAROLINA
 EVALUATION OF STATE ACCOUNTING SYSTEM (SAS) BUSINESS REVIEW
 PILOT APPROACH SYSTEM CONCEPT



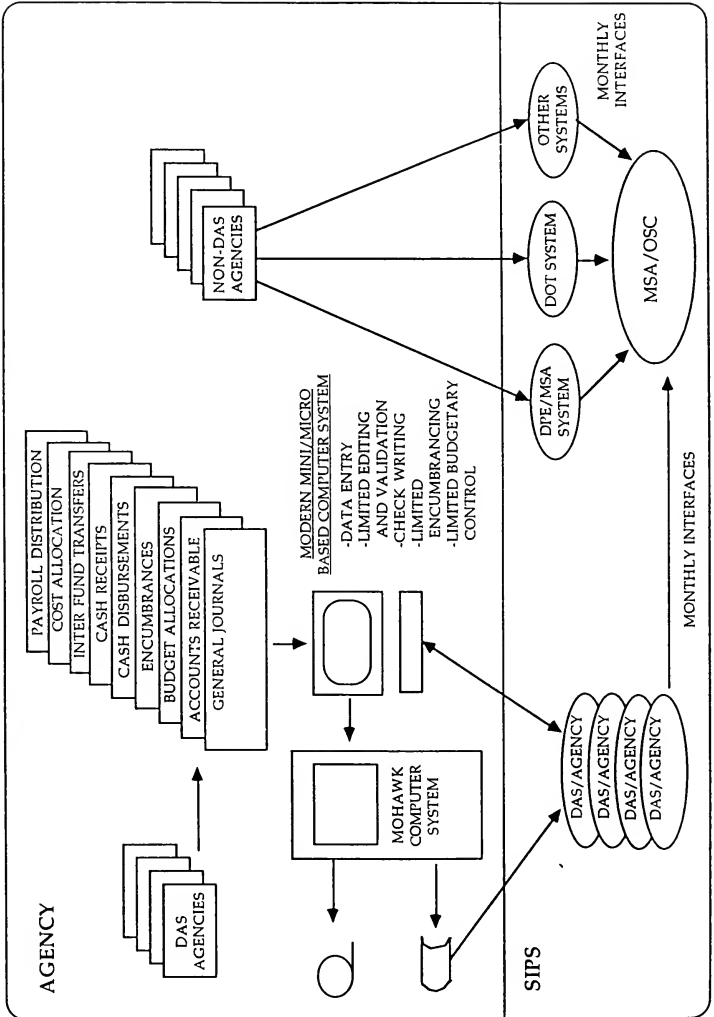
STATE OF NORTH CAROLINA
 EVALUATION OF STATE ACCOUNTING SYSTEM (SAS) BUSINESS REVIEW
 PRIMARY ALTERNATIVE - PILOT APPROACH SYSTEM CONCEPT
 PRELIMINARY DEVELOPMENT AND IMPLEMENTATION PLAN

TASK DESCRIPTION	ELAPSED MONTH		ESTIMATED DAYS		TOTAL	
	START	COMPLETE	DPE/AGENCY	OSC/SIPS		CONSULTANT
I. Review Existing SAS Capabilities and Define Statewide Reporting Requirements <ul style="list-style-type: none"> • Budgetary Analysis and Control • Cash Management • Comprehensive Annual Financial Report (GAAP) • Consolidated Vendor and Item Reporting 	1	3	20	120	90	230
II. Review Existing DPE/DAS/Non-DAS Interfaces and Define MSA/OSC Interface Requirements	1	3	50	80	80	210
III. Develop OSC Statewide Policy and Procedures Manual	4	10	100	450	25	575
IV. Install MSA/OSC Version of the MSA Software, Define Statewide Account Code Structure and Establish MSA/OSC Chart of Accounts	2	4	25	75	100	200
V. Design, Programming and Testing <ul style="list-style-type: none"> • DAS/DPE Interfaces (including operational control reporting) • Statewide Reporting 	2	5	75	100	120	295
VI. Develop Procedures and Prepare MSA/OSC Documentation <ul style="list-style-type: none"> • Financial Transactions • Interfaces • Direct Entries • Periodic Accruals and Adjustments • Reporting • Chart of Accounts Maintenance • System Administration 	4	6	50	125	125	300

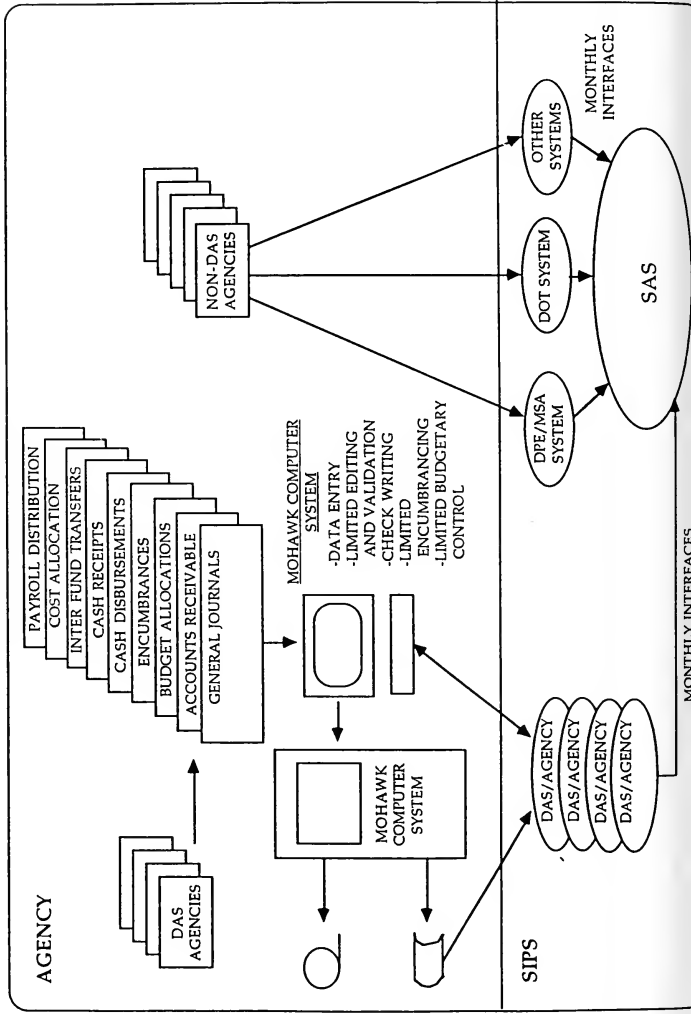
STATE OF NORTH CAROLINA
EVALUATION OF STATE ACCOUNTING SYSTEM (SAS) BUSINESS REVIEW
PRIMARY ALTERNATIVE - PILOT APPROACH SYSTEM CONCEPT
PRELIMINARY DEVELOPMENT AND IMPLEMENTATION PLAN

TASK DESCRIPTION	ELAPSED MONTH		ESTIMATED DAYS			TOTAL
	START	COMPLETE	DPE/AGENCY	OS/CSIPS	CONSULTANT	
VII. Prepare Training Materials and Conduct MSA/OSC Pre-Conversion Training (days exclude agency participant time)	6	7	10	60	20	90
VIII. Implement MSA/OSC System and Provide Post-Implementation Support	7	12	N/A	100	100	200
IX. Develop MSA Implementation Plan for Other Agencies <ul style="list-style-type: none"> • Evaluate DPE Implementation and Prepare a Prototype Implementation Plan • Define Statewide Purchasing and Budgeting Requirements that will be supported by MSA/AGENCY Systems • Prepare a Detailed System Flow Diagram Showing Relationships Among the Components of North Carolina's MSA-based and Other Financial Control Systems that should be implemented • Design System Modifications Required to Implement Consolidated Statewide Vendor and Item Reporting • Prepare a Preliminary Schedule of Agencies to be Converted and the Number of MSA Versions to be Installed • Prepare Preliminary Resource and Cost Estimates for MSA/AGENCY Implementations 	8	10	50	120	120	290
X. Review Pilot Implementation Results and Determine Course to be Adopted						
Totals Days			455	1,430	930	2,815
Total Hours			3,640	11,440	7,440	22,520

**STATE OF NORTH CAROLINA
EVALUATION OF STATE ACCOUNTING SYSTEM (SAS) BUSINESS REVIEW
SECONDARY ALTERNATIVE SYSTEM CONCEPT**



STATE OF NORTH CAROLINA
 EVALUATION OF STATE ACCOUNTING SYSTEM (SAS) BUSINESS REVIEW
 STATUS QUO ALTERNATIVE



TAB B

APPENDIX B: STAFF INTERVIEWED DURING EVALUATION EFFORT

<u>Agency/Department</u>	<u>Representatives</u>	<u>Position</u>
Department of Administration		
Division of Purchase and Contract	Max E. Baldwin	State Purchasing Officer
Office of State Personnel	Richard V. Lee	Director
Office of State Controller	Fred W. Talton Bradley M. Buie	State Controller Deputy State Controller
	Charles H. Cooper II	Manager, Financial Systems and Reporting
	Donald F. Waugh	Manager, State Accounting System
State Information Processing Services (SIPS)	Charles R. Williams Daniel H. Clark Garland L. Harris	Chief Deputy Director Performance Monitoring/ Capacity Planning Staff Specialist
Department of State Auditor	Edward Renfrow	State Auditor
Department of Correction	Danny C. Stewart	Controller
General Assembly		
Legislative Automated Systems Division	M. Glenn Newkirk Douglas Hale	Director Quantitative Applications Analyst
Fiscal Research Division	Thomas L. Covington James W. Newlin	Director Sr. Fiscal Analyst
Office of the Governor		
Office of State Budget and Management	Marvin K. Dorman Jr.	Deputy State Budget Officer

APPENDIX B: STAFF INTERVIEWED DURING EVALUATION EFFORT

<u>Agency/Department</u>	<u>Representatives</u>	<u>Position</u>
Department of Human Resources	Joyce H. Johnson	Controller
Department of Labor	Rebecca R. Brown	Director, Budget Division
Department of Public Education	Thomas C. Runkle	Deputy Controller
	Gerald H. Bland	Director, Management Information Systems
	Joyce B. Baffi	Associate Controller
	Patricia M. Labarbera	Assistant Director, Auditing and Accounting
	Philip W. Price	Accounting Manager, Federal Programs Division
	Nancy G. Thomas	Financial Systems Coordinator
	James G. Macaulay	Director, Administrative Services
Department of State Treasurer	Harlan E. Boyles	State Treasurer
	James L. Williams	Director, Computer Center
	* * * *	
Arthur Andersen	John B. Robbins	Partner, Raleigh
	Robert M. Berton	Senior Manager, Charlotte
Momentum Systems Corporation (Mohawk Computers)	Scott Etzler	National Sales Manager

ATTACHMENT 7
RECOMMENDED LEGISLATION CONTINUING
THE STATE INFORMATION PROCESSING NEEDS
AND
COST STUDY COMMISSION

GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 1989

S

1

SENATE BILL 47

Short Title: Computer Study Extended.

(Public)

Sponsors: Senators Royall, Goldston, and Sherron.

Referred to: Rules.

January 24, 1989

A BILL TO BE ENTITLED

1
2 AN ACT TO EXTEND THE STATE INFORMATION PROCESSING NEEDS
3 AND COST STUDY COMMISSION.

4 The General Assembly of North Carolina enacts:

5 Section 1. Section 14.1 of Chapter 873, Session Laws of 1987 reads as
6 rewritten:

7 "Sec. 14.1. The State Information Processing Needs and Cost Study Commission is
8 created. The Commission shall consist of three members of the Senate appointed by
9 the President Pro Tempore of the Senate; three members of the House of
10 Representatives appointed by the Speaker of the House of Representatives; one
11 citizen of the State of North Carolina who has a background in and familiarity with
12 information systems or data communications appointed by the President Pro Tempore
13 of the Senate; and one citizen of the State of North Carolina who has a background
14 in and familiarity with information systems or data communications appointed by the
15 Speaker of the House of Representatives. All initial appointments shall be made by
16 September 15, 1987. Appointments made to the Commission prior to that date shall
17 continue until the termination of the Commission. Vacancies on the Commission
18 shall be filled in the same manner as initial appointments."

1 Sec. 2. Section 14.2 of Chapter 873, Session Laws of 1987 reads as
2 rewritten:

3 "Sec. 14.2. The President Pro Tempore of the Senate shall designate one Senator
4 as cochairman and the Speaker of the House of Representatives shall designate one
5 Representative as cochairman. The cochairmen shall call the initial meeting of the
6 Commission."

7 Sec. 3. Section 14.3 of Chapter 873, Session Laws of 1987 reads as
8 rewritten:

9 "Sec. 14.3. The Commission shall study:

- 10 (1) Policies and procedures at the State Information Processing
11 Services and other executive agencies governing computer
12 equipment purchase and lease contracts, equipment maintenance
13 contracts, software support and maintenance contracts, contract
14 programming services, and data communication contracts;
- 15 (2) Opportunities for containing the State's cost of computer
16 equipment purchase and lease contracts, equipment maintenance
17 contracts, software support and maintenance contracts, contract
18 programming services, and data communication contracts;
- 19 (3) Current charge structures for information processing in North
20 Carolina State government, particularly charge structures at the
21 State Information Processing Services;
- 22 (4) Information systems use and needs in North Carolina State
23 government;
- 24 (5) Potential demands for additional information staff, equipment,
25 software, data communications, and consulting services in North
26 Carolina State government in the next 10 years;
- 27 (6) Abilities of executive agencies to analyze, project, and plan State
28 government's information needs and capabilities; and
- 29 (7) Policies and organizational structures used in other states to
30 contain government information processing costs and the potential
31 use of those policies and structures in North Carolina State
32 government.
- 33 (8) Information Systems issues referred to the Study Commission by
34 the General Assembly's committees, other legislatively created

1 study commissions, and the Joint Legislative Commission on
2 Governmental Operations."

3 Sec. 4. Section 14.5 of Chapter 873, Session Laws of 1987 reads as
4 rewritten:

5 "Sec. 14.5. The Commission shall submit a final report on the topics mentioned
6 above, other findings, and recommendations for legislation before the first day of the
7 ~~1989~~ 1991 Session of the General Assembly by filing the report with the President
8 Pro Tempore of the Senate and the Speaker of the House of Representatives. Upon
9 filing its final report, the Commission shall terminate."

10 Sec. 5. This act is effective upon ratification.

