

MEMBERS PRESENT: Chairman Bremner
Vice Chairman Hickey
Mr. Bergevin
Mr. Coulter
Mr. Glover
Mrs. Hayes
Mr. Horn
Mr. Marvel
Mr. Rhoads
Mr. Robinson
Mr. Vergiels
Mrs. Westall

ALSO PRESENT: Bill Bible, Fiscal Analyst; Judy Matteucci, Deputy Fiscal Analyst; Mike Alastuey, Deputy Budget Director (SEE ATTACHED GUEST LISTS)

Chairman Bremner called the meeting to order at 7:00 a.m.

UNIVERSITY OF NEVADA, RENO

Intercollegiate Athletics

Dr. Joe Crowley, President of the University of Nevada, Reno, said that much of the increase requested in Intercollegiate Athletics is for additional scholarship funding for the women's athletic program. Additionally, he noted that the Executive Budget's approach to Grants-In-Aid has a particularly serious impact on the athletics program because of the increases in fees and tuition without a commensurate increase in Grants-In-Aid funding.

Chairman Bremner asked for an explanation of the total impact of Title IX. Dr. Crowley said that the regulations attached to the original education amendments passed in 1973 refers to intercollegiate athletics in depth and guides the investigators in determining compliance to Title IX. In lieu of the enormous amount of regulations in this regard, he said it will be difficult not to find someone guilty of something on an issue.

Chairman Bremner called to the committee's attention a recent National Education Association study which reveals that Nevada ranks 15th in the nation in salaries paid to faculty at public universities. Dr. Crowley said that, according to the statistics available to the university, Nevada ranks 26th nationally in the salary range. Dr. Don Baepler, Chancellor of the University System, said that the university uses the AAUP statistics which base their salary considerations to include fringe benefits and consistently Nevada has ranked 26th in both a composite average and average by rank.

Agricultural Experiment Station and Cooperative Extension Service

Dr. Crowley said this budget reflects an inflation based overall increase of 19% for the first year of the biennium and 15% for the second year. He noted that the Executive Budget proposes a 10% cut in position numbers for both the Agricultural Experiment Station budget and the Cooperative Extension Service budget with most of the impact of these cuts being in the area of the four field laboratories across the state, 4-H and irrigation projects.

Mr. Rhoads referred to the great potential agriculture has for Nevada's economy considering the Sagebrush Rebellion and asked why cuts were being made in this budget. Dr. Crowley said the university requested added positions and increased operating funds in both the Agricultural Experiment Station budget and the Cooperative Extension Service but the Executive Budget recommends the reductions in these two areas. Chairman Bremner asked Mr. Alastuey for clarification. Mr. Alastuey, Deputy Budget Director, replied that the Budget Office did not specify this particular area to be cut any more than any other University area but, rather, proposed an across-the-board 10% reduction in all areas.

Mr. Bergevin asked if the administrative staff within the Agriculture Experiment Station and the Cooperative Extension Service at the University would be cut to the same degree that was being proposed for the rural areas (9 positions). Dr. Crowley said that funds cannot be transferred from budget to budget and the Executive Budget proposes a reduction in each of these two areas.

He further noted that a typical faculty member in these two programs is partially funded from these programs as well as being involved part time in instruction in the College of Agriculture under the basic UNR budget. He explained that it would therefore be difficult to cut such positions from these programs.

Mr. Hickey expressed his concern in the proposed cuts of the 4-H programs and Agriculture Extension Service noting their importance to the small communities. Mr. Alastuey said the Executive Budget is not recommending cuts in specific areas, but rather a 10% cut in overall personnel. Mr. Hickey asked if it was common practice of the Governor to make indiscriminate cuts in the budget. Mr. Cashell commented that it was his opinion that the Executive Budget has made irresponsible cuts in the budget after the University System had worked diligently in preparing a well thought out budget request.

Mr. Rhoads asked for an explanation of the decrease in "County Funds" line item in the Cooperative Extension Service budget. Dale Bohmont, Dean of the College of Agriculture, replied that these budgets are complex in that they have funds from the Federal Government and the counties. He added that this line item is an allocation based upon property tax and is controlled by the County Commissioners and is used for salaries. The allocations are the amounts the County Commissioners have committed for salaries and the balance is sent back to the counties through a voucher system. In addition, he noted that the position cuts required by the Executive Budget are being made in position slots that are unfilled at the present time.

It was Mr. Bergevin's opinion that the budget is more "top heavy" in administration and less in delivery of services.

Statewide Programs

Dr. Crowley said the budget as requested proposes an inflationary increase but a reduction of 10% in some areas is proposed by the Executive Budget. Chairman Bremner asked why an across-the-board 10% reduction was not imposed in this budget as it was in the Agriculture Experiment Station and Cooperative Extension Services budgets. Mr. Alastuey said that each of the agencies within this budget offer a variety of functions and that each within themselves does not warrant a 10% reduction.

Mr. Marvel asked if there were any vacant positions in the Statewide Programs budget. Dr. Crowley said he did not know if there were any vacancies.

Business Center North

Dr. Crowley said that the Business Center North is located on the campus of UNR but services all of the business of the University in northern Nevada and a number of statewide operations as well. Due to increased service activity, the University requested an additional seven positions but the Executive Budget proposed two additional classified positions.

Mr. Horn referred to the position of Vice President of Business who is paid \$15,000 annually for 1/3 service time and asked what his duties are. Dr. Crowley said that position is reflective of a budgeting convenience wherein he spends approximately 1/3 of the time on Business Center North activities and the remainder of his salary appears under the Vice President of Business University of Nevada Reno budget.

Medical School

Dr. Robert M. Daugherty, Dean of the University Medical School, distributed a handout to the committee (EXHIBIT A). He noted that the major thrust of the medical school is determining and admitting those students who are interested in primary care and their commitment to the state.

Mr. Hickey said that it was his understanding that it costs the state approximately \$125,000 to educate a medical student. Additionally, he asked of the 49 students to graduate in May, how many are Nevadans. He further noted that as a member of the 1971 Legislature that implemented the Medical School, it was his opinion that the school has deviated from the original philosophy of a commitment to rural medicine and, in view of the existing financial problems, consideration should be given to return to a two-year medical school.

Mr. Cashell said that information from the LCME (accreditation body) reveals that reversion cannot be made to a two-year medical school. He added that it should never have been started but now that it has been in progress, the state is "stuck" with the Medical School.

It was Mr. Robinson's opinion that in view of the fact that it is costing the taxpayers approximately \$89,000 a year for each medical student, it would be more cost effective to close the Medical School and subsidize (through loans) the education of those students at a school in another state. Dr. Daugherty said that at the present time there are 196 students plus 40 residents that are being trained. He added that the school has helped many rural parts of the state make decisions in terms of health care. Dr. Daugherty went on to say that each medical student spends one month out of their senior year in a rural area and one month at the end of their second year in a primary care physician's office.

Mr. Horn referred to Mr. Hickey's question asking how many of the 49 seniors graduating in May are from Nevada. Dr. Daugherty said he would provide the committee with that information. He did note, however, that of the total 196 student body, 97% are from Nevada and the only students from out of state that have been accepted are from WICHE states. Additionally, Mr. Horn asked how many of the 36 students that graduated in May 1980 are practicing in Nevada. Dr. Daugherty said that 62% of the 1980 graduates have begun residencies in primary care in Nevada.

Mr. Vergiels referred to the nine physicians currently in practice in the rural counties and asked who placed them in those areas. Dr. Daugherty said that the present system allows the physician to make the choice where he wants to practice; however, an effort has been made to help the communities recruit doctors.

Mr. Vergiels additionally noted that during the 1979 Legislative Session, the Medical School told the Ways and Means Committee that the state appropriation would be held to 70% of the total budget; however, the state appropriation in this budget is 80% of the total or \$500,000 over projection. Mr. Vergiels said that he agreed with Mr. Robinson's proposal to phase out the Medical School. He pointed out that inasmuch as 75% of the 1980 graduating class students actually graduated, there was no reversion to the General Fund on those that had dropped out. Mr. Vergiels added that the per student expenses are exorbitant. Dr. Daugherty commented that once a faculty member is on staff regardless if students drop out, he still gets a salary. Mr. Vergiels said that if the assumption is that 36 students can get an education for the same amount of money as 48 it destroys the entire University budget concept. Mr. Vergiels requested written justification of how the money was spent despite the fact there were fewer students. Dr. Daugherty said he would provide that information.

Mr. Robinson said it was not his intention to criticize the quality of the students that are graduating from the Medical School, but feels that it has become an "albatross" to the State of Nevada.

Mr. Brady asked what is the purpose of the new proposed \$5 million building for the Medical School. Dr. Daugherty said that the purpose of the new building is to allow the Bio-Chemistry Department, the Agriculture Department and Medical Department to share the same building. Mr. Brady additionally asked if more staff will be required for the new facility and Dr. Daugherty said that it would not.

Mr. Bergevin pointed out that although the teaching staff may not be increased, there will be ancillary positions and maintenance support necessary for the additional square footage.

It was Mr. Horn's opinion that the Medical School is costing the taxpayers of the State of Nevada between \$27,000 and \$33,000 a year per student and consideration should be given to phasing out the program over a four-year period. Dr. Daugherty replied that the Medical School provides resources for Nevada in terms of research and the benefits to the people of the state.

Chairman Bremner commented that the Committee has the responsibility of setting priorities in terms of state appropriations and must consider the fact that the Medical School is a costly item.

Desert Research Institute

Clifford Murino, President, Desert Research Institute, informed the Committee that DRI undertakes basic and applied research on problems of importance to the State of Nevada that includes research in water resources, atmospheric resources, energy, biological resources and social sciences.

Dr. Murino said that revenues for DRI are composed of funds from the Federal Government, private enterprise and state support. He explained that the General Fund appropriation to the Institute is vital for use in securing additional Federal and private research grants. He noted that for every dollar the State has been investing in DRI approximately \$10 is being returned to the Nevada economy.

Dr. Murino detailed for the Committee the administrative support for the DRI and his comments are contained in EXHIBIT B.

Dr. Murino pointed out the four research projects that are being proposed by the DRI and are recommended for funding by the Governor. They are:

Weather Modification Program

As a result of this program, 176,000 acre feet of additional water has been produced at a cost of less than \$4.00 per acre-foot.

Chairman Bremner asked if evidence is available to substantiate the statistics that DRI has actually produced the additional water. Dr. Murino said that statistical proof is available from DRI.

Mr. Vergiels asked how many operational days were spent in the actual seeding function. Joseph Warburton, Project Director for the Weather Modification Program said that there are 22 flight seeding missions each year for the Spring Mountain area and 45 seeding missions for the Tahoe-Truckee area yearly and said he would provide the Committee with more detailed information. Dr. Murino noted that the DRI has proposed adding the Elko area to the cloud seeding program but the Governor has recommended that it remain at the current level.

Truckee River Project

Dr. Murino said the DRI is making an effort over the next biennium to compile a data base to be available to state agencies to assist in making the proper water management decisions as they relate to the Truckee River. He pointed out that the DRI had requested a program augmentation but that the Governor's recommendation provided for continuing the program at current levels.

Solar-Electric Energy Production

Dr. Murino pointed out that the DRI is focusing on a program in solar energy aimed at making use of the Nevada playa. The surface of the playa is an ideal area to be converted into a solar pond. Chairman Bremner questioned why the DRI did not originally request this Solar-Electric Energy program but is now being recommended by the Governor. Dr. Murino said that the Institute had. Mr. Alastuey explained that the original budget submitted by DRI did not contain this request, however, during the budget process, this project was expressed as a priority by DRI and included in their budget request. He said this project was not initiated by the Governor's office. Dr. Murino explained that this project came about after discussions with the Governor.

Mr. Hickey asked if the DRI had other priorities that were not listed in their budget request. Dr. Murino said that the requests listed in the budget are the highest priority established by the DRI.

Recharge to Nevada's Groundwater Reservoirs

Dr. Murino said this project will initiate a study of the processes of recharge to Nevada's groundwater reservoirs and is recommended for funding by both the DRI and the Governor.

Mr. Horn suggested the possibility of consolidating the DRI into one regional office and eliminating the five executive directors. Dr. Murino said that consolidation would not eliminate the directors positions because four out of the five positions are located in Reno at the present time. He added that for every \$50,000 cut in the budget, federal support would be reduced by \$500,000.

Chairman Bremner asked which new program, Solar Electric Energy or Groundwater Reservoirs, if given a choice, would be given priority by the DRI. Dr. Murino replied that the Groundwater Reservoirs is more certain to produce useful results in a short period of time to benefit the state; however, the Solar Energy is more speculative but is vital in the long run to Nevada's future.

Chairman Bremner referred to Dr. Murino's statement contained in EXHIBIT B that the state does not participate in the maintenance of the DRI's buildings and noted that state funds were used to replace a roof on a DRI building. Dr. Murino responded that the state does fund repairs but not the on-going daily maintenance of the buildings.

Mr. Robinson asked if there were any guarantees that the \$3.2 million in federal appropriations to the DRI would be continued. Dr. Murino said that he has no assurance that federal funds will be available but input from the 17 different federal agencies that fund the DRI reveals that while other programs are being reduced programs that tie closely to energy research, etc., are not experiencing the reductions.

Mr. Robinson speculated that if the federal funds were cut 20% what reductions could be made in the state funding of the DRI. Dr. Murino said that positions that related to a particular project would be eliminated.

Additionally, Mr. Robinson asked for an explanation of the Social Sciences Center. Dr. Murino said that historically the Center has focused research on the area of archaeological work but the trend for the future is toward calculating the effect of population on air quality in densely populated areas.

System Administration

Dr. Baepler, Chancellor of the University System, said that the System Administration budget is for the Board of Regents and the Chancellor's Office. He said it consists basically of 16 professional positions and 8 classified people and provides coordinating services to the University System. He noted that the Executive Budget proposes cutting two professional and two classified positions from this budget and the University opposes the deletion of these positions.

Mr. Glover asked what the impact would be on the System if the Chancellor's Office were abolished. Dr. Baepler said that services performed by this office would have to be duplicated at each of the campuses. Mr. Cashell, Board of Regents, said that due to Dr. Baepler leaving the post of Chancellor, the Board of Regents determined that any changes in this budget should be considered when a new Chancellor is instituted. He added that eliminating the office as a whole would result in cost duplication at the various campuses.

Mr. Vergiels pointed out that if the Governor's recommended salary increases are implemented, a secretary in the Chancellor's Office will be making \$30,000 a year. Ms. Frankie Sue Del Papa, member of the Board of Regents, responded that the person in that position is highly competent and has worked in the Chancellor's Office for 17 years. Mr. Vergiels said that the Ways and Means Committee deals with positions not with personalities.

Mr. Coulter asked what the salary range is for the Chancellor position. Dr. Baepler said that due to the 95% rule, the ceiling is set by statute at \$47,500. In response to Mr. Coulter's question on the position of Community College Coordinator, Dr. Baepler said that person works directly with the Community Colleges in an effort to maintain their master course files and solve any problems in connection with the Community Colleges. It is a new position and replaces the former position of President of the Community College Division. Mr. Coulter noted the reduction of a position of a President of the Community Colleges to a coordinator and asked why similar reductions could not be affected in the Chancellor's Office as a whole. He suggested that the staff could be reduced by retaining an attorney, an auditor and by upgrading an existing position to an administrator. Dr. Baepler said that the Board of Regents gave careful consideration to streamlining the Chancellor's Office but determined that a strong central administration in the position of a Chancellor is preferred. Mr. Coulter inquired if other states the size of Nevada have a similar "Chancellor" position. Dr. Baepler said that most states have a coordinating agency either through their governing board or through their state legislature.

Mr. Horn asked what two professional positions are proposed for elimination in the Executive Budget. Dr. Baepler replied that based on the salary level indicated in the reductions, it would be the System Architect and the Director of System Institutional Research.

Computing Center

Mr. Niels Anderson, Director of the University Computing Center, said the requested one-shot equipment appropriation in the Executive Budget covers communication processors, a time-share computer to be located in northern Nevada and the cost of installing telephone lines to gain access to the computers.

In response to Mr. Rhoads' question on the main purpose for the requested computer, Mr. Anderson noted that the computer will be dedicated to educational purposes. Additionally, Mr. Rhoads asked if it would be used to generate any revenue. Mr. Anderson replied that computer time could be sold to generate income but, in general, the central computer is used for that purpose.

Mr. Anderson detailed for the committee the budget request for the University Computing Center and his comments are contained in EXHIBIT C. Mr. Anderson said the Governor is recommending a new concept whereby students who use the computers would be charged a fee in order to raise \$100,000 per year to augment the Computing Center's budget. Chairman Bremner asked the position of the University regarding the fees. Mr. Anderson said that he is against it. Dr. Baepler expanded the issue by noting that from an administrative perspective, it is impossible to establish a mechanism whereby fees could be charged to and collected from the students for use of the computer.

Chairman Bremner asked Mr. Alastuey for his comments on the matter. Mr. Alastuey said that the establishment of a fee schedule was an effort to equate fees for computer usage by the students to "lab fees" in Chemistry. Dr. Baepler said a student in a Chemistry class pays \$10 for a "breakage deposit" and that those fees do not represent a charge for taking the class. Dr. Baepler added that he is opposed to charging students based on the cost of teaching the classes and said there is no effective way to have this kind of a fee policy for the Computing Center.

University Press

Mr. Robert Laxalt, Director of the University of Nevada Press, presented a handout to the Committee (EXHIBIT D) and explained the achievements and objectives of the press. He noted that slightly more than 95% of book manufacturing funds comes from sales of University Press books and that the Press takes in an average of \$60,000 per year in these sales. He said these earnings nearly cover the cost of producing the books and that only advertising and sales promotion come from his operating budget. Mr. Laxalt stated that the Press is satisfied with the Governor's recommended budget for the next biennium.

Mr. Glover asked Mr. Laxalt how his position as Editor of the University Press compares with that of the Editor of Nevada Magazine. Mr. Laxalt said the University Press deals with academic publications that can take as long as five years to write whereas Nevada Magazine is a publication that deals with short-term entertainment type articles; therefore a comparison of the two would be extremely difficult.

Chairman Bremner adjourned the meeting at 10:30 a.m.

DATE: Feb. 10-1981

WAYS AND MEANS COMMITTEE

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NAME (PLEASE PRINT)

REPRESENTING:

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Budget Division

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Univ. of Nev. Press

NICHOLAS CADY

U N PRESS

KENNETH R. Robbins

UNIV. OF NEV. PRESS

John Tom Ross

Univ. of Nev System

Luell Fiant

Business Center South

Kath Evans

Clark County Community College

JACK DAVIS

WESTERN NEVADA COMM COLLEGE

MARCIA R. BERASAIN

WESTERN NEVADA COMMUNITY COLLEGE

Ron Martini

Western Nevada Community College

Bell Berg

Northern Nevada Community College

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Andrea Charles

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John Whitworth

intern - Vergel

Man Manuel

NV State Journal / Reno Gazette

Joseph A. WARBURTON

Desert Res. Inst.

James H. Jeyou

Desert Res. Inst.

David R. Saket

UNR Faculty Senate

DAVID WILKINS

TRUCKEE MEADOWS COMMUNITY COLLEGE

Joe Crowley

Univ. of Nevada, Reno

Raymond Bergquist

Western Nevada Community College

Richard B. King, Jr.

Truckee Meadows Community College

London Johnson

Clark Co. Comm Coll.

Judy Butler

Clark County Comm. College (ASCC)

James Claphorn

WESTERN NEVADA COMMUNITY COLLEGE

Richard A. Pugh

UNIV. SCH OF MEDICINE

Sam Hill

Nevada State Medical Assn

Jerry Young

Nevada First Thrift

Donald C. Fordall

Clark City Community College

Warren Kocmond

UNLV

DRI

DATE: _____

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New Motor Transport Assoc.

CHRIS STOJANOFF

DR I

MARK DAWSON

DR I

Dale Johnston

Clark County Community College

REV. CAESAR CAVIGLIA

" " " "

JOHN R. McBEIDE

Board of Regents

James F. Miller
Humal Nelson

Clark County Comm College
UPI



UNIVERSITY OF NEVADA • RENO

SCHOOL OF MEDICAL SCIENCES
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Progress Report to
The Nevada State Legislature

1 February 1981

Robert M. Daugherty, Jr., M.D., Ph.D.
Dean

A DIVISION OF THE UNIVERSITY OF NEVADA SYSTEM

EXHIBIT A

Progress Report

Our 1976 proposal to convert the School of Medicine to a four-year, degree-granting program with residencies in primary care stated that such a program should help meet the future medical care, medical manpower and educational needs of Nevada. Nevada's sons and daughters would be given the opportunity to attend medical school and in turn help provide expanded health care in the state.

The decision to convert to a four-year, degree-granting school, unanimously approved by the University of Nevada Board of Regents in 1976, was based on a number of rationales, including: difficulties in transferring medical students; a need for primary care physicians in Nevada; and federal financial incentives for all two-year schools to convert. In 1977, the Nevada State Legislature endorsed the school's conversion with the Assembly voting 35 to 5 in favor and the Senate voting 15 to 5 in favor.

As a program with a statewide base and a mission to train doctors from and for Nevada, the School of Medicine is now meeting its legislative mandate. The school has:

- successfully converted to a four-year, degree-granting program
- graduated its first class of doctors (May 1980)
- established primary care residencies
- been accredited by the Liaison Committee on Medical Education.

(1) Medical Student Admissions: 1971-80

10 classes admitted

- 7,315 applicants screened
- 1,211 (16%) of applicants were Nevadans
- 461 students admitted
- 429 (93%) of those admitted were Nevadans
- 32 (7%) of those admitted were out of state (all from WICHE states)
- all Nevadans who apply are granted interviews

(2) Medical Students and Residents: 1980-81 Academic Year

- 196 Medical Students
- 40 Residents in Primary Care

(3) Alumni:

- 36 Seniors received M.D. degree as charter graduation class in May 1980
- 49 seniors will receive M.D. degree in May 1981
- 45 M.D.s hold a Nevada License.
- 30 M.D.s have returned to Nevada to practice: Las Vegas (5), Reno (13), Sparks (3), and rural as shown below:

<u>Graduate</u>	<u>Location</u>	<u>Year of License</u>	<u>Specialty</u>
Bruce Wilkin	Ely	1978	Family Practice
Edmund Pierczynski	Carson City	1978	Family Practice
Joseph Wilkin	Panaca/Pioche/Caliente	1979	Family Practice
Brian Sonderegger	Carson City	1979	Family Practice
Gary Walker	Winnemucca	1979	Family Practice
Constance Antone-Knoll	Fernley/Fallon	1980	Family Practice
Warren Smith	Boulder City	1980	Family Practice
David Johnson	Gardnerville	1980	Family Practice
John McBride	Schurz-Indian Health Service	1980	Family Practice

(4) Faculty: 1980-81 Academic Year

In addition to our full-time faculty,

- 212 M.D.s from among the 1,080 actively practicing, licensed physicians in Nevada volunteer their time
- 37 M.D.s are paid, part-time faculty (Letters of Appointment)

(5) Present Facilities

Campus: 50,000 sq. feet of classroom, laboratory and faculty office space at a total capital investment of \$4,201,000 (no state funds)

In addition, extensive use is made of doctors' offices, hospital facilities and community health agencies throughout the state. Several hospital expansions-including a \$9 million federal grant to Southern Nevada Memorial Hospital and a \$13 million expansion at the Veterans Administration Medical Center-are directly related to their functions as teaching hospitals.

(6) Planned Facilities

Five million dollar Phase IV building on Campus, with completion scheduled for 1982.

- Approximately 30,000 sq. feet
- \$2 million-Mr. Claude Howard's gift
- \$2 million-Max Fleischmann Foundation grant
- \$1 million-Interest on gift and grant

UNR GRADUATES - PRACTICING IN NEVADA: BY YEAR OF LICENSE

<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Edmond J. Pierczynski	Constance V. Antone-Knoll	John L. Burt.	Dennis J. Brown
Brian C. Sonderegger	David J. Christensen	Jerry C. Calvanese	Jay C. Chamberlain
Scott B. Tucker		Ann Marie Evans	Clarke D. Cole
Bruce W. Wilkin		William B. Michaelson	Dennis Cookro
		Michael R. Panicari	Gary Steven Dankworth
		Richard T. Priest	John M. Erickson
		Malin H. Prupas	Patricia A. Hodges
		Gary L. Walker	Larry M. Noble
		Joseph D. Wilkin	Lexey Parker
		David A. Zucker	Donald K. Pennelle
		Michael D. Stouder (R)	Robert P. Platt
			Michael Scott
			Warren L. Smith
			Marc D. Wolfson
			Judy F. Hilbish (R)
			Steven W. Parker (R)
			Richard P. Seher (R)

Statement on Biennium Budget Request of

The Desert Research Institute

1981-1983

Prepared by

Clifford J. Murino

President

February, 1981

EXHIBIT B

APPENDIX: DESERT RESEARCH INSTITUTE

1. ADMINISTRATIVE SALARY SUPPORT

FINANCIAL CONSIDERATIONS

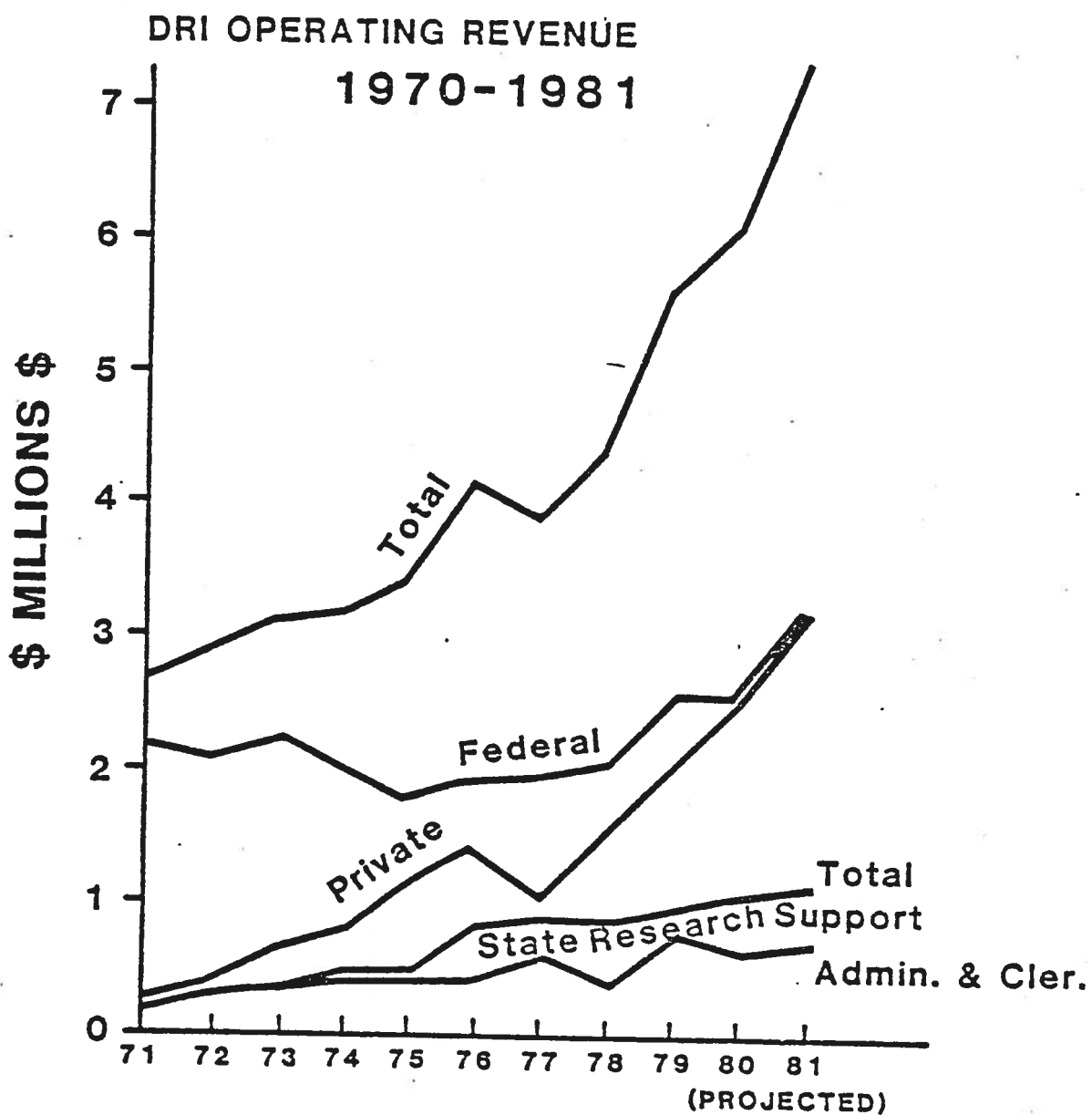
The Essence of the DRI Fiscal Condition

DRI's SOURCES OF FUNDING

The total funding for the DRI is received in three distinct streams: 1) funding from the State of Nevada; 2) funding from the federal government and 3) funding from private industry. The Institute's operating revenues from these sources for the 11-year period 1970-71 to 1980-81 are displayed in Figure 1. One can see that achieving growth has not been one of DRI's problems. Over this period, revenues will have nearly tripled; the growth rate has exceeded inflation by a comfortable margin.

Funding from federal and private sponsors represents by far the major fraction of the total DRI support. Out of a total \$7.5 million we expect to receive in 1980-81, an estimated \$6.4 million will be related to research programs supported by the federal government and by private industry. The funding received from the State, while small in comparison to the other two sources, for the subtle reasons discussed below is nonetheless the most important funding the DRI receives in that it makes the other two possible. The State funding is limited to certain administrative and clerical salaries and benefits, and to several research projects of special interest and timeliness to the State. No State funding is provided for on-going institutional support such as plant maintenance costs, utilities, and the DRI libraries. These latter costs are entirely covered out of grant and contract funds.

Figure - 1



FEDERAL SPONSORSHIP OF ACADEMIC RESEARCH ^{1/}

The single largest provider of funds to DRI has been the federal government. In fiscal year 1980-81, some \$3.2 million will come from this source. Since the DRI is an academic institution, a part of the University of Nevada System, this funding is governed by the provisions of Circular A-21 of the Federal Office of Management and Budget. This Circular articulates regulations which apply to federally-sponsored research in academic institutions as distinguished from federally-sponsored research undertaken by private industry and by non-academic not-for-profit corporations. Sponsored research in these latter institutions falls under an entirely different set of federal regulations which, in key respects, such as the ability to charge a fee and to depreciate equipment over relatively short time intervals, are more liberal than Circular A-21. The distinction has major significance for DRI.

In a typical federal research grant ^{2/} to an academic institution, the funding has two components: 1) funds to cover the direct costs of doing research, for example, the costs of salaries of the researchers, materials and supplies, travel, project instrumentation, computer use, and so on; and, 2) funds to cover the indirect costs of doing research, for example, general administrative costs, institutional costs such as: plant maintenance and utilities.

1/ With the exception of references to federal regulation, virtually all of what is said in this Chapter about federally-sponsored research applies equally to research sponsored by private industry.

2/ In this Chapter, often we will use the term grant to include the term contract, as in this instance.

THE SHORTFALL PROBLEM

Much of DRI's support comes in the form of research contracts that are competitively awarded. In such competitions, costs must be kept realistic and must be fully justified. Many research projects can justify only fractional amounts of the services of the team members, not only for support people such as secretaries and technicians, but also for the researchers. Were we to attempt to charge 100% of their salaries we would price ourselves out of the market, and the contract would be awarded to a competitor. Even in the case of research grants, a sponsor will balk at unjustified costs and will refuse to make the award.

Many of the research problems DRI addresses are intrinsically interdisciplinary in nature. For example, to study the water quantity and quality of a river system or reservoir system, in-depth competence is required in say: hydrology, water chemistry, engineering, aquatic biology, etc. The required skills seldom will reside in one individual who can work full-time on the problem. More often, it will require four or more people, each working part-time, and each bringing his or her own special skills to the task. In this way, DRI can prove it has the capability to carry out research at a high quality, and at a cost that is competitive and acceptable to research sponsors. Thus, normally, only parts of many people are funded under any one grant or contract. The salary of a given researcher, technician, or secretary is made up from a patchwork of contributions from a number of different grants and contracts--all with different starting and ending dates. Sometimes the grant is renewed, sometimes not. Sometimes there is no interruption of cash flow between renewals or replacement, sometimes

there is. Sometimes a staff member's full salary is covered by the grant mix, sometimes there is a gap. In special circumstances, to be eligible for a grant the DRI is required to assume a share of the direct costs of the research.

Since the DRI is prohibited by federal regulation from charging more than the full salaries of some individuals in order to make up for the shortfall of others, the DRI fiscal machine in the real world inevitably must run significantly short of the ideal. On average, the percentage of all salaries covered should lie somewhere between 0% and 100%; statistical chance would say 50%. Fortunately it turns out that the number at DRI is about 85%, and this is very good. Perhaps this can be improved in the future, but it will always be impossible to achieve the ideal 100%. There must always be a shortfall problem. ^{3/}

Increasing the base of research support that DRI receives from federal and private sponsors will not necessarily help with this problem. It will help in those circumstances where the additional income is used to complete the partially-covered salaries of people already on board. It will compound the problem in those circumstances where it adds new people who are only partially supported. Since the nature of the research dictates the kind and quality of competence of the research team required for its execution, it frequently is not possible to focus growth only on those areas that result in completing salaries of those already on board.

^{3/} Industrial, and non-academic not-for-profit firms operating under the more liberal federal regulations are able to offset this shortfall problem because they are allowed to include a fee (including profit) which they then can accumulate as a cushion against shortfall.

THE SOURCE OF DRI'S FISCAL STABILITY

Since there is a shortfall in the amount of direct income on grants and contracts, and indirect costs are intended to cover indirect expenses, how does the DRI maintain its fiscal stability and keep from going bankrupt? To begin to answer this we look at the uses to which DRI puts its recovered overhead dollars. First, it is used to cover institutional expenses, such as plant maintenance and utilities, that are incurred as a necessary part of doing research. Second, it is used to cover the real-world shortfall and emergencies that are the inevitable consequence of inherent imperfections in the fiscal enterprise. Without this coverage, the DRI could not survive. Beginning immediately, one-by-one, people would have to be terminated until the research could not proceed, and DRI would collapse.

One may ask: since overhead dollar recovery is justified entirely on the basis of overhead expenses, how is it possible to have any funds left over to meet this second, crucial purpose? The answer to this key question is at the heart of the uniqueness of DRI. Simply put, the fact is that the State of Nevada fully funds a limited few administrative and clerical salaries including salaries in the President's office, the Vice President's office, and the Center Directors' offices. These salary costs qualify for inclusion in the overhead rate and are fully recovered as overhead dollars on grants and contracts. (A similar situation occurs on the University of Nevada campuses.) Since the salaries already have been covered by State funds, there is no need to pay them from overhead recovery. These overhead dollars are available to meet

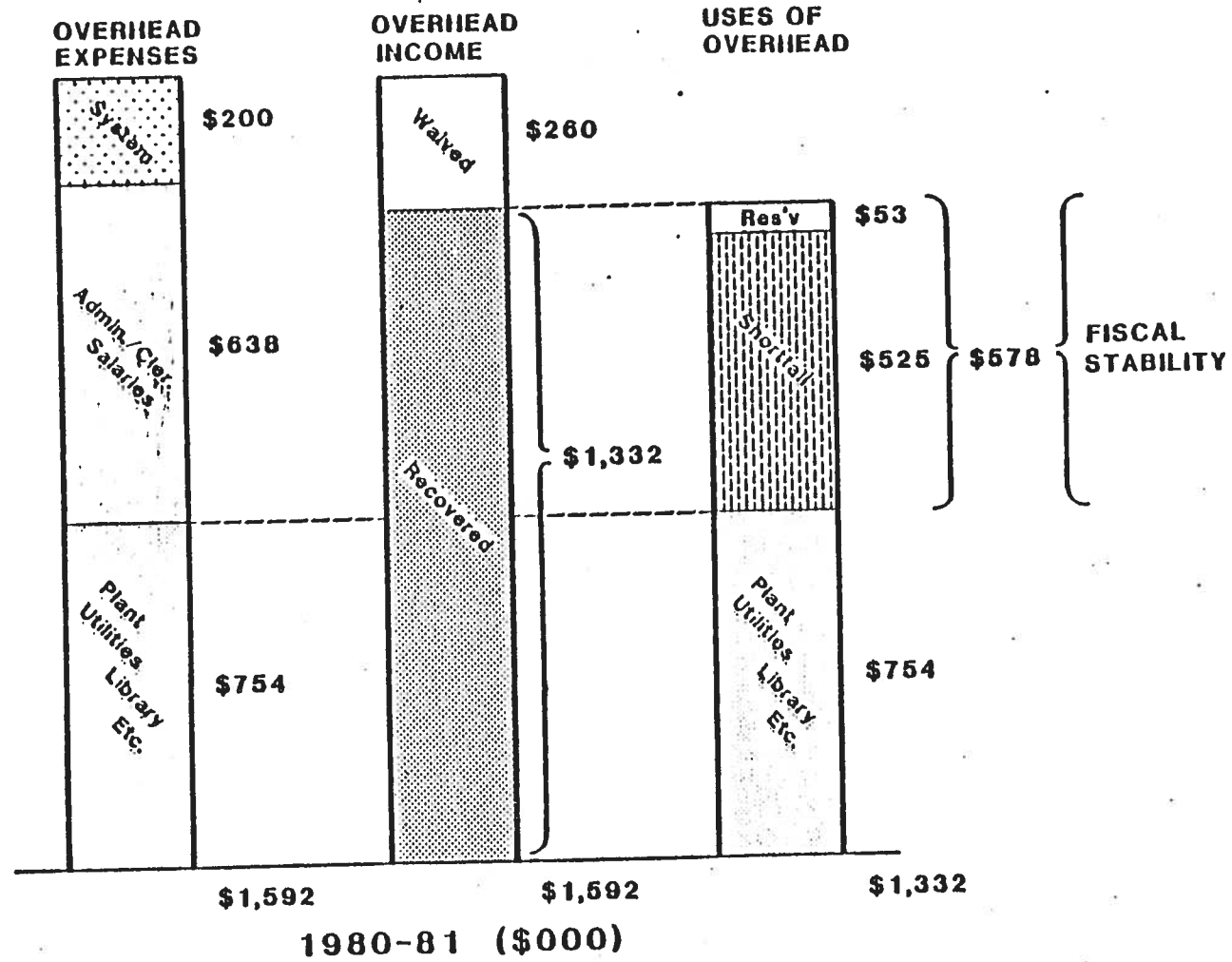
the serious shortfall problem. Together with the dollar-equivalence of certain System-contributed services also included in the overhead rate, these funds constitute the sole source of DRI's fiscal stability. They are also the ceiling on DRI fiscal stability because the dollars actually available will be less by an amount equal to the waived overhead recovery. Moreover, until such time as DRI can develop a base of private philanthropic income, this will always be DRI's sole source of fiscal stability. It is in this special--and not generally recognized--sense that the State funding is absolutely indispensable to DRI's viability. Since the shortfall problem increases as DRI grows, we see as the importance of State support not that it will be there if all else fails; rather, that it becomes increasingly crucial as all else succeeds.

We should stress that the above are available dollars only in the sense that they have not been previously committed to other purposes; not in the sense that they are surplus, available for any purpose. DRI's survival depends on their being used to meet the shortfall problem. That is why they are equated to fiscal stability.

AN ILLUSTRATION OF THESE FISCAL PRINCIPLES

To quantify all of this--to put it in concrete terms--we need only to look at the current fiscal year. In 1980-81, DRI's total income of \$7.5 million will equal the total expenditures; a balanced condition. If we examine the overhead portion of this, as displayed in Figure 2, we note that total overhead expenses

Figure - 2



including \$638,000 in State-paid administrative and clerical salaries, ^{4/} and about \$200,000 in System-contributed services. We expect overhead dollars recovered to be \$1,332,000, some \$260,000 less than overhead expenses, the amount of overhead recovery DRI can not avoid waiving. An amount \$754,000 of the overhead recovery will be used to cover the institutional expenses for which it was obtained. This leaves \$578,000 as the total amount available to meet shortfall and emergencies. Of this, \$525,000 must be committed to the shortfall problem allowing a reserve of only \$53,000 to meet emergencies.

The above amounts of dollars available from overhead recovery would remain constant as DRI received more grants and contracts, while the size of shortfall would increase. To maintain a proper balance between DRI growth and fiscal stability, it is necessary to maintain a corresponding balance between State support and support from other sources.

A Good Investment for Nevada

Viewed from the perspective of the State, this is an attractive and highly leveraged investment opportunity. Every administrative dollar that the State invests in DRI is immediately matched by two federal (or private) overhead dollars. There are no ifs or maybes, it is a matter of regulation. Nevada is guaranteed to triple its money. Added to this are the eight additional federal (and private) dollars for direct research expenses - primarily salaries - that provide the State both an economic benefit and the benefit of research for the State.

^{4/} Nevada is also providing \$392,000 to support research projects of special interest to the State: the State of Nevada Weather Modification Project and the Truckee River Studies. This funding is fully expended for the research itself. Its contribution toward DRI's fiscal stability is small and only insofar as it completes salaries not otherwise coverable.

2. RESEARCH PROGRAMS
STATE WEATHER MODIFICATION PROGRAM
Cost-Effectiveness Analysis
1978-79 and 1979-80 Seasons

1. We seed 3 areas in the State:
 - a) Truckee-Tahoe Catchment = 673,000 acres
= 1050 sq. mi.
 - b) Walker-Carson Catchments = 5064 sq. mi.
 - c) Spring Mountains = 600 sq. mi.
2. The mean annual precipitation in the 3 areas are:
 - a) Truckee-Tahoe = 1.4×10^6 Acft
 - b) Walker-Carson = 1.5×10^6 Acft
 - c) Spring Mountains = 0.2×10^6 Acft.
3. The estimated increases in precipitation resulting from the Weather Modification Program for the combined 1978-79 and 1979-80 seasons are:
 - a) Truckee-Tahoe, Walker-Carson = 157,000 Acft
 - b) Spring Mountains = 19,000 Acft
 - Total = 176,000 Acft
4. Cost of 2 year program = \$640,000
5. Estimated cost of water production = approx \$4/Acft
= 1/8¢ per 1000 gals

Comparative Water Costs by other Systems

1. Southern Nevada Water Project
Delivers 100,000 Acft/year from Lake Mead to Las Vegas Valley
Cost - \$12-15/Acft
2. Southern California Canal System
Cost \$30-40/Acft
3. Desalination at least \$1/1000 gals or at least \$326/Acft

State of Nevada Weather Modification Project 1981-83

With the steady growth in water usage due to increases in gaming, recreation and warehousing industries in western Nevada, it is clear that the region is becoming less able to handle large variations in the annual water supply for farming, domestic and sewage purposes. Our water supplies come principally from the winter snowpack which accumulates in the mountainous regions of the State.

The scientific evidence from several cloud seeding projects in the Sierra Nevada shows that increases in snowfall can be anticipated when suitable winter storms in the mountainous regions of the State are seeded. Results from the Pyramid Pilot Cloud Seeding Project conducted by DRI from 1970 to 1975 suggested that 16 to 25 percent increases had been produced by seeding suitable storms in the Lake Tahoe Basin.

In January 1977, it became apparent that Nevada was going to experience its second consecutive winter with below average snowfall, and at that time the State Legislature authorized the Desert Research Institute (DRI) to conduct the cloud seeding program for augmenting the supply of water in several regions of the State.

This weather modification program is currently seeding three areas of the State which will benefit from increased water supplies. These are the Tahoe-Truckee basin, the Carson and Walker Rivers watersheds and the Spring Mountains north of Las Vegas. During the 1977-78 winter season the program was extended to cover the Ruby Mountains at Elko and the mountain ranges east and west of the town of Ely. These two additional areas were seeded by aircraft techniques with funds provided by the Federal Government under its drought relief program (a one-year program only).

In 1979, the Nevada State Legislature provided funds (\$322,000 for 1979-80 and \$330,000 for 1980-81) to continue the program in the original three areas of the State (Tahoe-Truckee, Carson-Walker and Spring Mountains) and this very productive program is currently in progress.

Airborne and ground-based seeding techniques will be used in a program proposed for the coming biennium. This program has as its goal to supply additional water to these three regions of Nevada, plus a fourth region; the Ruby and Jarbidge mountains in Elko County.

Research flights with instrumented aircraft will be used to obtain information on the appropriate conditions for optimum seeding which will allow us to assess: the impact of our own seeding of the clouds; the influence of cloud seeding on the California slopes of the Sierra; and the effect on the precipitation falling on the Nevada side of the Sierra crestline.

WEATHER MODIFICATION - BUDGET
"GOVERNOR'S RECOMMENDATION"

<u>PERSONNEL</u>	<u>FTE</u>	<u>FY 82</u>	<u>FY 83</u>
Professional	3.10	\$ 74,200	\$ 74,200
Technical	0.25	5,278	5,278
Fringe Benefits		<u>9,637</u>	<u>9,935</u>
Total Salaries and Benefits		<u>\$ 89,115</u>	<u>\$ 89,413</u>
<u>OPERATING</u>			
Cloud Seeding Activities		\$170,000	\$187,000
Ground Base Precipitation		40,000	44,000
Chemical Analyses		20,000	22,000
Miscellaneous		11,000	12,100
Forecasting		12,000	13,200
In-State Travel		<u>8,000</u>	<u>8,800</u>
Total Operating		<u>\$261,000</u>	<u>\$287,100</u>
TOTAL COST		<u><u>\$350,115</u></u>	<u><u>\$376,513</u></u>

Truckee River Project 1981-83

The Truckee River Project has as its overall objective to provide an improved understanding of the river system with a view toward making accurate predictions concerning its water quantity and quality under various management strategies. During the past few bienniums a water quality monitoring program has been conducted which provides the background information which can be utilized to determine how the river water quality regime reacts to varying influences and what potential impacts of future change might be. In addition, other limited studies have been conducted on such aspects as urban runoff, feasibility and cost of flow augmentation as a means of meeting water quality standards, natural and man-induced quality changes in the reach below the Truckee Meadows and biological influences on water quality with respect to nutrients.

Because of the controversial nature of the Truckee River--given its Interstate character, terminus in the Pyramid Lake Indian Reservation, and the extensive involvement of federal agencies--there have been many other studies of bits and pieces of the hydrology and water quality of the Truckee River over the years. The only thread of continuity through any of these studies has been the Truckee River Project monitoring program and studies which have crossed state boundaries. During the coming biennium one of the principal objectives (beyond continuing the monitoring program) will be to pull together results of all past studies into a compendium volume that summarizes the knowledge and understanding of the Truckee River System. The data to be gathered, compiled and analyzed consists of:

- a) Water Chemistry - Results derived from monitoring nutrient, Ph, cation, etc., and their association with varying streamflow levels.

b) Biological - Effects on aquatic communities, emphasizing suppression of algal growth stimulation to enhance river water quality for downstream users.

c) Climatic Variations - Prehistoric and historic data and paleoenvironmental data will be utilized to examine climatic variations and the range of attendant river flow fluctuations.

The results of these studies will bring together pertinent available data which will be supplemented by necessary field and laboratory investigations to fill in gaps in our knowledge of water quality and quantity in one of Nevada's most important river systems. This data base will constitute a major tool for use in the development of water policy and management decisions by various levels of government and, in particular, will define whether further studies or monitoring are warranted.

TRUCKEE RIVER PROJECT - BUDGET
 "GOVERNOR'S RECOMMENDATION"

<u>PERSONNEL</u>	<u>FTE</u>	<u>FY 82</u>	<u>FY 83</u>
Professional	0.85	\$ 24,388	\$ 24,388
Graduate Assistants		16,560	18,302
Fringe Benefits		<u>3,933</u>	<u>4,056</u>
Total Salaries and Benefits		<u>\$ 44,881</u>	<u>\$ 46,746</u>
<u>OPERATING</u>			
Chemical Analysis		\$ 16,000	\$ 17,600
In-State Travel		1,000	1,100
Miscellaneous		<u>1,000</u>	<u>1,100</u>
Total Operating		<u>\$ 18,000</u>	<u>\$ 19,800</u>
TOTAL COST		<u>\$ 62,881</u>	<u>\$ 66,546</u>

SOLAR - ELECTRIC ENERGY PRODUCTION ON THE PLAYAS IN NEVADA

Playas are characteristic geologic landform features of the Basin and Range Province. The playas (often termed marshes, flats, dry lakes, etc.) are flat and generally barren lower portions of an arid basin of internal drainage that periodically floods and accumulates sediment. The playa surface is usually compact and the surficial materials are normally fine-grained sediments and/or evaporite minerals of various compositions.

These characteristics make the playas ideally suited for solar-pond applications. A solar pond is a body of saline water which absorbs solar radiation, converts it into heat and stores it for a prolonged period of time. The solar pond serves both as a solar energy collector and as an energy reservoir. The heat absorbed and collected in the bottom layer of the pond is extracted and utilized for generating electrical power by means of a low temperature turbogenerator.

The compact clay or silt surface of the playa is ideally suited for the construction of large-scale unlined ponds, since there is no water leakage through the bottom of the pond. Unlined ponds are cheaper to construct and operate than lined ponds. Israeli data for Solar Pond Peaking Plants at the Dead Sea show equipment costs of \$700 to \$900 per kilowatt, and \$20 per kilowatt annual operating and maintenance cost. The actual system performance of the 150-kilowatt Israeli pilot plant at Ein Bokek permits capacity projection of 5-megawatt per square kilometer of pond area for base loading application and 20-megawatt peaking power unit. The peaking load mode of operation of a solar-pond power plant is one of the essential

features of this type power plant, since the energy is already stored and available for immediate use when peak load demand occurs.

The subject matter of this proposal is to assess the capacity of the playas in Nevada for electrical power generation, to conduct hydrological investigation, and to study the ecological impact on playas suitable for power generation.

A major portion of the research and development efforts will be concentrated on the design and construction of a prototype module consisting of a 1000-square meter solar pond and a 5-kilowatt turbogenerator. The experience collected from the prototype experiment will be used to define the optimum modular unit (20 to 50 megawatt) for power generation on the playas.

In the future, a series of such modular units and accompanying solar ponds, could be constructed in a manner to best suit Nevada's electricity network needs for peaking, intermediate and base-loading applications.

As the system expands, solar ponds totaling about 500 square kilometers, with clusters of power plants of 50 to 100-megawatt modules could be put into operation, reaching a total generating capacity of 2500 megawatts. This is a conservative estimate, since 500 square kilometers represent only 10% of the playas in Nevada.

SOLAR - ELECTRIC ENERGY PRODUCTION ON THE PLAYAS IN NEVADA - BUDGET

<u>PERSONNEL</u>	<u>FTE</u>	<u>FY 82</u>	<u>FY 83</u>
Professionals	3 / 2	\$ 90,000	\$ 70,000
Technical Support	1	20,000	22,890
Fringe Benefits		<u>26,500</u>	<u>22,300</u>
Total Salaries and Benefits		\$136,400	\$115,190
 <u>EQUIPMENT</u>			
Instrumentation, heat transfer systems, pumps, etc.		25,000	
Construction of 1000-square meter pond with 5-kilowatt turbogenerator			<u>60,000</u>
Total equipment		\$ 25,000	\$ 60,000
 <u>OPERATING COSTS</u>			
Construction of several test sites drilling, etc. (including \$3,600 in-State travel.		23,600	
Computer usage Monitoring Instruments Chemical Analysis, Salts, etc. (including \$3,400 in-State travel)			<u>29,110</u>
Total Operating Costs		<u>\$ 23,600</u>	<u>\$ 29,110</u>
TOTAL COST		<u><u>\$185,000</u></u>	<u><u>\$204,300</u></u>

RECHARGE TO NEVADA'S GROUNDWATER RESERVOIRS

In many of Nevada's desert basins, economic activities rely solely or heavily on groundwater for water supply. In these areas, the amount of replenishment, or groundwater recharge, received by these underground reservoirs is of vital concern. Nevada water law provides that the State engineer may restrict withdrawal of water from wells in any basin or portion thereof in which it appears that the average annual replenishment to the groundwater supply may not be adequate for the needs of all permittees. Further, the State engineer may restrict drilling of new wells in any basin or portion thereof if he determines that additional wells would cause an undue interference with existing wells. To date the State engineer has designated some seventy hydrographic areas and sub-areas in Nevada where further drilling of wells is restricted.

In essence, the amount of water which safely can be withdrawn from a groundwater reservoir is limited to the amount of average annual replenishment. Further withdrawal would cause the groundwater stored in the reservoir to be depleted or "mined." Therefore, the accuracy of the estimate of average annual replenishment takes on crucial economic importance. Over-estimates of replenishment could result in continued declines in water levels, inevitable restrictions on water withdrawal, and attendant disruption of activity with economic consequence. Conversely, under-estimates could result in needless limitations on a basin's economic development.

In Nevada, the current method for estimating recharge is a simple and straightforward application of the water-budget

equation. This method has been extremely useful in developing first approximations for a given groundwater basin's recharge. However, the method does have some serious inherent uncertainties that make its use somewhat tenuous in circumstances where restriction of groundwater development is contemplated. Because of these uncertainties, and ramifications of over-estimates of groundwater recharge, the State has justifiably pursued a conservative approach in selecting recharge estimates.

Actual groundwater recharge is not an easy quantity to determine; however, in areas where groundwater pumpage is to be restricted, better methods than the one currently used for determining natural replenishment are needed. These new methods might yield estimates different from those obtained with the current method, but their accuracy could provide a stronger basis for water and land management decisions.

This project will initiate a study of the processes of replenishment, or recharge, to Nevada's groundwater reservoirs in order to improve our ability to estimate this important quantity. Groundwater recharge estimates are assuming greater importance because of the number of basins that are being "designated" under provisions of the State water law. Once a basin is "designated," further development is essentially precluded.

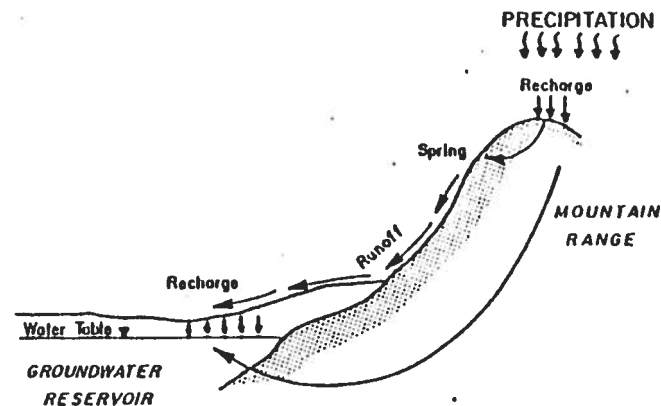
During the 1981-83 biennium, this study will focus upon the development of needed methodologies. The specific objectives during this period will be as follows:

- a) to identify those areas within a basin where recharge is actually occurring;

b) to determine the most important controls (e.g., precipitation characteristics, channel networks, depths to water table, lithology, elevation, topography, vegetation, etc.) on replenishment to groundwater reservoirs; and

c) to attempt to develop procedures for estimation of the replenishment to and perennial yields of groundwater reservoirs in one, or possibly two, selected groundwater basins.

This study not only is directed at improving our knowledge of the selected groundwater reservoir in regard to replenishment and perennial yield, but will also serve as a benchmark for similar studies in other Nevada groundwater basins. The ultimate effect of studies such as the one proposed herein will be a firmer scientific basis for the application of provisions of Nevada water law as it pertains to groundwater recharge and mining.



IDEALIZED DIAGRAM OF NATURAL RECHARGE
TO NEVADA'S GROUNDWATER RESERVOIRS

RELEVANCE OF RECHARGE RESEARCH TO THE STATE OF NEVADA:

- 1) PROVIDE A STRONGER BASIS FOR WATER AND LAND MANAGEMENT DECISIONS BY GOVERNMENTAL AGENCIES
- 2) ENABLE THE STATE TO PROTECT GROUNDWATER RESERVOIRS FROM POLLUTION
- 3) ALLOW THE STATE TO ASSESS ITS GROUNDWATER RESOURCES MORE ACCURATELY
- 4) IDENTIFY RECHARGE AREAS SO THAT THEY CAN BE PROTECTED
- 5) OBTAIN A BETTER UNDERSTANDING OF THE MECHANISMS PROVIDING REPLENISHMENT TO THE STATE'S GROUNDWATER RESERVOIRS

WHAT WE PROPOSE TO DO:

- 1) IDENTIFY AREAS IN A SELECTED BASIN WHERE NATURAL RECHARGE IS OCCURRING
- 2) DETERMINE THE MOST IMPORTANT CONTROLS (E.G., PRECIPITATION CHARACTERISTICS, CHANNEL NETWORKS, TOPOGRAPHY, LITHOLOGY, SOIL TYPES, DEPTHS TO WATER, ETC.) ON NATURAL RECHARGE IN A SELECTED BASIN
- 3) ATTEMPT THE DEVELOPMENT OF MORE ACCURATE PROCEDURES FOR ESTIMATING NATURAL RECHARGE
- 4) COMPARE ANY NEW TECHNIQUES FOR RECHARGE ESTIMATION TO EXISTING ONES

RECHARGE TO NEVADA'S GROUNDWATER RESERVOIRS - BUDGET

<u>PERSONNEL</u>	<u>FTE</u>	<u>FY 82</u>	<u>FY 83</u>
Professional	1.75	\$ 54,250	\$ 59,700
Graduate Assistants	1.25	18,330	20,200
Technical	1.00	16,000	17,600
Classified	0.33	4,250	4,675
Fringe Benefits		<u>18,064</u>	<u>19,876</u>
Total Salaries and Benefits		<u>\$110,894</u>	<u>\$122,051</u>
OPERATING			
In-State Travel		\$ 10,950	\$ 10,950
Computer time - 10 hr @\$360/hr		3,600	3,600
Communications		750	750
Duplication		600	600
Report preparation		-0-	1,000
Drilling and construction		25,000	25,000
Chemical analyses		7,000	8,000
Isotopic analyses		19,000	21,000
Equipment		<u>8,000</u>	<u>11,422</u>
Total Operating		<u>\$ 74,900</u>	<u>\$ 82,322</u>
TOTAL COST		<u>\$185,794</u>	<u>\$ 204,373</u>

3. PROGRAM ENRICHMENT

Equipment Replacement \$250,000

A research institution lives off the talents of its staff and the capabilities of its research instrumentation. While the DRI staff, through constant hard work, continually rejuvenates itself to remain scientifically current, the same is not true of our research equipment. Such equipment rapidly becomes obsolete, and a steady replacement program is necessary merely to stand still (relatively).

While the generous Fleischmann Foundation grant will help us to acquire, over the next 24-months, certain much-needed equipment, it can not meet the need for the orderly and plannable long-term replacement of equipment. We believe this need can best be met by modest amounts of support from the State of Nevada.

Advance Research Project Initiation \$250,000

The major fraction of DRI funding comes from external sponsors, principally the Federal Government. The dollars invested by the State of Nevada are highly leveraged in that they return to Nevada many multiples of the dollars invested. This return is in the form of a research capability that is available to attack problems of crucial concern to the State: air, water, energy.

Sponsorship of research goes to those institutions that have an established track record of productive work in a given area. It goes today to those institutions that yesterday worked to properly position themselves prior to the availability of larger sums of federal research dollars. The DRI often can anticipate where the action will be in the future. We then require a modest amount of flexible dollars judiciously to invest in various advanced research

projects in order that DRI will be there waiting when the time comes. Some of these efforts will pay off; others will not.

Another purpose of these funds is to enable us to take advantage of certain targets of opportunity which become available to us but require small amounts of start-up money for us to do so.

SUMMARYDESERT RESEARCH INSTITUTE 1981-83 BIENNIAL BUDGET REQUEST

The DRI 1981-83 Biennial Budget Request consists of three elements: 1) Continued salary support for a limited few administrative staff members; 2) Support for selected research programs; 3) Research-program enrichment: equipment replacement and advanced research project initiation.

The DRI budget showing the Governor's recommendation is formatted according to the above functional elements in Table I (attached) and according to the Executive Budget in Table II (attached).

1. Administrative Staff Salary Support

The DRI requests, and the Governor recommends, continued salary support for 19.25 administrative and clerical positions in the offices of the President, Vice President and the Executive Directors of the five research centers. These positions provide for an Institute management structure which gives both overall scientific program direction and the needed financial planning, management and control. These costs are not allowable as a direct charge to grants and contracts.

A recent detailed financial analysis of the Institute (see Appendix) has proven that, because of federal regulations governing sponsored research at academic institutions, the State's contribution to DRI administrative expenses (plus certain System-contributed services) is the sole source of DRI's fiscal stability. Any reduction in the State's contribution to administration would result in an immediate equal reduction in overhead recovery on grants and contracts and this would have serious consequences for DRI's fiscal stability.

2. Research Program Support

The DRI requests, and the Governor recommends, support for the following research programs of particular importance and timeliness to the State:

a) Weather Modification Program

Nevada's water supply comes principally from the winter snowpack which accumulates in the mountainous regions of the State. The DRI has been conducting a weather modification program aimed at augmenting this naturally-occurring snowfall. Data collected for the last two completed operational years, 1978-79 and 1979-80, for the current Tahoe-Truckee, Carson-Walker and Spring Mountain project areas provide estimates that we have produced 176,000 acre feet of additional water at a cost of less than \$4.00 per acre-foot (or 1/8 cent per 1000 gals)-- a cost well below typical water costs. In 1981-83 the DRI has proposed to expand the program to include a fourth area near Elko; the Governor recommends continuing the program at current levels. (see Appendix).

b) Truckee River Project

The Truckee River Project has as its overall objective to provide an improved understanding of the river system to make more accurate predictions of its water quantity and quality under various management strategies. Given the controversial nature of the Truckee River: interstate in character, terminus on an Indian reservation, involvement of federal agencies, there have been many other studies in bits and pieces over the years. In 1981-83, our objective will be to summarize existing knowledge of the Truckee River system, to collect and analyze needed new data, to conduct field and laboratory investigations and to assemble all of this information into a comprehensive data base for use in the development of water policy and management decisions by various levels of government. The DRI has requested that the program be augmented; the Governor recommends continuing the program at current levels. (see Appendix)

c) Solar-Electric Energy Production

The characteristics of Nevada's playas (areas that are periodically flooded and have a compact underlying surface composed of fine-grained material) make them ideally suited for solar-pond application. The heat absorbed and collected in the bottom layer of a solar pond is extracted and utilized for generating electrical power. The DRI plans to assess the capacity of Nevada's playas for electrical power generation, to conduct hydrological investigation and to assess ecological impacts. A major portion of the research and development effort will be concentrated on the design and construction of a prototype playa solar-pond model consisting of a 1000-square meter area and a 5-kilowatt turbogenerator. Since this technique could prove to be an important source of energy for Nevada, both the Governor and DRI recommend funding this program in this coming biennium. (see Appendix)

d) Recharge to Nevada's Groundwater Reservoirs

In many of Nevada's desert basins, economic activities rely solely on groundwater for water supply. In these areas, the amount of replenishment (recharge) received by groundwater reservoirs is of vital concern. The amount of water which safely can be withdrawn from a groundwater reservoir without depleting it is limited to the amount of average annual replenishment. Over-estimates of replenishment could result in continued declines in water levels, inevitable restrictions on water withdrawal, and attendant disruption of activity with economic consequences. Under-estimates could result in needless limitations on a basin's economic development. The accuracy of the estimate of average annual replenishment thus takes on crucial economic importance. Unfortunately, the current method for estimating recharge has serious inherent uncertainties that make its use somewhat tenuous in circumstances where restriction of groundwater development is contemplated. An increasing number of Nevada's basins are being "designated" under provisions of State water law which preclude further development of these basins. This project will initiate a study of the processes of recharge to Nevada's groundwater reservoirs to improve our ability to estimate this important quantity. Both the DRI and the Governor recommend funding this program in the coming biennium. (see Appendix)

3. Research-Program Enrichment

Funding for two enrichments to the DRI research program have been requested:

- a) Equipment Replacement - to enable DRI to remain in a position of strength for securing grants and contracts by implementing a systematic and orderly program of replacement of obsolete equipment.
- b) Advanced Research Project Initiation - to establish DRI's competence in new research areas and thus to be eligible for major new funding when such becomes available from the sponsoring agencies. (see Appendix)

The Governor does not recommend funding these enrichments in the coming biennium.

TABLE I
DESERT RESEARCH INSTITUTE
1981-83 BUDGET REQUEST WITH GOVERNOR'S RECOMMENDATION

FORMAT: By Function

	1980-81		1981-82				1982-83			
	WORK PROGRAM		REQUEST		GOVERNOR RECOMMENDS		REQUEST		GOVERNOR RECOMMENDS	
	FTE	\$	FTE	\$	FTE	\$	FTE	\$	FTE	\$
ADMINISTRATIVE SALARY SUPPORT										
President's Office	4.00	161,535	4.00	161,535	4.00	147,691	4.00	161,535	4.00	148,027
Vice President for Administration	4.25	115,443	4.25	115,689	4.25	107,046	4.25	115,843	4.25	107,541
Atmospheric Sciences Center	2.00	78,442	2.00	78,442	2.00	72,182	2.00	78,442	2.00	72,383
Bioresources Center	2.00	57,020	2.00	57,623	2.00	53,211	2.00	58,256	2.00	53,943
Energy Systems Center	3.00	98,457	3.00	98,457	3.00	90,535	3.00	98,457	3.00	90,737
Social Sciences Center	2.00	58,247	2.00	58,817	2.00	54,275	2.00	59,411	2.00	54,973
Water Resources Center	2.00	71,409	2.00	71,999	2.00	64,963	2.00	72,619	2.00	65,649
Salary Reserve				69,585		76,935		136,703		143,501
Sub Total	19.25	640,553	19.25	712,147	19.25	666,838	19.25	781,266	19.25	736,754
RESEARCH PROJECTS										
Weather Modification	3.35	330,000	6.00	558,250	3.35	350,115	6.00	576,054	3.35	376,513
Truckee River Project	2.01	62,220	4.12	121,984	0.85*	62,881	4.16	131,844	0.85*	66,546
Wind Energy		35,000				185,000				204,300
Solar-Electrical Energy						185,794				204,373
Groundwater Reservoir										
Sub Total	5.36	427,220	10.12	680,234	4.20	783,790	10.16	707,898	4.20	851,732
RESEARCH PROGRAM ENRICHMENT										
Research Equipment				250,000		-0-		250,000		-0-
Special Projects				250,000		-0-		250,000		-0-
Sub Total				500,000		-0-		500,000		-0-
OTHER										
Contingency Reserve		91,266								
TOTAL	24.61	\$1,159,039	29.37	\$1,892,381	23.45*	\$1,450,628	29.41	\$1,989,164	23.45*	\$1,588,486

*The Governor's recommendation includes funding for Graduate Research Fellows. It does not, however, include the FTE for these positions. With these included, the FTE will be increased by 0.66 each year in the Governor Recommends column.

TABLE II
DESERT RESEARCH INSTITUTE
1981-83 BUDGET REQUEST WITH GOVERNOR'S RECOMMENDATION

FORMAT: By Executive Budget

	1980-81		1981-82				1982-83			
	WORK PROGRAM		REQUEST		GOVERNOR RECOMMENDS		REQUEST		GOVERNOR RECOMMENDS	
	FTE	\$	FTE	\$	FTE	\$	FTE	\$	FTE	\$
RESEARCH										
ATMOSPHERIC SCIENCES CENTER										
Administration	2.00	78,442	2.00	78,442	2.00	72,182	2.00	78,442	2.00	72,383
Weather Modification	3.35	330,000	6.00	558,250	3.35	350,115	6.00	576,054	3.35	376,513
Wind Energy		35,000								
Sub Total, Atmos. Sci. Ctr.	5.35	443,442	8.00	636,692	5.35	422,297	8.00	654,496	5.35	448,896
BIORISOURCES CENTER										
Administration	2.00	57,020	2.00	57,623	2.00	53,211	2.00	58,256	2.00	53,943
ENERGY SYSTEMS CENTER										
Administration	3.00	98,457	3.00	98,457	3.00	90,535	3.00	98,457	3.00	90,737
SOCIAL SCIENCES CENTER										
Administration	2.00	58,247	2.00	58,817	2.00	54,275	2.00	59,411	2.00	54,973
WATER RESOURCES CENTER										
Administration	2.00	71,409	2.00	71,999	2.00	64,963	2.00	72,619	2.00	65,649
Truckee River Project	2.01	62,220	4.12	121,984	0.85*	62,881	4.16	131,844	0.85*	66,546
Sub Total, Water Res. Ctr.	4.01	133,629	6.12	193,983	2.85	127,844	6.16	204,463	2.85	132,195
RESEARCH EQUIPMENT										
				250,000				250,000		
PROJECT DEVELOPMENT										
				250,000				250,000		
RESEARCH TOTAL	16.36	790,795	21.12	1,545,572	15.20	748,162	21.16	1,575,083	15.20	780,744
INSTITUTIONAL SUPPORT										
President's Office	4.00	161,535	4.00	161,535	4.00	147,691	4.00	161,535	4.00	148,027
Vice President's Office	4.25	115,443	4.25	115,689	4.25	107,046	4.25	115,843	4.25	107,541
Total, Institutional Support	8.25	276,978	8.25	277,224	8.25	254,737	8.25	277,378	8.25	255,568
SOLAR-ELECTRICAL ENERGY PRODUCTION										
						185,000				204,300
GROUND WATER RESERVOIR										
						185,794				204,373
RESERVES										
		91,266		69,585		76,935		136,703		143,501
TOTAL DESERT RESEARCH INSTITUTE	24.61	\$1,159,039	29.37	\$1,892,381	23.45*	\$1,450,628	29.41	\$1,989,164	23.45*	\$1,588,486

*The Governor's recommendation includes funding for Graduate Research Fellows. It does not, however, include the FTE for those positions. With these included, the FTE will be increased by 0.66 each year in the Governor Recommends column.

Statement on Biennium Budget Request of

The Computing Center

1981-1983

Prepared by

Niels H. Anderson

Director

February, 1981

EXHIBIT C

OBJECTIVES OF (PURPOSES FOR) COMPUTING AT UNS

Educational:

To provide "hands-on" experience in computer-related courses (e.g., programming, operations, operating systems, problem solving, modeling).

To augment teaching capabilities (e.g., computer-assisted instruction).

To alleviate faculty administrative workload (e.g., grading).

Research:

To facilitate data acquisition/analysis and modeling projects (many impossible without computer).

Administrative:

To improve cost effectiveness in administration (e.g., clerical work reduction).

To improve administrator's effectiveness (e.g., management information).

ACADEMIC USES

Key Users: Faculty and students at universities and community colleges.

Major Uses: Student programming (introductory courses, programming languages, operating systems).

Student problem solving (engineering, business modeling).

Future Growth: Word Processing.

Computer-assisted instruction (CAI).

Test generation, grading, and grade recordkeeping.

Vocational training (operations, keypunch, programming, word processing).

Teacher evaluations.

RESEARCH USES

Key Users: Researchers at DRI and faculty at universities.

Major Uses: Engineering and scientific modeling.
Data acquisition and analysis.
Statistical analysis.

Future Growth: More and larger models.
Graphical analysis of data.

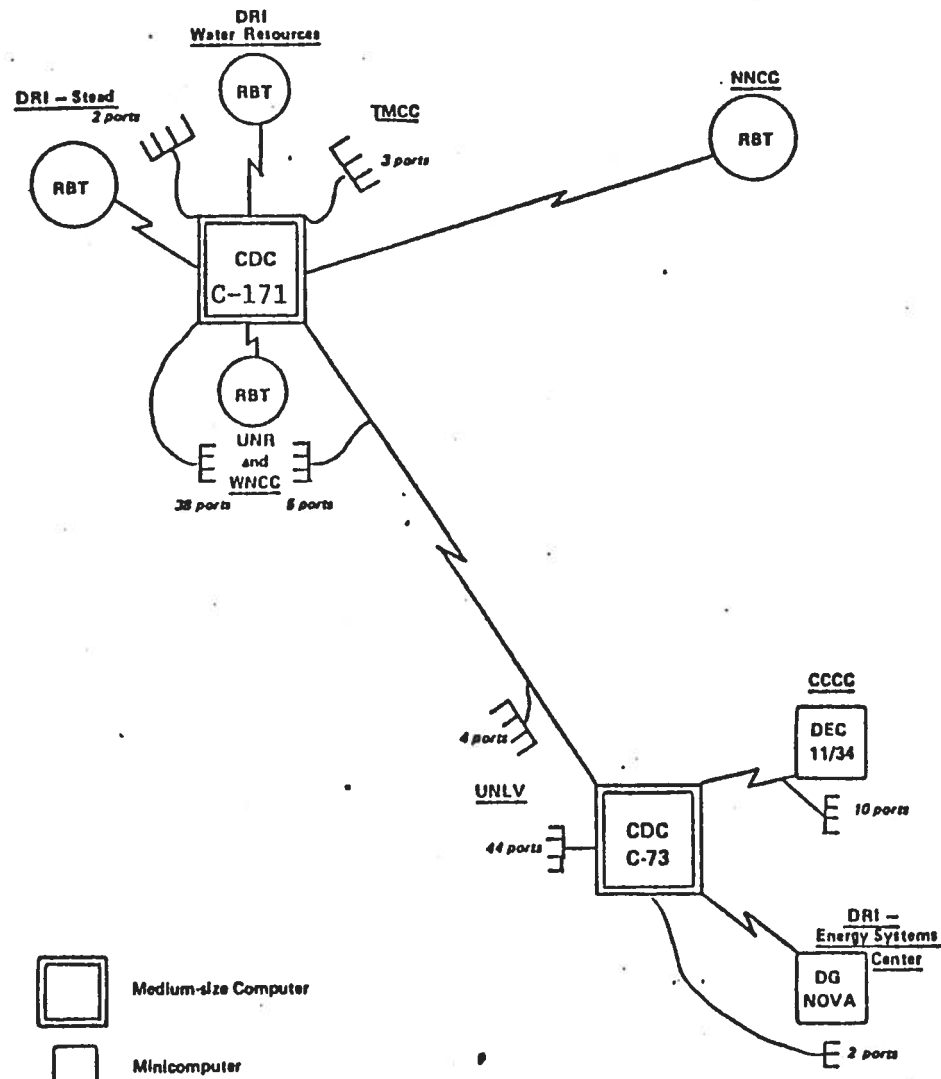
ADMINISTRATIVE USES

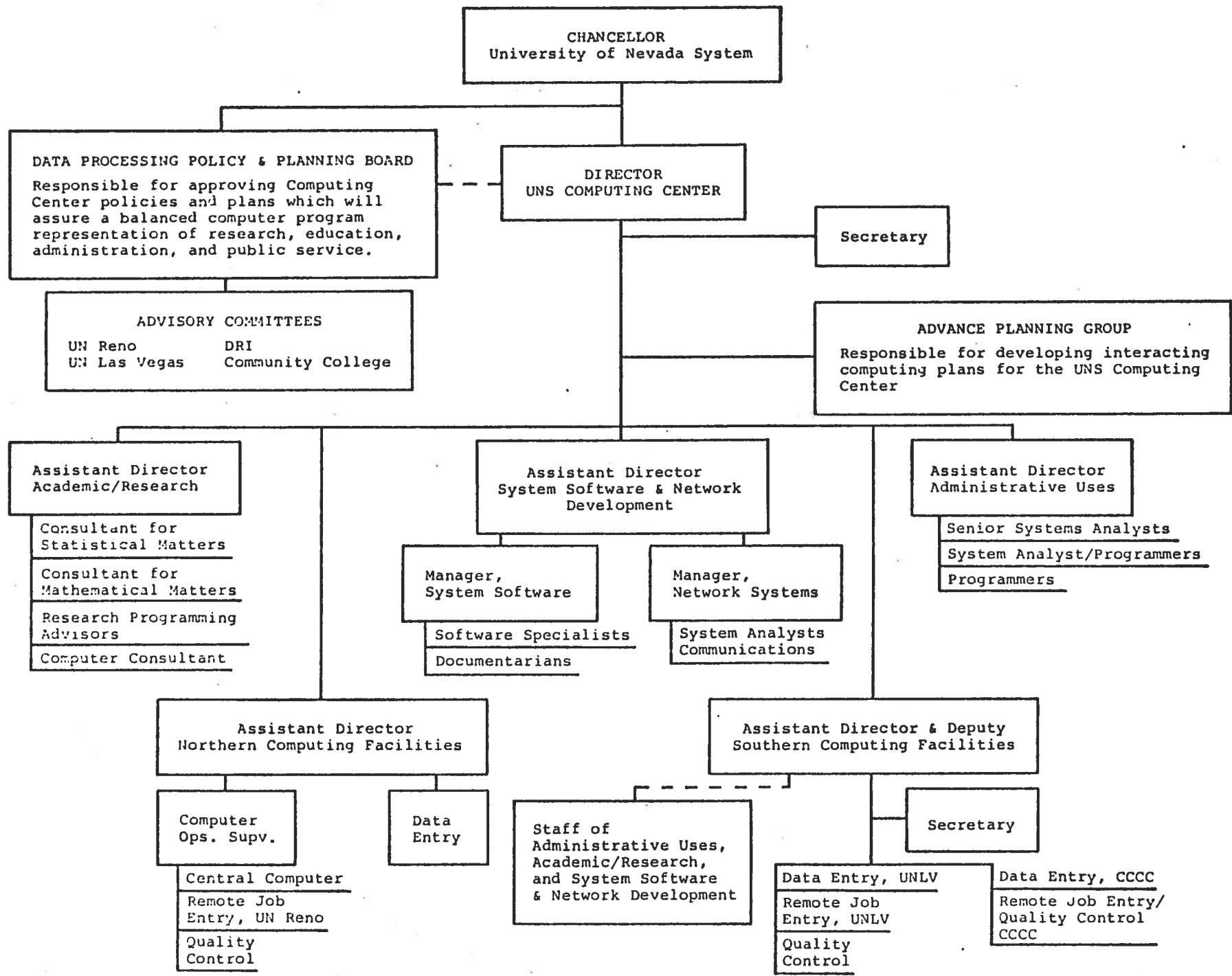
Key Users: Administrators throughout UNS, libraries.

Major Uses: Student records/student accounting.
Financial management.
Personnel accounting.
Student billing, loans and aid.
Space and property inventory.
Library support.

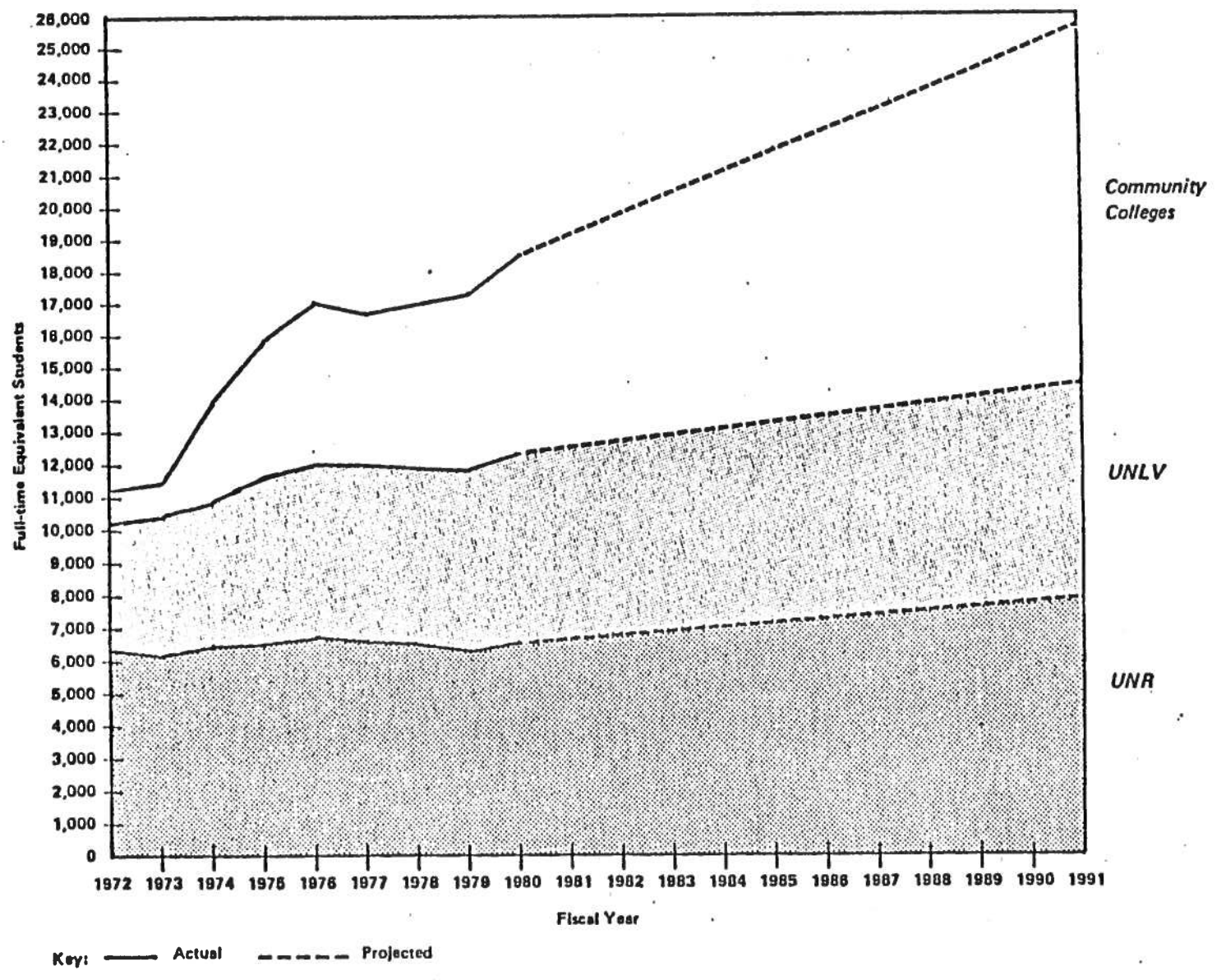
Future Growth: Improved registration.
Management information.
Word Processing.
Vocational/educational testing.
Alumni correspondence.
Library data bases, photominiturization.

UNSCC HARDWARE NETWORK

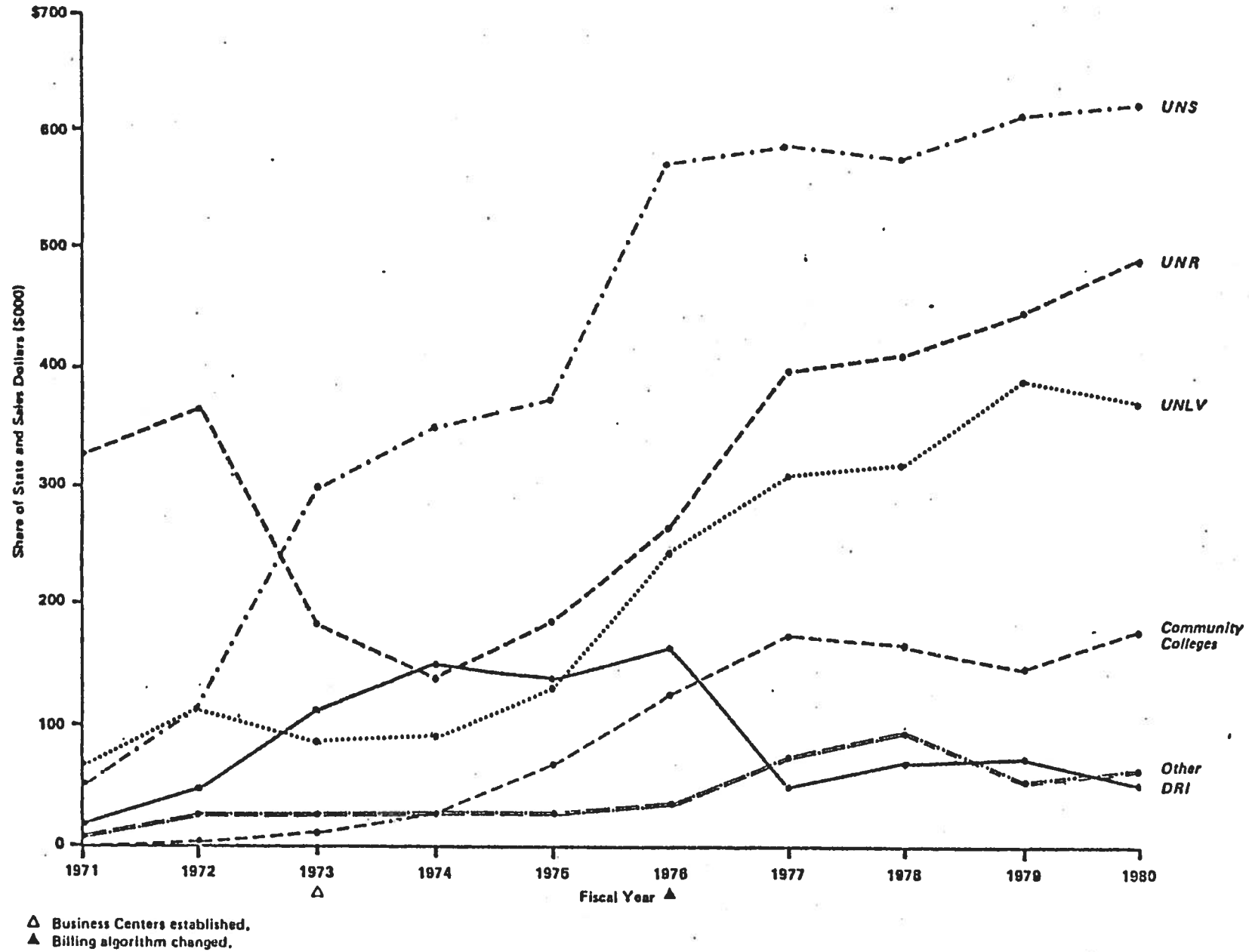




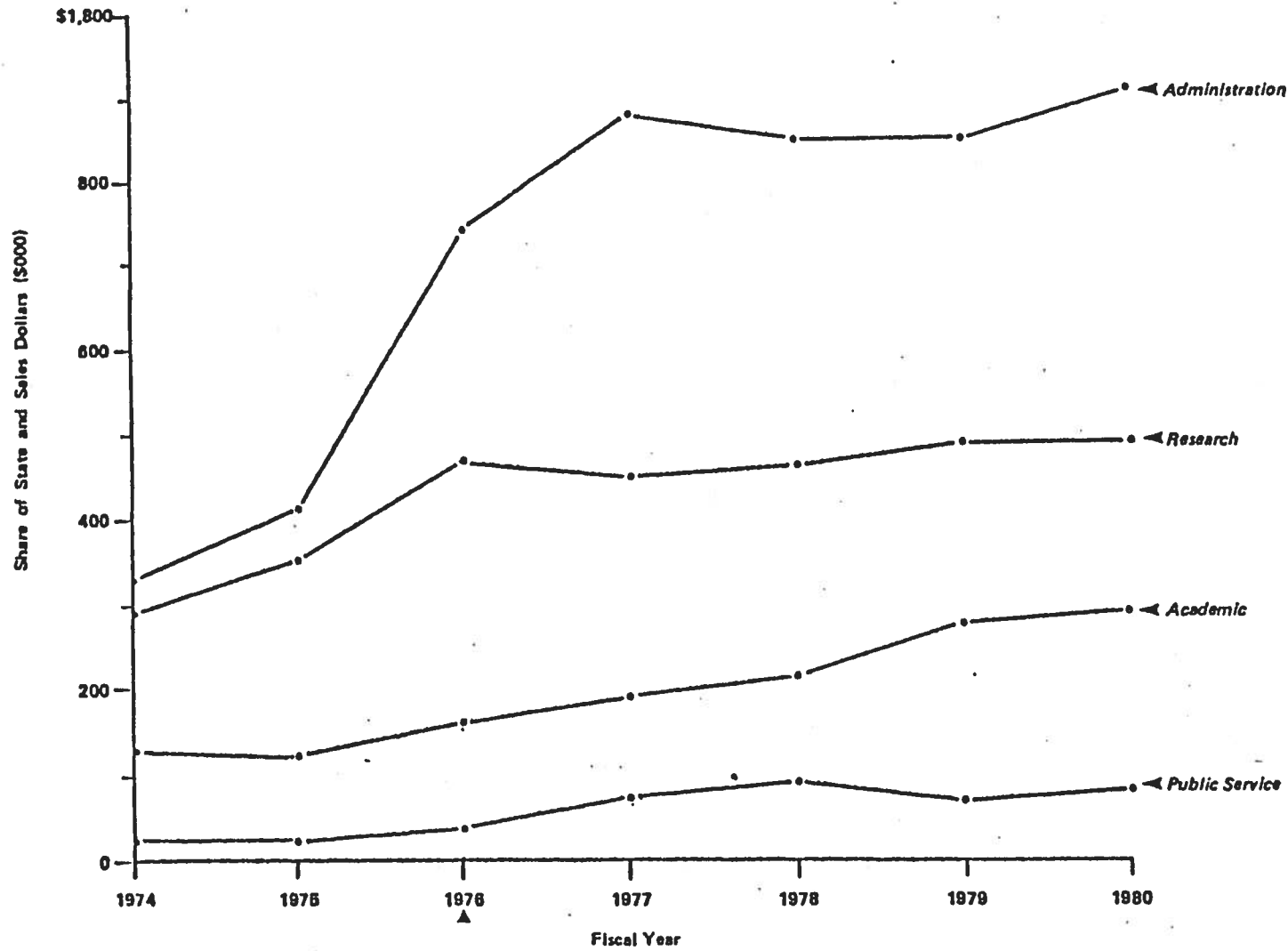
UNS STUDENT GROWTH TRENDS



USE TRENDS BY USER ORGANIZATION
 (Allocated based on percent share of charge back)

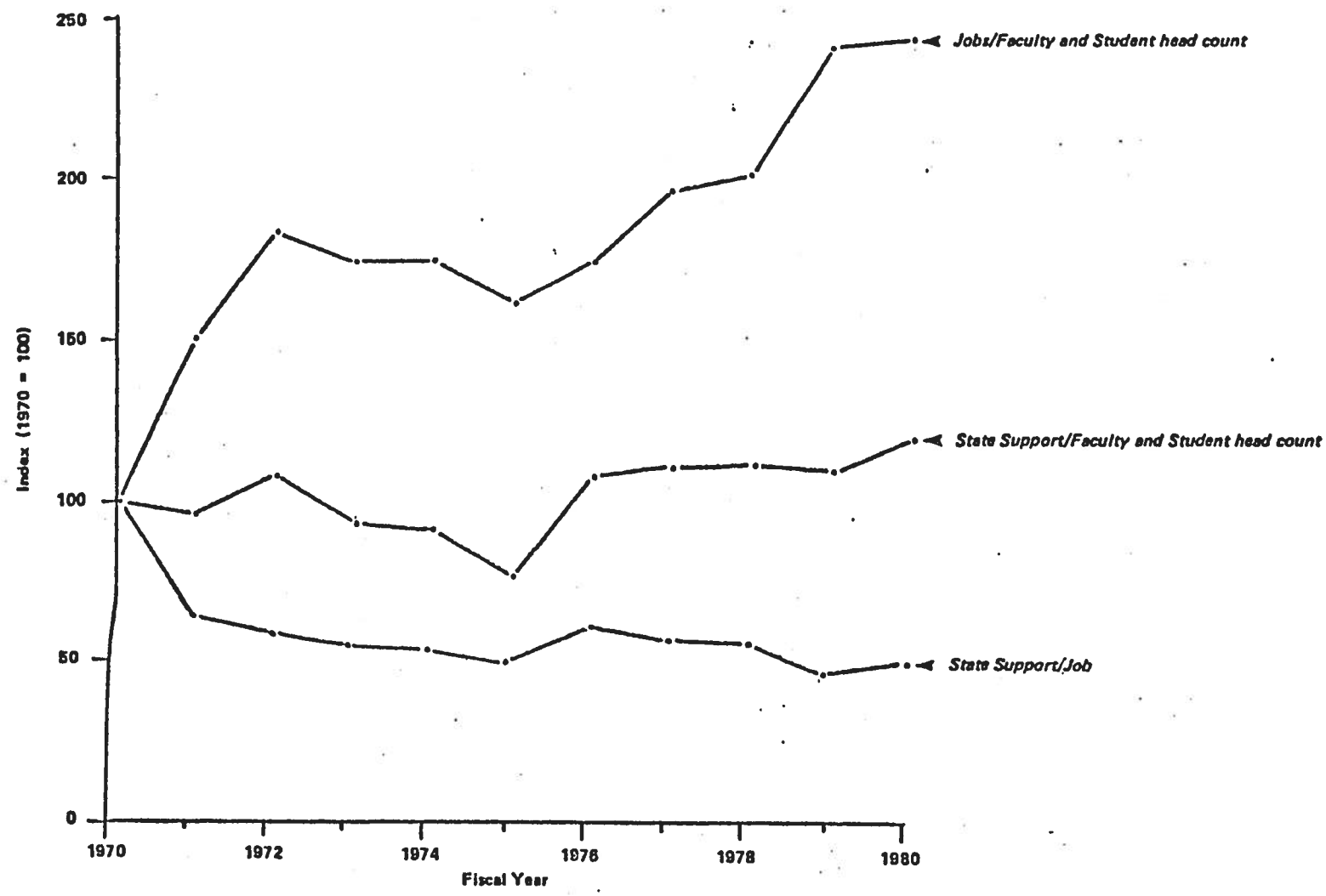


ACADEMIC/RESEARCH/ADMINISTRATIVE/PUBLIC SERVICE
USE TRENDS
(Allocated based on percent share of charge back)

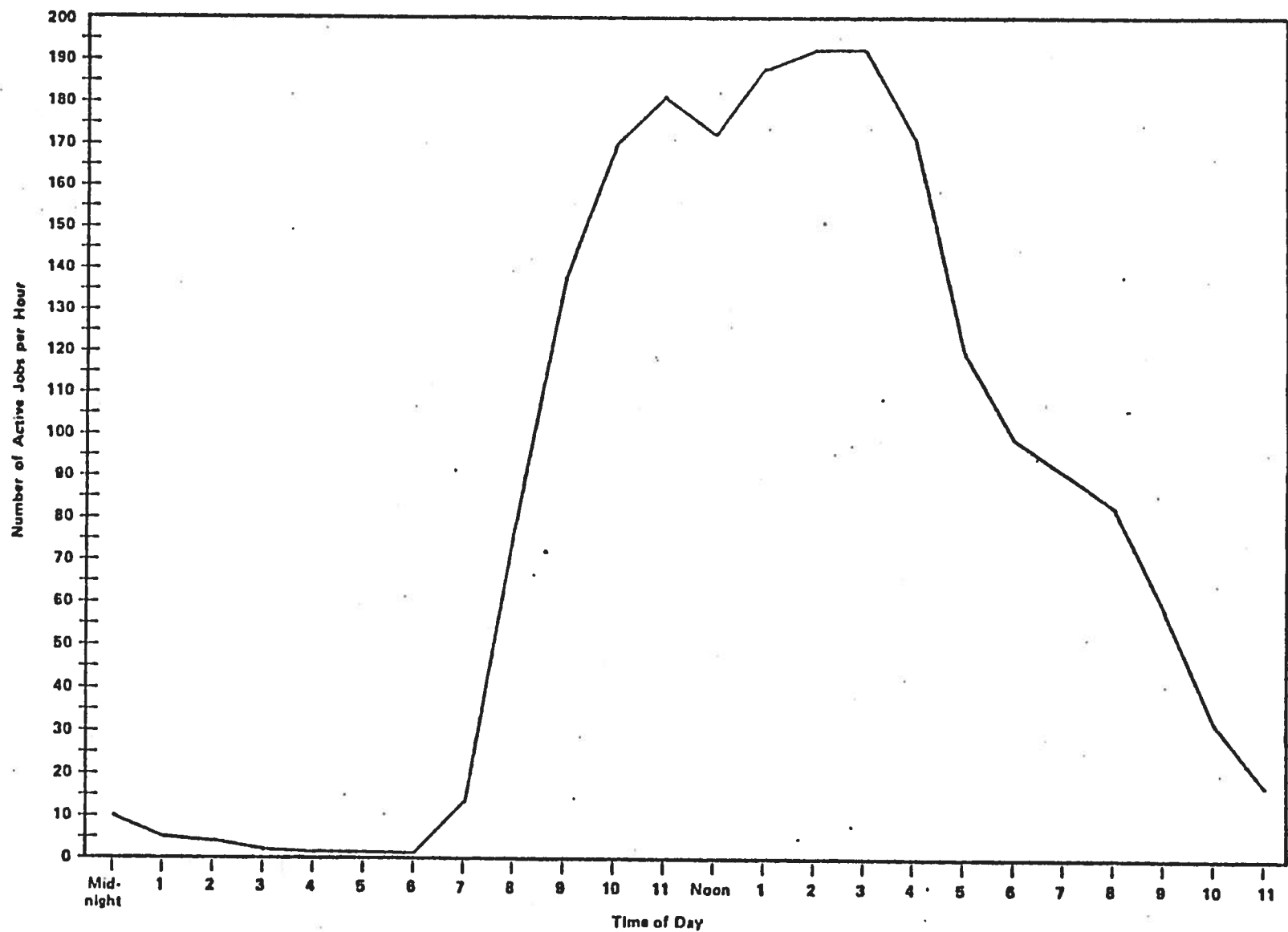


▲ Billing algorithm changed.

UNSCC GROWTH TRENDS - RATIOS



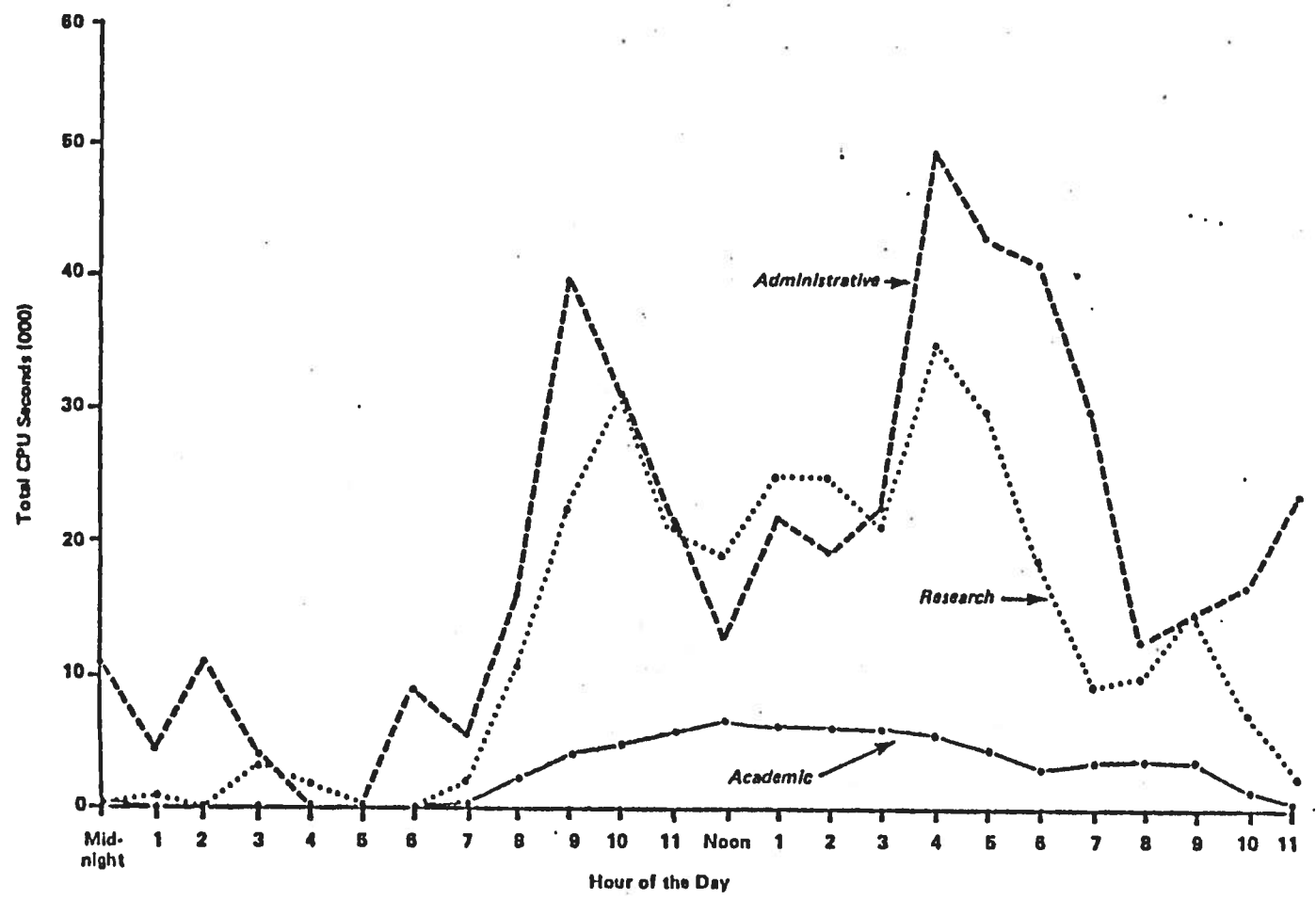
TIME-SHARING UTILIZATION



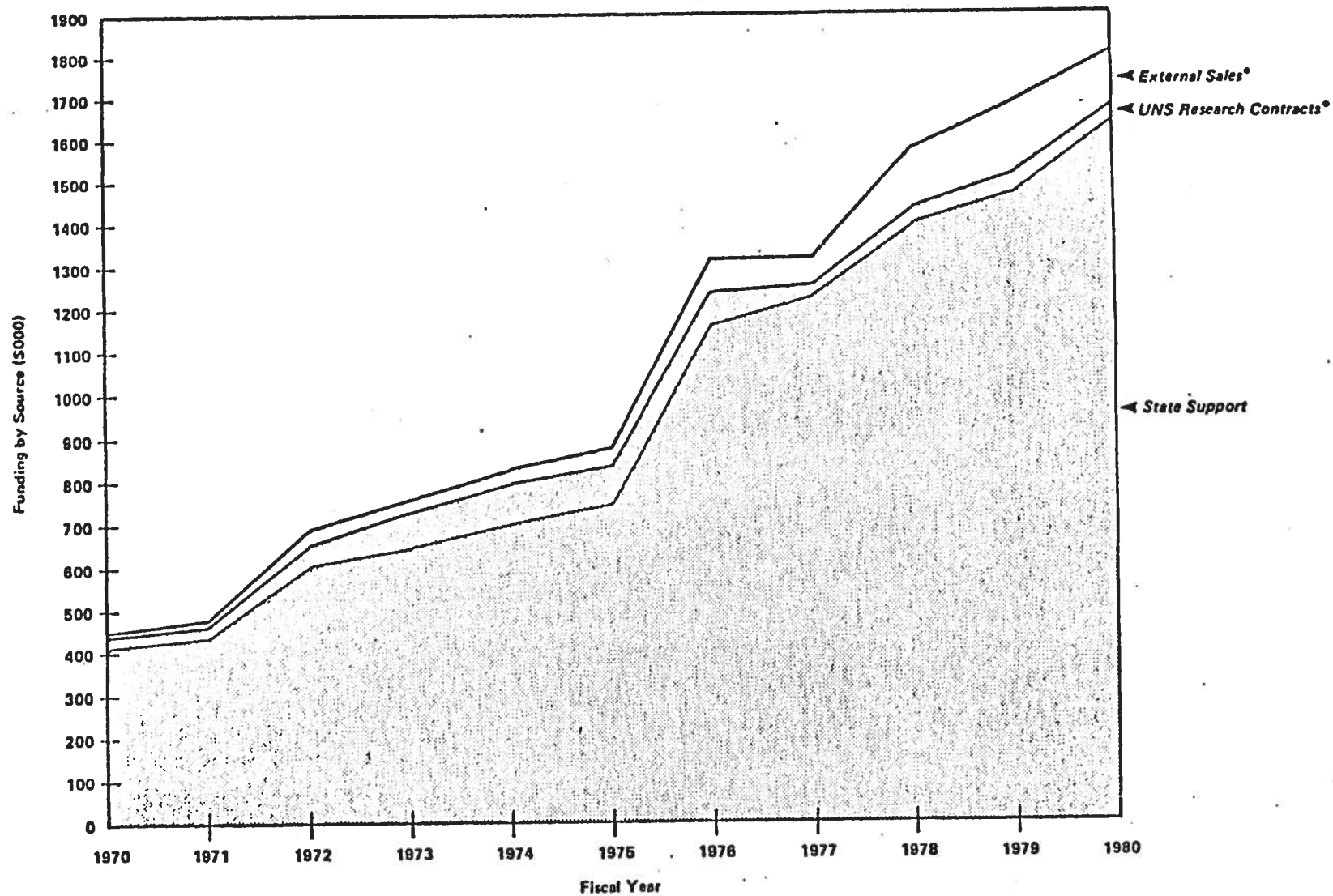
For October 1979 -

Average Job Length Profile: 73.7% shorter than 1/2 hour
21.5% longer than 1/2 hour, less than 1 1/2 hours
4.8% longer than 1 1/2 hours

MAINFRAME CPU USAGE - MARCH 1979

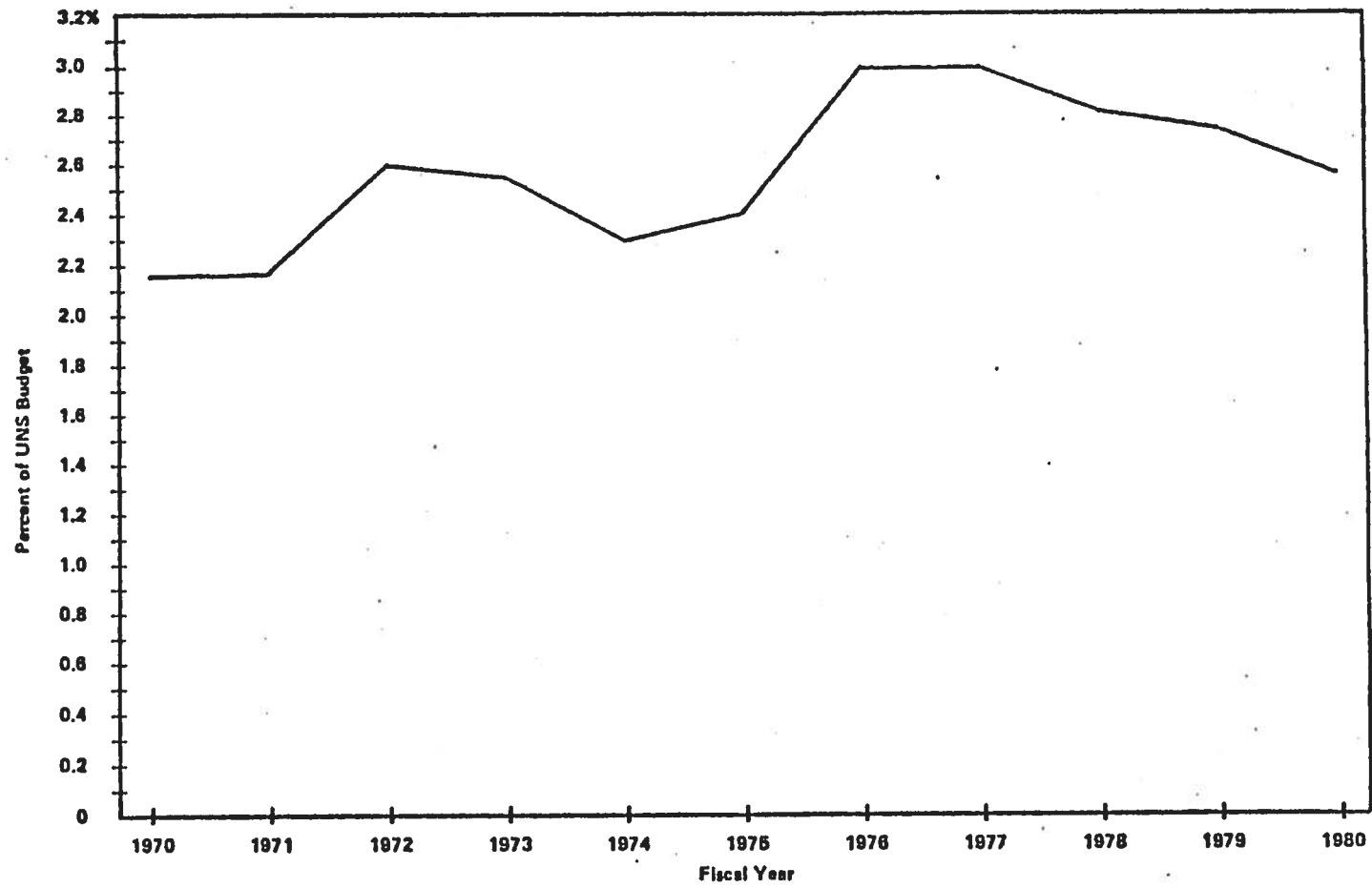


SOURCE OF UNSCC FUNDS

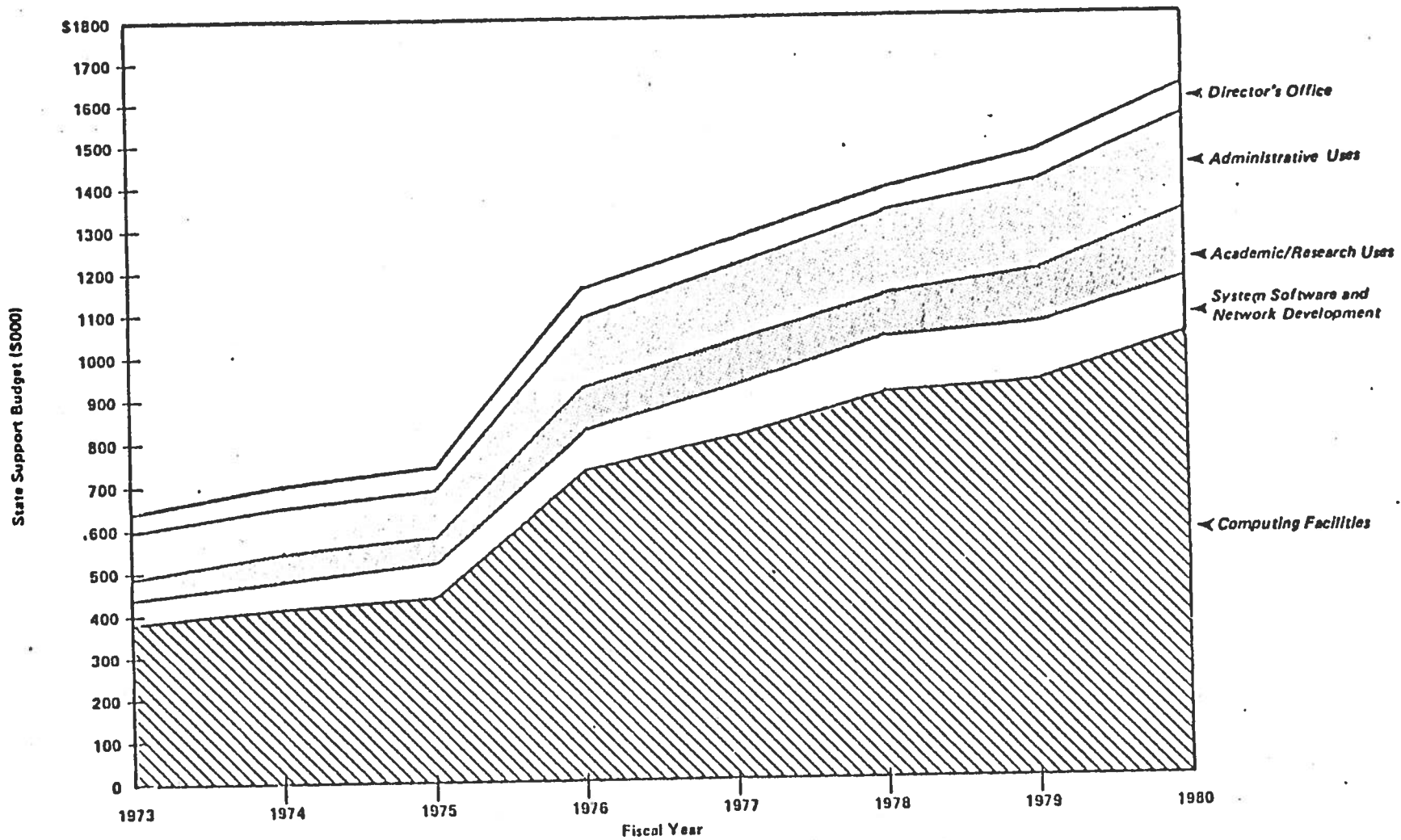


*Actual receipts; budgeted receipts shown on Exhibit IV-20.

UNSCC BUDGET AS PERCENT OF UNS BUDGET



UNSCC BUDGET BY DEPARTMENT (State support only)



SUMMARY OF UNS COMPUTING CENTER
 COMMENTS CONCERNING THE FY82-83 BUDGET

15.

- I. The University of Nevada System Computing Center (UNSCC) serves three basic areas:
- A. Education
 - B. Research
 - C. Administrative

II. To achieve these goals the resources provided the UNSCC by the State are organized into:

A. Hardware/software network consisting of:

<u>Size Computer</u>	<u>Location</u>
Medium	UNLV Campus
Medium	UNR Campus
Small	North Cheyenne CCCC
Small	Energy System Center, Boulder City

These computers provide services to users through local or remote terminals and are linked via communication lines to optimize their use.

B. People are grouped into five organizational units:

<u>Unit</u>	<u>Number</u>
System Operations	30
System Software & Network Development	6
Teaching/Research Support	5
Administrative Design & Programming	8
Director's Office	3
Total	<u>52</u>

III. Demand for Computing Resources

- A. It became increasingly evident in 1979 that demand for computer services was exceeding available supply by the flattening of growth trends and the advent of many user reports of inaccessibility to computers and poor response time.
- B. An independent consulting firm was requested to examine the UNSCC operation and recommend measures which would correct problem areas.
- C. Computer Shortages:
 - 1. The independent consultant firm found lack of resources to meet expected demand in three areas:
 - a. Hardware
 - b. Software
 - c. People
 - 2. The UNSCC's budget request for FYS 82-83 included funds to correct known deficiencies in resources at a minimal level.

IV. Executive Budget Recommendations

- A. The Executive Budget increased the number of professionals by 2 thereby filling 25% of the 8 requested. There is no increase in the number of classified. The "one-shot" request, which I urge you to approve, will be of significant help in providing increased hardware resources.
- B. An area of deep concern is the new concept of charging students who use computers a fee to raise \$100,000 per year for the Center. Enforcement of this concept, while possible, will add to administrative costs and place yet another financial burden on students for learning a skill which in this day and age is akin to learning to read and write. I urge that the Center's revenues be increased by \$100,000 each year from the general funds and that the plan to collect a computer fee from students be eliminated.

THE UNIVERSITY OF NEVADA PRESS

Objectives

Ever since the University of Nevada Press was created by the Board of Regents in 1961, its prime objectives have been: to record the many neglected corners in Nevada's history; to stimulate scholarly research and writing by faculty members and other authors in their specialized fields; to enhance the academic reputation of the University of Nevada System.

Evidence that the Press has accomplished its objectives can be seen in the following: it has published a broad range of books dealing with previously unrecorded areas of Nevada's history; it has published biographies of various Nevadans, ranging from early settlers to minority group members to state governors; it has stimulated research on Nevada history, Basque studies, political processes, and natural history; its 67 publications have received many hundreds of laudatory critical reviews, not only from Nevada media, but from major newspapers and scholarly journals throughout the United States and foreign countries.

Budget

For the forthcoming biennium, the Board of Regents; budget request for the University of Nevada Press was:

Fiscal year 1981-82 -- \$192,938
Fiscal year 1982-83 -- \$215,861

The Governor's budget recommendation is:

Fiscal year 1981-82 -- \$196,118
Fiscal year 1982-83 -- \$213,515

This represents a 20.1 percent increase over the current biennial budget of \$340,976.

EXHIBIT D

The Governor's recommendation calls for cost-of-living increases in salaries for three professional positions and two classified positions, plus an increase in fringe benefits. The University Press has requested no new positions from appropriated funds.

The Governor's recommendation calls for slight cutbacks from the Board of Regents' request in the areas of wages for one part-time student, and out-of-state travel.

The operating appropriation provides less than 5 percent of moneys needed to meet the cost of manufacturing books. Slightly more than 95 percent of book manufacturing funds comes from sales of University Press books. Sales of our books continue to grow steadily. We are now taking in an average of about \$60,000 per year in book sales. These earnings cover nearly the entire cost of book manufacture -- including typesetting, printing, paper, and binding of books. Advertising and sales promotion of our books come largely out of operating.

Therefore, the University Press is satisfied with the Governor's recommended budget for the next biennium.

Books published per year

(See addendum for list of books published in calendar years 1979 and 1980, and books scheduled to be published in 1981 and 1982.)

The number of books published per year by the University Press is also climbing. The average production schedule for a press of our limited staffing and funding is five books per year.

We published three books in 1979. In 1980, this figure jumped to a total of nine books. It must be explained that the disparity between the two years is not unusual. Academic books -- as contrasted

to fiction -- come to fruition at varying speeds, depending upon their length, the amount of research required, the inevitable revisions that are called for by critical readers, and book manufacturing problems. At any rate, the average for the two years was six books per year, which is above average for a university press of our size.

In calendar year 1981, we will publish seven books. In 1982, we are projecting an additional seven books.

Next year, in 1982, we expect to see the first two books in our Fleischmann Series on Great Basin Natural History. One will be on birds and the other will be on trees and shrubs of the Great Basin -- the land area which takes in nearly the entire state of Nevada and parts of neighboring states. Other books in this series will deal with such topics as flowering plants, mammals, fish, insects, anthropology, and climatology.

The Great Basin Series has been made possible by a \$550,000 grant to the University of Nevada Press from the Max C. Fleischmann Foundation. The grant is specifically earmarked to meet research and manufacturing costs of a book series on natural history of the Great Basin. From what we understand, it is the largest such grant ever made to a university press anywhere for a series of this nature. We intend to make the Fleischmann Series a really outstanding one that will bring national prestige to the University System and to the State of Nevada.

THE UNIVERSITY OF NEVADA PRESS

Addendum -- Books published and projected for four-year period:

1979

SIERRA SUMMER, by Mel Marshall
HIS OWN COUNSEL: THE LIFE AND TIMES OF LYMAN TRUMBULL, by Ralph Roske
BELTRAN: BASQUE SHEEPMAN OF THE AMERICAN WEST, by William Douglass

1980

THE STORY OF THE MINE, by Charles H. Shinn
WILL JAMES: THE LAST COWBOY LEGEND, by Anthony Amaral
THE NEVADA CONSTITUTION (5th ed.), by Eleanore Bushnell with Don Driggs
THE BASQUES: THE FRANCO YEARS AND BEYOND, by Robert Clark
EARLY NEVADA: THE PERIOD OF EXPLORATION, by F.N. Fletcher
THE WITCHES' ADVOCATE: BASQUE WITCHCRAFT AND THE SPANISH INQUISITION,
by Gustav Henningsen
TWENTY MILES FROM A MATCH (second printing), by Sarah Olds
A BOOK OF THE BASQUES (reprint), by Rodney Gallop
CRAIG SHEPPARD: WESTERN DRAWINGS IN BRUSH AND INK (portfolio)

1981

NEVADA PRINTING HISTORY, by Robert Armstrong
THE UNSPIKED RAIL: MEMOIR OF A NEVADA REBEL, by Sally Springmeyer
Zanjani
THE PINON PINE: A NATURAL AND CULTURAL HISTORY, by Ronald Lanner
NEVADA'S TURBULENT 50s, by Mary Ellen Glass
IN A HUNDRED GRAVES: A BASQUE PORTRAIT (reprint), by Robert Laxalt
UNDER THE MOUNTAIN, by Molly Knudtsen
THE NEVADA ADVENTURE: A HISTORY, 5th edition revised, by James Hulse

1982

THE NEWSPAPERS OF NEVADA: A HISTORY AND BIBLIOGRAPHY -- 1854-1979,
by Richard Lingenfelter and Karen Gash
PAT McCARRAN: POLITICAL BOSS OF NEVADA, by Jerome Edwards
WALTER VAN TILBURG CLARK: THE MAN AND HIS WORKS, ed. by Charlton Laird
HISTORY OF NEVADA, by Hubert Howe Bancroft (Vintage Nevada)
FIRST YEAR BASQUE GRAMMAR, by Juan Onatibia and William Jacobsen
BIRDS OF THE GREAT BASIN, by Fred Ryser
TREES AND SHRUBS OF THE GREAT BASIN, by Hugh Mozingo