

HB

115

Alaska State Legislature

DURING SESSION
STATE CAPITOL, ROOM 501
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REPRESENTATIVE CON BUNDE

District 18

VICE-CHAIR: HOUSE FINANCE COMMITTEE
MEMBER: LEGISLATIVE BUDGET & AUDIT COMMITTEE

SPONSOR STATEMENT HB 115

The purpose of HB 115 is to provide equitable funding for each University of Alaska campus. The University of Alaska is important to the people, the economy, and the future of our state. The debate over equitably funding each campus needs to be resolved. If it is not, the needs of our University of Alaska students will not be met adequately now or in the future.

HB 115 begins to address the question of equitable funding for all University campuses. This proposed legislation directs the Board of Regents to allocate funds based on enrollment at each campus.

HB 115 is one way to balance our limited funds and meet the needs of our growing student population. I urge the legislature; university officials, students and others who are interested to join in this debate and ultimately to resolve the issue of equitable funding for the University.

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Sectional Analysis HB 115 Version 1-LS0534/A

“An Act relating to the University of Alaska; and providing for an effective date.”

Section 1: Findings and intent

Section 2: Amends AS14.40 by adding a new section. The new section places certain requirements for the allocation of appropriations to the University of Alaska.

Section 3: Amends AS 14.40.325 by providing for reallocation of appropriations to the University of Alaska by the University administration.

Section 4: Effective date

Category I	Category II	Category III	Category IV
Certificates	Certificates	Certificates	Certificates
Architectural Drafting (AI)	Refrigeration and Heating Technology (MA)		
Civil Engineering Drafting (AI)	Automotive Technology (AI)		
Dental Assisting (AI)	Aviation Maintenance Technology (AI)		
Early Childhood Development (AI)	Diesel Technology (AI)		
Mechanical and Electrical Drafting (AI)	Electronics Technology (AI,MA)		
Mechanical Technology (KP)	Welding Technology (KP)		
Office Technology (AI, KO, KP,MA)			
Paralegal Studies (AI)			
Petroleum Technology (KP)			
Small Business Management (KP)			
Structural Drafting (AI)			
Degree Programs	Degree Programs	Degree Programs	
Associate Degrees	Associate Degrees	Associate Degrees	
Accounting (AI, MA)	Medical Laboratory Technology (AI)		
Air Traffic Control (AI)	Refrigeration and Heating Technology (MA)		
Architectural and Engineering Technology (AI)	Aviation Maintenance Technology (AI)		
Automotive Technology (AI)	Diesel Technology (AI)		
Business Computer Information System (AI)	Electronics Technology (AI, MA)		
Computer Electronics (KP)	Welding Technology (AI)		
Dental Assisting (AI)			
Dental Hygiene (AI)			
Early Childhood Development (AI)			
Fire Service Administration (AI, MA)			
Foodservice Technology (AI)			
Forestry Technology (AI)			
General Business (KO)			
Geomatics (AI)			
Degree Programs	Degree Programs	Degree Programs	Degree Program
Associate Degrees	Associate Degrees	Associate Degrees	Associate Degrees
Human Services (AI)			
Industrial Process Instrumentation (KP)			
Medical Assisting (AI)			
Nursing (AI)			
Office Management and Technology (AI, KO, KP, MA)			
Paramedic Technology (AI)			
Petroleum Engineering Aide (KP)			
Petroleum Technology (KP)			
Professional Piloting (AI)			
Small Business Administration (AI, KP, MA)			
Baccalaureate Degree	Baccalaureate Degree	Baccalaureate Degrees	Baccalaureate Degrees
Bachelor of Arts	Bachelor of Arts	Bachelor of Arts	Bachelor of Arts
	Anthropology (AI)	Journalism and Public Communications (AI)	Biological Sciences (AI)
	Art (AI)	Mathematics (AI)	Computer Science (AI)
	Economics (AI)	Theatre (AI)	
	English (AI)		
	History (AI)	Bachelor of Business Administration	Bachelor of Science
	Interdisciplinary Studies (AI)	Accounting (AI)	Biological Sciences (AI)
	Justice (AI)	Economics (AI)	Chemistry (AI)
	Music (AI)	Finance (AI)	Civil Engineering (AI)
	Political Science (AI)	Management (AI)	Computer Science (AI)
	Psychology (AI)	Management Information Systems (AI)	Geomatics (AI)
	Sociology (AI)	Marketing (AI)	Mathematics (AI)
			Natural Sciences (AI)
		Bachelor of Fine Arts	Nursing Science (AI)
		Art (AI)	
	Bachelor of Education	Bachelor of Music	Bachelor of
	Elementary Education (AI)	Elementary Education (AI)	
	Physical Education (AI)	Secondary Education (AI)	
	Secondary Education (AI)	Performance (AI)	
	Bachelor of Science	Bachelor of Science	
	Anthropology (AI)	Mathematics	
	Interdisciplinary Studies (AI)		
	Psychology (AI)		
	Sociology (AI)		
	Technology (AI)		
	Bachelor of Social Work		
	Social Work (AI)		
Category I	Category II	Category III	Category IV
Degree	Degree	Degree	Degree
Certification Certificate	B. A. Bachelor of Arts	B.B.A. Bachelor of Business Administration	B.S. Bachelor of Science
A. A. Associate of Arts	B. Ed. Bachelor of Education	B.F.A. Postsecondary Education Categories.docLast printed 04/15/98 4:03 PMPage 4 of 4Bachelor of Fine Arts	E. M. Engineer of Mines
A. A. S. Associate of Applied Science		B.M. Bachelor of Music	
		B.T. Bachelor of Technology	

UA IN REVIEW 1999

Table 1.01 Headcount by Campus
Fall 1994 - 1998

	Fall Semester					% Change 1994-1998
	1994	1995	1996	1997	1998	
Anchorage	13,727	12,998	13,032	12,609	13,559	-1%
Kenai	1,158	1,227	1,304	1,205	1,197	3%
Kachemak Bay	495	507	426	384	422	-15%
Kodiak	689	823	759	681	665	-3%
Mat-Su	1,396	1,333	1,256	1,285	1,236	-11%
Military	625	640	531	450	348	-44%
PWSCC	1,388	1,477	1,614	1,663	1,926	39%
Fairbanks	6,129	5,819	5,523	5,514	5,110	-17%
College of Rural Alaska						
Bristol Bay	310	376	679	640	475	53%
Chukchi	195	161	160	284	169	-13%
Interior/Aleutians	428	519	548	556	689	61%
Kuskokwim	405	564	500	354	366	-10%
Northwest	344	387	412	377	291	-15%
Rural College	1,051	843	970	1,015	731	-30%
Tanana Valley	2,582	2,273	2,459	2,554	2,533	-2%
Juneau	2,783	2,927	2,456	2,698	2,604	-6%
Ketchikan	603	628	588	488	576	-4%
Sitka	1,331	1,509	1,453	1,535	1,315	-1%
UA Anchorage	19,174	18,757	18,674	17,987	19,063	-1%
UA Fairbanks	9,416	9,222	9,273	9,011	8,235	-13%
UA Southeast	4,639	4,982	4,402	4,617	4,337	-7%
UA System	32,850	32,481	31,917	31,184	31,106	-5%

Note: The mapping of the Rural Delivery Courses to some campuses was revised which explains the small changes to the Fall 95 numbers. Reported headcount is unduplicated. Campus headcount totals add up to more than MAU totals and MAU headcounts add up to more than the system total. This occurs because it is common for students to take courses at multiple campuses and/or multiple MAUs in the same semester. Therefore, some students would be double counted if headcounts were summed across campuses and MAUs. Headcount includes students who audit credit courses. Students taking only course sections designated as no-grade are excluded from credit headcount. This change was implemented in January 1995 per the Data Administration Management Team. For the five year period, Military Program, Chukchi and Rural College did not have any non-credit head count.

Source: Data supplied by MAUs via UA Information Systems; Banner SI Fall Semester Closing Extracts 1997 - 1998, SIS Fall Semester Closing Extracts 1994 - 1996. Compiled by Statewide Budget and Institutional Research.

ACADEMIC INFORMATION

**Table 2.05 Student Full-Time Equivalent (FTE) Enrollment by Campus
Fall 1994 - 1998**

	Fall Semester					% Change 1994-1998	% Change 1997-1998
	1994	1995	1996	1997	1998		
Anchorage	7,737	7,327	7,190	6,932	7,127	-7.9%	2.7%
Kenai	485	513	529	475	482	-0.6%	1.5%
Kachemak Bay	142	121	110	114	122	-14.0%	6.3%
Kodiak	177	183	172	153	161	-9.1%	5.2%
Mat-Su	670	653	600	580	555	-17.1%	-4.4%
Military	178	186	161	140	107	-39.7%	-30.8%
PWSCC	228	243	266	293	299	31.1%	1.9%
Fairbanks	4,111	3,914	3,739	3,580	3,181	-22.6%	-12.5%
College of Rural Alaska							
Bristol Bay	56	57	90	93	73	31.1%	-26.7%
Chukchi	45	34	30	62	37	-17.1%	-66.2%
Interior/Aleutians	64	85	98	86	102	58.0%	15.8%
Kuskokwim	106	160	145	89	109	2.5%	17.8%
Northwest	71	63	72	68	52	-26.9%	-30.4%
Rural College	246	190	206	235	176	-28.4%	-33.2%
Tanana Valley	788	695	773	829	835	6.0%	0.7%
Juneau	1,058	1,108	1,018	1,091	1,037	-2.0%	-5.2%
Ketchikan	165	166	171	135	156	-5.7%	13.1%
Sitka	315	356	357	381	321	2.0%	-18.5%
UA Anchorage	9,617	9,226	9,028	8,687	8,854	-7.8%	1.8%
UA Fairbanks	5,487	5,198	5,153	5,042	4,565	-16.8%	-10.4%
UA Southeast	1,538	1,630	1,546	1,607	1,514	-1.6%	-6.1%
UA System	16,642	16,054	15,727	15,936	14,933	-10.3%	-2.7%

Fall 1998 student FTE enrollment decreased by 54 and 399 FTE from fall 1997 at Juneau and Fairbanks campuses respectively. Anchorage campus student FTE enrollment increased by 195. The Anchorage and Fairbanks Campuses accounted for 60 percent of the systemwide FTE enrollment during the fall 1998 semester.

Between 1993 and 1995, the full-time equivalent fall enrollment declined 0.8 percent nationwide for public institutions (NCES Digest of Education Statistics 1997).

Note: Student FTEs exclude audited credit hours. One student FTE is calculated as 15 student credit hours for courses below the 500 level and 12 student credit hours for courses 500 and above. This represents the average number of credits needed to receive a degree in four years.

Source: Data supplied by MAUs via UA Information Systems: Banner SI Fall Semester Closing Extracts 1997 - 1998. SIS Fall Semester Closing Extracts 1994 - 1996. Compiled by Statewide Budget and Institutional Research.

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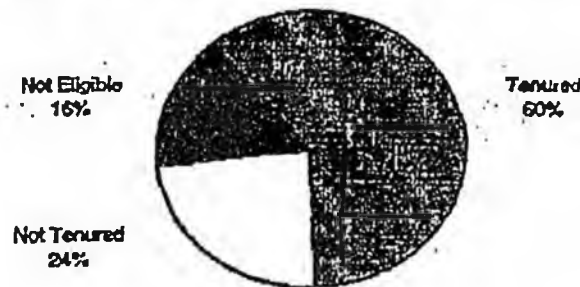
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UA IN REVIEW 1999

**Table 3.01 Full-Time Regular Faculty by Tenure Status and Campus
Fall 1998**

	Tenured	Not Tenured	Not Eligible	Total
Anchorage	208	72	41	321
Kenai	17	5	3	25
Kachemak Bay	3			3
Kodiak	6	1	1	8
Mat-Su	6	3	2	11
Military	1			1
PWSCC	5	1		6
Fairbanks	231	79	66	376
College of Rural Alaska				
Bristol Bay	1	1		2
Chukchi	2			2
Interior/Aleutians	3	2		5
Kuskokwim	2	9	2	13
Northwest	0	3		3
Rural College	1		3	4
Tanana Valley	11	7	5	23
Juneau	28	19	7	54
Ketchikan	1	4	1	6
Sitka	2	4	7	13
UA System	528	210	138	876

Proportion of Full-Time Regular Faculty by Tenure Status



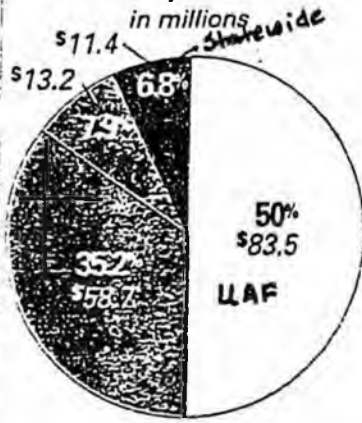
Note: Employees are counted who had an assignment active on October 1st of the given year. Faculty are identified as employees with a primary EEO occupation code of faculty. Faculty are reported at the campus level based on the primary campus from which they receive the highest compensation.

Source: Data supplied by MAUs via UA Information Systems: Barmer HR Fall Federal Reporting Extracts 1997 - 1998, HRS Fall Reporting Extracts 1994 - 1996. Compiled by Statewide Budget and Institutional Research.

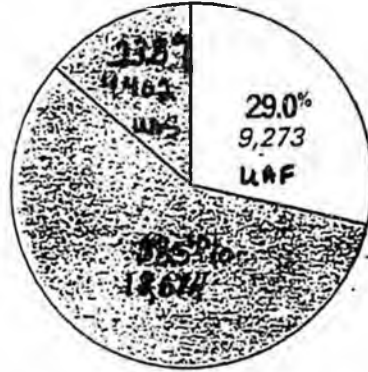
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Fbx News Miner
Dec 5, 1997

**State apportionment
Fiscal year 1998**



**Fall 1996
Enrollment**



\$166.9 • Total • 99.9%

	Full-time students	Part-time students	Total
Univ. of Alaska, Southeast	819	3,583	4,402
Univ. of Alaska, Anchorage	6,116	12,558	18,674
Univ. of Alaska, Fairbanks	4,150	5,123	9,273
Statewide	11,163*	20,745*	31,917*

* Campus headcount; adds up to more than MAU (Main Administrative Unit) totals because it is common for students to take courses at multiple campuses and/or multiple MAU's in the same semester. Therefore students who would be double counted if headcounts were summed across campuses and MAUs.

General Appropriations Act, 75th Legislature, Article III (Education), Special Provisions

Sec 46. **General Academic Funding** Funding for general academic institutions will consist of four formulas and supplemental items

- a. **Instruction and Operations Formula.** The Instruction and Operations Formula shall provide funding for faculty salaries, including nursing, departmental operating expense, library, instructional administration, research enhancement, student services, and institutional support. These funds are distributed on a weighted semester credit hour basis. The rate per weighted semester credit hour for the 1998-99 biennium is \$51.12.

Weighting is determined by the following matrix:

	Lower Division	Upper Division	Masters	Doctoral	Special Professional
Liberal Arts	1.00	1.96	3.94	12.04	
Science	1.53	3.00	7.17	19.29	
Fine Arts	1.85	3.11	6.51	17.47	
Teacher Ed	1.28	1.36	3.23	9.95	
Agriculture	2.05	2.54	6.64	16.37	
Engineering	3.01	3.46	8.20	21.40	
Home Economics	1.58	2.12	4.34	10.79	
Law					3.22
Social Services	1.64	1.84	5.80	11.92	
Library Science	1.45	1.52	4.22	12.26	
Vocational Training	1.45	2.59			
Physical Training	1.36	1.36			
Health Services	2.87	3.46	6.47	15.98	
Pharmacy	4.00	4.64	7.55	19.11	13.43
Business Admin.	1.41	1.59	4.59	13.91	
Optometry			5.46	19.12	7.00

Teacher Ed Practice	2.43	2.43		
Technology	1.00	2.56	6.61	
Nursing	4.91	5.32	6.49	16.32

- b. **Teaching Experience Supplement.** For the 1998-1999 biennium, an additional weight of 5 percent is added to lower-division and upper-division semester credit hours taught by tenured and tenure-track faculty. Beginning in Fiscal Year 1998, the Coordinating Board shall collect data on non-tenured faculty with a terminal degree in the discipline, appropriate professional certification, or extensive and recognized accomplishment in the field. Furthermore, it is the intent of the Legislature that for the 2000-2001 biennium the weight shall be assigned to undergraduate semester credit hours taught by non-tenured faculty with the appropriate credentials or experience, and the weight shall increase by 10 percent per biennium, up to 50 percent.
- c. **Growth Supplement.** Universities projected by the Coordinating Board to experience growth in headcount enrollment from fall 1996 to fall 1998 will receive a \$1,435 supplement for each additional student forecasted to enroll during that time period. The supplement is based on the amount of general revenue funding per student generated by the instruction and operations formula.
- d. **Infrastructure Support.** Funding associated with plant-related formulas and utilities shall be distributed by the infrastructure support formula, which is driven by the predicted square feet for universities' educational and general activities produced by the Space Projection Model developed by the Coordinating Board. The portion of the formula related to utilities is adjusted to reflect differences in unit costs for purchased utilities, including electricity, natural gas, and water and wastewater. The average rate per square foot is \$7.51.
- e. **Supplemental Non-formula Items.** Institutions shall receive a direct reimbursement as applicable for staff group insurance (other educational and general income portion), workers' compensation insurance, unemployment compensation insurance, public education grants, 50 percent of indirect research costs recovered on grants, organized activities, system office operations, scholarships, tuition revenue bond payments, Skiles Act bond payments, and facility lease charges. Institutions may receive an appropriation for special items. Revenue derived from board authorized tuition would still be appropriated to the institutions levying the additional charges. Any university losing funding attributable to the proposed formula changes shall receive "formula transition funding" for implementing the new formula structure for the 1998-1999 biennium.

These formulas and supplemental items shall be reviewed and updated by study committees appointed by the Higher Education Coordinating Board and recommended changes forwarded to the Legislature, Legislative Budget Board, and Governor's Office of Budget and Planning by June 1, 1998.

[Return to the Finance Page](#)

[Return to the University Formula Advisory Committee Page](#)

MEMO

To: Patricia Swenson
From: Paul Brandt
Subject: Formula Funding
Date: February 6, 1998

Attached is a copy of the information sent by Keith Hasselquist of the Idaho State Board of Education. As I mentioned on the phone, Idaho's legislature makes a lump sum appropriation to the board. Subsequent to the appropriation, the board uses a base plus enrollment model to distribute the funds to the state's universities. The attached information provides both the boards objectives and methodology in making the appropriation. I hope this information is helpful for your purposes.

IDAHO

T. ALLOCATION OF THE LUMP SUM APPROPRIATION

1. Objectives

- a. The funding process should offer maximum institutional flexibility to allocate funds internally to carry out roles and missions established by the Board.
- b. The funding process should be a straightforward approach which can be used by the Board to express system-wide priorities.
- c. There should be a clear and understandable relationship between Institutional needs, the system-wide funding request, the legislative appropriations, the allocation of funds, and the ultimate use of the funds.
- d. The funding process should not penalize institutions as the result of decisions related to the internal allocation of resources by other institutions.
- e. Any incentives that the Board uses in the funding process should be explicit.
- f. The funding process should be applied consistently from year to year so that there can be some level of predictability in the allocation as well as increased confidence in the outcome.
- g. The funding process should encourage cooperative programs among institutions.
- h. The funding process should be compatible with the Statewide Plan for Higher Education.

2. Methodology

The allocation shall consist of the total of the lump sum general account appropriation and actual land grant endowment receipts. The allocation shall be made in the following order:

- a. Each institution shall be allocated its base allocation of the prior year.
- b. An Enrollment Workload Adjustment shall be applied to the allocation of each institution. The adjustment shall be calculated as follows:

- (1) A three-year moving average of credit hours multiplied by the program weights shall be used. The three (3) years to be used shall be those which precede the year of the allocation and shall consist of two (2) years of actual and one (1) year of estimated credit hours.
- (2) Effective with the FY 1990 allocation, credit hours generated from externally funded sources and contracts shall be removed from this adjustment. Credit hours for in-service teacher education shall not be removed.
- (3) The total budget base of the institutions shall be multiplied by 0.33 and divided by the three-year moving average of total weighted credit hours for the prior year. The resultant amount per credit hour shall be multiplied by the change from the prior three-year moving average of weighted credit hours for each institution to calculate the adjustment by institution.
- (4) Program weights are the weighting factors applied to four (4) categories of instructional disciplines with different weight factors by category and course level. The groups and factors follow.

Group I

Physical Education
Law
Letters
Library Sciences
Mathematics
Military Science
Psychology
Social Sciences

Group II

Area Studies
Business & Management
Information Sciences
Education
Communications
Home Economics
Public Affairs
Interdisciplinary Studies

Group III

Agricultural & Natural Resources
 Architecture & Environmental Design
 Biological Sciences
 Computer Sciences
 Fine & Applied Arts
 Foreign Languages
 Physical Sciences

Group IV

Engineering
 Health Professions

The weighting factors for the above categories are as follows:

<u>Course Level</u>	<u>Category</u>			
	I	II	III	IV
Lower Division	1.00	1.30	1.60	3.00
Upper Division	1.50	1.90	2.50	3.50
Graduate	3.50	3.50	6.00	6.50
Law	2.60	--	--	--

An additional five percent (5%) emphasis factor is given to the Primary Emphasis areas at each institution. These areas are:

Boise State University

Business
 Social Science (includes Economics)
 Public Affairs
 Performing Arts (excluding Art)
 Interdisciplinary Studies

Idaho State University

Health Professions
 Biological Sciences
 Physical Sciences

University of Idaho

Agriculture
Forestry
Mines
Engineering
Architecture
Law
Foreign Languages

Lewis-Clark State College

Interdisciplinary Studies

- c. Operations and maintenance funds (custodial, maintenance, and utilities) for new, major general education capital improvement projects shall be allocated to affect institutions.
- d. Decision units above the base shall be consistent with the legislative budget request. The allocation of these decision units to the institutions shall be based on the proportionate share of each institution in the total budget request for these decision units applied to the increase in appropriations above the base excluding special allocations.
- e. The Board may also allocate funds for special activities or projects at the discretion of the Board.

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Code	Discipline	Grp	Wght	Level	FY88 Credit Hours-Resident Only, Excluding Cr Hrs								FY87 Credit Hours-Resident Only, Excluding Contr Cr Hrs							
					Actual Resident Credit Hours				Weighted Resident Credit Hours				Actual Resident Credit Hours				Weighted Resident Credit Hours			
					BSU	ISU	UofI	LCSC	BSU	ISU	UofI	LCSC	BSU	ISU	UofI	LCSC	BSU	ISU	UofI	LCSC
	Developmental	1	1.00	Letters	893	1,881		284	683	1,881	0	284	738	1,947		347	738	1,947	0	347
			1.00	Math	4,020	5,848		1,004	4,020	5,848	27	1,004	3,948	5,168		637	3,948	5,168	0	637
			1.00	Phy. Sc			480		0	0	480	0			477		0	0	477	0
1	Agr Bus & Prod	3	1.80	Lower			382		0	0				288		0	0		0	0
			2.50	Upper			585		0	0				708		0	0		0	0
			6.00	Grad			257		0	0				259		0	0		0	0
2	Agr Sci	3	1.80	Lower			1,092		0	0				1,783		0	0		0	0
			2.50	Upper			2,538		0	0				2,771		0	0		0	0
			6.00	Grad			1,351		0	0				1,379		0	0		0	0
3	Care & Renew Natl Res	3	1.80	Lower			2,734		0	0				2,374		0	0		0	0
			2.50	Upper			3,880		0	0				3,993		0	0		0	0
			6.00	Grad			2,140		0	0				2,181		0	0		0	0
4	Arthil & Rlid Prog	3	1.80	Lower		109	1,658		0	173			137	1,255		0	219		0	0
			2.50	Upper			4,562		0	0				4,696		0	0		0	0
			6.00	Grad			147		0	0				57		0	0		0	0
5	Area, Eth & Cult Stds		1.30	Lower	84	1,700		5	109	2,210	0	7	57	1,621		74	2,367		0	0
			1.90	Upper	213	316	563	3	405	600	1,070	0	312	408	272	593	775	517		0
			3.50	Grad					0	0	0			4		0	14		0	0
9	Communications	2	1.30	Lower	8,773	5,584	4,762	1,884	11,405	7,272	8,191	2,423	9,272	5,718	4,881	1,572	12,054	7,433	8,345	2,644
			1.90	Upper	3,910	1,477	2,728	590	7,429	2,908	5,183	1,121	3,889	1,584	2,785	601	7,351	2,972	5,292	1,142
			3.50	Grad	309	195			1,082	683	0	0	454	189		1,589	687		0	0
11	Comp & Inform Sci	3	1.60	Lower			3,332		0	0	5,331			3,317		0	0	5,307	0	
			2.50	Upper			1,508		0	0	3,095			1,981		0	0	4,953	0	
			6.00	Grad			591		0	0	3,548			824		0	0	3,744	0	
11	Comp & Inform Sci	2	1.30	Lower	5,250	2,826		980	8,825	3,874	0	1,274	8,043	3,806		811	7,858	4,684		794
			1.90	Upper	2,490	1,478		285	4,731	2,804	0	542	3,078	1,779		280	5,844	2,240		511
			3.50	Grad	42	18			147	83	0	0	57	9		200	32		0	
13	Education	2	1.30	Lower	10,691	7,509	3,950	1,335					10,373	8,836	3,942	1,434				
			1.90	Upper	11,789	16,300	15,680	8,457					12,363	16,671	16,398	8,570				
			3.50	Grad	18,427	16,072	19,187						18,281	18,488	18,824					
13	Physical Education (Fitness/Recr Classes)	1	1.00	Lower																
			1.50	Upper																
			3.50	Grad																
14	Engineering	4	3.00	Lower	2,685	869	3,902		8,056	2,667		0	2,368	1,090	4,217		7,088	3,270		0
			3.50	Upper	492	1,328	12,887		1,722	5,341		0	1,020	1,328	11,154		3,570	3,341		0
			6.50	Grad	0	718	2,598		0	4,664		0	0	578	2,697		0	3,757		0
18	Foreign Lang & Ltr	3	1.60	Lower	5,423	8,870	6,050	1,129	8,677	10,872		1,806	5,631	7,377	6,870	1,452	9,010	11,800		2,323
			2.50	Upper	2,719	965	2,375	54	6,798	2,388		135	2,832	1,135	2,371	38	7,330	2,838		90
			6.00	Grad	27	5			162	30		0	24	6		144	36		0	
19	Home Economics	2	1.30	Lower		1,725	1,813		0	2,243	2,097	0	1,700	1,762		0	2,210	2,291		0
			1.90	Upper		1,273	2,346		0	2,419	4,467	0	1,211	2,398		0	2,301	4,558		0
			3.50	Grad		171	102		0	589	357	0	35	246		0	123	861		0
22	Law & Legal Studies	1	1.00	Lower					0	0	0	0				0	0	0	0	0
			1.50	Upper	483				725	0	0	0	405			606	0	0	0	0
			2.50	1st Pro			8,787		0	0	0	0		7,081		0	0	8,787	0	
23	Engl Lang & Lit/Ltr	1	1.00	Lower	22,013	16,587	11,402	6,338	22,013	15,587	11,402	5,338	23,371	16,683	10,889	5,011	23,371	16,683	10,889	5,011
			1.50	Upper	2,723	2,489	5,070	1,398	4,085	3,749	7,806	2,087	2,851	2,418	4,844	1,487	4,277	3,627	7,286	2,631
			3.50	Grad	906	664	913		3,168	2,324	3,186	0	1,022	651	963	3,577	2,279	3,336	0	
24	LA & Sci/Gen Stds & Hum	2	1.30	Lower	883			359		0	0	487	1,128				0	0	280	
			1.90	Upper	181			60		0	0	114	73				0	0	581	
			3.50	Grad						0	0						0	0	0	
25	Library Science	1	1.00	Lower		164			0	164	0	0		266		0	266	0	0	
			1.50	Upper	59	180			89	240	0	0	119	42		179	63	0	0	
			3.50	Grad	34	30			119	105	0	0	18	0		63	0	0	0	
28	Biol Sci/Life Sci	3	1.60	Lower	12,062	11,673	8,700	1,879	19,299		10,726	3,008	12,037	11,236	8,134	1,682	19,259		9,814	2,531
			2.50	Upper	2,947	9,624	3,643	823	7,585		9,108	2,068	2,787	10,315	3,058	794	6,988		9,895	1,985
			6.00	Grad	582	1,781	1,899		3,372		11,934	0	529	1,886	1,502	3,174		9,012	0	

Code	Discipline	Grp	Wght	Level	FY98 Credit Hours-Resident Only, Excluding Cr Hrs								FY97 Credit Hours-Resident Only, Excluding Contr Cr Hrs									
					Actual Resident Credit Hours				Weighted Resident Credit Hours				Actual Resident Credit Hours				Weighted Resident Credit Hours					
					BSU	ISU	UofI	LCSC	BSU	ISU	UofI	LCSC	BSU	ISU	UofI	LCSC	BSU	ISU	UofI	LCSC		
27	Mathematica	1	1.00	Lower	19,187	17,132	15,918	3,030	19,187	17,132	15,918	3,030	18,913	16,846	16,183	2,725	18,913	16,846	15,183	2,725		
			1.50	Upper	1,167	762	3,217	67	1,781	1,143	4,826	101	1,340	581	3,574	213	2,010	872	5,381	320		
			3.50	Grad	7	398	877		25	1,386	2,370	0	0	402	689	0	0	1,407	2,342	0		
29	Military Tech	1	1.00	Lower	165		690	28	165	0	690	28	185		697	38	185	0	697	38		
			1.50	Upper	174		535	24	281	0	803	38	256		513	14	383	0	770	21		
30	Multi/Intendis Studies	2	1.30	Lower	1,443	2,818	1,043	1,130		3,401	1,356		43	513	1,075	973		567	1,398			
			1.90	Upper	150	43	34	840		82	65		101	51	44	793		87	64			
			3.50	Grad	30	207	143			725	501		0	181	128			634	448			
31	Parks, Rec, Lels & Fit	1	1.00	Lower	3,192	1,008	4,399		3,192	1,608	4,399	0	3,188	3,776	4,125		3,168	3,776	4,125	0		
			1.50	Upper	88		1,090		129	0	1,635	0	79		1,346		119	0	2,218	0		
			3.50	Grad			195		0	0	683	0			230		0	0	806	0		
38	Philosophy & Religion	1	1.00	Lower	3,909	8,805	2,805	288	3,909	8,805	2,805	288	3,915	8,122	3,095	248	3,915	8,122	3,095	248		
			1.50	Upper	323	253	702	6	485	360	1,053	9	462	238	880		693	357	1,290	0		
			3.50	Grad	3	81			11	284	0	0	0	48		0	0	168	0	0		
40	Physical Sciences	3	1.60	Lower	13,973	13,012	13,060	2,228	22,357	21,880		3,585	13,582	12,318	12,837	1,877	21,731	20,694		3,003		
			2.50	Upper	2,149	2,889	2,895	181	5,373	7,584		453	2,085	2,748	2,504	423	5,213	7,214		1,058		
			6.00	Grad	393	854	2,478		1,998	5,380		0	348	878	2,270		2,088	5,531		0		
42	Psychology	1	1.00	Lower	10,203	6,799	3,536	2,702	10,203	5,799	3,536	2,702	10,453	5,280	3,131	2,669	10,453	5,280	3,131	2,669		
			1.50	Upper	3,884	2,309	4,356	2,813	5,828	3,464	8,534	4,220	4,028	2,395	4,401	3,312	6,032	3,503	8,802	4,988		
			3.50	Grad	3	281	838		11	964	2,933	0	9	438	601		32	1,528	2,804	0		
43	Protective Services	2	1.30	Lower	2,216	23	351	728		30	456	944	2,858	25	342	829		31	445	1,078		
			1.90	Upper	2,148		822	608		0	1,562	1,165	2,098		944	647		0	1,604	1,229		
			3.50	Grad	4		3			0	11	0	3		15		0	53	0			
44	Pub Admin & Service	2	1.30	Lower	1,010	687	19	315		893	25	410	880	600		237		780	0	308		
			1.90	Upper	1,674	2,085	178	990		3,982	334	1,898	1,489	2,313		1,995		4,395	0	3,031		
			3.50	Grad	1,601					0	0	0	1,482				0	0	0	0		
46	Soc Sci & History	1	1.00	Lower	30,274	23,891	18,225	5,219		23,691	16,225	5,219	31,163	23,918	17,324	4,757	31,163	23,918	17,324	4,757		
			1.50	Upper	11,148	5,825	8,349	2,600		8,438	12,524	3,900	10,877	5,727	8,707	2,488		8,591	13,061	3,732		
			3.50	Grad	994	1,503	1,512			5,291	5,282	0	660	1,563	1,262			5,438	4,417	0		
48	Construction Trades	1	1.00	Lower	218				218				231				231					
			1.50	Upper	571				857				514				771					
			3.50	Grad																		
50	Visual and Perf Arts	3	1.60	Lower	12,449	7,746	11,070	2,158	19,018	12,394	17,712	3,450	12,058	8,156	10,951	2,209	9,293	13,054	17,522	3,534		
			2.50	Upper	3,612	1,253	3,429	583	9,030	3,133	8,573	1,408	3,792	1,437	4,191	684	9,480	3,503	10,478	1,735		
			6.00	Grad	178	375	845		1,058	2,258	5,070	0	313	327	473		1,378	3,622	4,000	0		
50	Visual and Perf Arts Emphases for BSU	3	1.60	Lower	10,311					0	0	0	11,831				0	0	0			
			2.50	Upper	1,889					0	0	0	2,112				0	0	0			
			6.00	Grad	503					0	0	0	717				0	0	0			
51	Hlth Prof & Rel Sci	4	3.00	Lower	8,120	1,988		1,812	24,360		0	4,838	7,897	2,131		714	23,691		0	2,142		
			3.50	Upper	6,478	11,868		1,218	22,673		0	4,258	8,513	12,124		1,882	22,798		0	5,887		
			6.50	Grad	484	10,019			3,146		0	0	442	10,455			2,873		0	0		
52	Bus Mgmt & Admin Serv	2	1.30	Lower	9,965	4,839	3,453	989		8,291	4,489	1,288	8,417	4,710	3,508	984		8,123	4,560	1,279		
			1.90	Upper	18,198	7,371	10,286	4,375		14,005	19,543	8,313	18,880	7,744	10,147	3,693		14,714	19,279	7,017		
			3.50	Grad	2,972	1,077	91			3,770	319	0	2,848	1,092	115			3,822	403	0		
			Remedial	4,713	7,729	507	1,298		4,713	7,729	507	1,298		4,686	7,115	477	1,184		4,686	7,115	477	1,184
Total EWA Credit Hours					Lower/Remed	199,212	148,328	121,454	34,802	269,271	188,820	163,808	44,732	200,359	150,783	121,043	31,327	269,431	191,726	163,384	39,242	
					Upper	81,458	70,054	94,118	28,022	168,968	163,445	210,506	50,458	84,410	71,827	95,459	27,017	175,918	168,470	211,152	54,218	
					Grad	25,425	34,425	26,963	0	98,449	187,033	83,283		27,183	37,218	34,886	0	105,504	178,529	157,885		
					1st Prof			8,787			18,529				7,081			18,331				
					Med/Dent			0			0			0			0					
					Total	306,095	252,807	288,310	68,824	636,889	519,148	556,120	68,188	311,932	259,826	258,488	68,944	560,853	538,725	551,732	83,458	

31,75 31,25 31,80 5,37
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State Board of Education

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**State Funding Formulas for
Public Four-year Institutions**

Mary P. McKeown

February 1996

SHEEO STATE HIGHER EDUCATION EXECUTIVE OFFICERS

707 Seventeenth Street, Suite 2700, Denver, Colorado 80202-3427. 303-299-3686

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The State Higher Education Executive Officers is a nonprofit, nationwide association of the chief executive officers serving statewide coordinating boards and governing boards of postsecondary education. Fifty states, the District of Columbia and Puerto Rico are members.

State Funding Formulas for Public Four-year Institutions

The use of state funding formulas or guidelines for public higher education will reach the half-century mark in the 1990s. Despite the long history of use, controversy has surrounded state funding formulas for higher education since their inception. Likely, the only point upon which experts would agree is that there is no perfect formula. In fact, one observer has noted that "formula budgeting, in the abstract, is neither good or bad, but there are good formulas and bad formulas" (Caruthers 1989). Twenty years ago, some experts even were questioning whether formula usage was dead (Moss and Gaither 1976). Like Mark Twain, reports of its death were a little premature. Funding formula usage for public, four-year institutions may not be dead; however, the question remains: have funding formulas for four-year, public colleges and universities fulfilled their promise of identifying an adequate and predictable resource base and distributing those resources equitably?

Originally envisioned as simply a means to distribute public funds in a rational and equitable manner, funding formulas have evolved over time into complicated methodologies for allocating public funds. Although funding formulas provide some rationale and continuity in allocating state funds for higher education, formulas are designed and utilized for many purposes, including measurement of productivity. While the genesis of funding formulas may lie in rational public policy formulation, the outcome may not. Formulas are products of political processes, which implies that formulas result from compromise.

Formulas are used in almost every state in the allocation of state funds to elementary and secondary school districts. The stated public policy goal has been to attain equity in the distribution of funds through improvements in funding formulas. Federal and state courts have

presented many decisions on the equity and adequacy of elementary and secondary funding formulas, and relatively sophisticated analyses of elementary-secondary education funding formulas have been completed.

In contrast, the goal of equality of educational opportunity through equalized funding has not been accepted in higher education, and treatments of higher education formulas are largely descriptive in nature. Issues of student and taxpayer equity are not addressed often in the literature of higher education finance, and certainly are not driving forces in state funding formulas despite the federal government's intervention by litigation in several states (McKeown 1989). All but one of the states against which the Office of Civil Rights has filed suit in higher education are (or were) formula states; some have argued that, in these states, funding formulas may serve to perpetuate past inequities that existed among previously segregated institutions of higher education (McKeown 1986).

The use of funding formulas or guidelines in the resource allocation or budgeting process varies from state to state. In some states, the higher education coordinating or governing board may use formulas as a means of recommending to the legislature and governor the resources for each campus. In other states, the legislative or executive budget offices may use formulas to make their recommendations on funding (McKeown and Layzell 1994). Some states use formulas to determine the allocation of resources to each campus, given available funding. Although this latter use has been defined by some to be the only "true" formula funding, for purposes of this paper, states will be counted as using formulas if a formula or guideline is used at any point in the resource allocation process.

Development of an optimal, or best, formula is complex because there are differences in institutional missions and in the capacities of institutions to perform their missions. These differences do not negate the value of formulas but suggest that formulas can be used to provide

a fiscal base to which (or from which) funding can be added (or subtracted), if justified. Formulas typically are considered to be enrollment driven, since they are based on credit hours, students, or faculty members, which makes it relatively easy to evaluate change. If additional funds are justified, then formulas can provide the basis to target supplemental funding. Because formulas may be enrollment driven, when enrollments are steady or decline, funding may decrease. This aspect of formula use brought formulas under attack in several states when several institutions experienced declines in enrollment.

Debates over formulas because of declining enrollments and over the equitable distribution of resources to public institutions of higher education caused several states to critically examine methods used to recommend or distribute funding to public colleges and universities. When enrollments decline or remain constant, methods are sought that will provide additional resources. Development of new programs and services to meet the varied needs of a changing clientele may require different configurations of resources in addition to different programs. The student of the 21st century likely will have not only different non-instructional needs but also different preferences for instructional programs.

The student in the new century may be taught by alternative instructional delivery methods, which require a shift in the paradigm on funding. The trend in this direction is developing as more and more universities offer courses through telecommunications technology. In December 1995, the Western Governors' Conference announced a joint "virtual university" whose funding (and delivery of courses by telecommunications technology) would be shared by the western states (Bass 1995). Since the primary user states for the virtual university are formula states, funding for this university will require a shift in formulas, at least, and perhaps lead to the development of new methods of funding.

To accomplish the purpose of providing an equitable distribution of available state resources,

a majority of states have used funding formulas in budget development or in resource allocation to public higher education institutions. A formula is a mathematical representation of the amount of resources or expenditures for an institution as a whole or for a program at the institution (Boutwell 1973). Programs in this context refer to those categories into which expenditures are placed, as defined by the National Association of College and University Business Officers (NACUBO): instruction, institutional support, research, operation and maintenance of plant, public service, scholarships and fellowships, academic support, auxiliary enterprises, student services, and hospitals.

Many states provide funding for higher education based on these functional or budget programs, with the exception of auxiliary enterprises, and hospitals. These two areas usually are not funded by the state, and are not included in what are called "educational and general expenditures" (E&G). E&G expenditures are those that result from expenditures for the three basic missions of colleges and universities: instruction, research, and public service. Funding for the remaining categories may be based on formulas in the determination of the total resource allocation to the institution.

In most states, however, total institutional needs are not determined by a formula mechanism. Additions are made to the formula amounts to recognize special needs or special missions. Similarly, given political structures and competition for funds from other state agencies, the amount determined by a formula calculation may be reduced to conform to total funds available.

FORMULA DEVELOPMENT

Formulas have been considered the offspring of necessity (Gross 1979). The development of an objective, systematic method of dealing with the funding of many diverse institutions that served differing constituencies prompted many states to investigate and subsequently to begin using formulas (Miller 1964). Prior to 1946, institutions of higher education served a limited and fairly homogenous clientele. After World War II, enrollments jumped and each state had a variety of liberal arts colleges, land-grant colleges, teacher training colleges, and technical schools to meet the needs of its citizens.

As the scope and mission of the campuses increased and changed (i.e., teachers colleges becoming regional universities), so did the complexity of distributing resources equitably among competing campuses. Unfortunately, state resources did not keep pace with expanding enrollments and the competition for state funds became greater. Because no two campuses are ever alike, methods were sought to allocate available funds in an objective manner, to provide sufficient justification for additional resources to satisfy state legislators, and to facilitate inter-institutional comparisons.

The desire for equity was a prime factor in the development of funding formulas, but other factors served as catalysts: the desire to determine an "adequate" level of funding; institutional needs to gain stability and predictability in funding levels; and increased professionalism among college and university business officers (Miller 1964). The objective of equity in the distribution of state resources is to provide state appropriations to each campus according to its needs. To achieve an equitable distribution of funds required a distribution formula that recognized differences in size, clients, location, and the mission of the college (Millett 1974).

The concept of "adequacy" is more difficult to operationalize in the distribution of resources. What might be considered adequate for the basic operation of one campus would be considered inadequate for a campus offering similar programs but having a different client base. Indeed, the concept of adequacy has created operational problems in the distribution of funds to elementary and secondary education, where the definition of "need" is much more refined.

Texas was the first state to use funding formulas for higher education. By 1950 California, Indiana and Oklahoma also used funding formulas or cost analysis procedures in the budgeting or resource allocations process (Gross 1979). In 1964 sixteen states — Alabama, California, Colorado, Florida, Georgia, Indiana, Kentucky, Mississippi, New Mexico, New York, North Carolina, Ohio, Oregon, Tennessee, Washington, and Wisconsin — were identified as using formulas at some point in the allocation process (Miller 1964). By 1973 the number had increased to 25 states (Gross 1973), and increased to 33 by 1992 (McKeown and Layzell 1994).

Formulas evolved over a long period of time and contributed to a series of compromises between institutions, state coordinating agencies, and state budget officials. For example, institutions sought autonomy, while state coordinating or governing boards and budget officials sought adequate information to enable control over resources. Formula development involves tradeoffs and compromises between accountability and autonomy.

The trend in formula development in many states involves refinement of procedures, greater detail and reliability in the collection and analysis of information, and improvement in the differentiation between programs and activities. Some states appear to have used different methods to develop formulas. For example, Alabama adapted the formulas used by Texas to the particular circumstances of Alabama, and continues to modify the formulas to reflect circumstances specific to Alabama, and to incorporate judicial interventions. Adaptation rather than development of a new formula appears to be the preferred method because of the time and

cost required to do a good cost study. Accounting procedures are not refined enough in some states to permit the calculation of costs differentiated by academic discipline and level of student, and to separate professorial time into the multiple work products generated by carrying out the university's three main missions: teaching, research, and service. States continue to adapt formulas from other states because methods that work in one state may work equally well in another at considerable savings of time and resources.

Many formulas have been based on simple least-squares regression analysis or the determination of an "average cost" for providing a particular type of service. Others have been based on staffing ratios and external determinations of "standard costs." The key to the process seems to be the isolation or identification of variables or factors that are directly related to actual program costs (Anderes 1985b). Isolation of variables that are detailed, reliable, not susceptible to manipulation by a campus, and sufficiently differentiated to recognize differences in role and missions requires collection of myriad amounts of data. Data must be collected and analyzed in an unbiased manner that does not raise questions of preferential treatment for one campus or sector. For this reason, statewide boards or other state agencies have been given responsibility for formula development.

For a formula to be effective, several criteria should be met (Miller 1964):

1. Formula development should be flexible.
2. Formulas should be used for budget development, not budget control.
3. Formulas should be related to quantifiable factors.
4. Data should be consistent among institutions.
5. Normative data should reflect local and national trends.
6. The formula should be useful to institutions, boards, other state agencies, and the legislature.

Formula Advantages and Disadvantages

States use funding formulas for a variety of reasons, including these advantages among the reasons for use:

1. Formulas provide an objective method to determine institutional needs equitably.
2. Formulas reduce political competition and lobbying by the institutions.
3. Formulas provide state officials with a reasonably simple and understandable basis for measuring expenditures and revenue needs of campuses, and determining the adequacy of support.
4. Formulas enable institutions to project needs on a timely basis.
5. Formulas represent a reasonable compromise between public accountability and institutional autonomy (Millett 1974).
6. Formulas ease comparisons between institutions.
7. Formulas permit policymakers to focus on basic policy questions.
8. Formulas promote efficiency in institutional operation.

State funding formulas also can provide for equity among institutions depending on how the formulas are constructed. Two types of equity achieved through formula use are horizontal equity and vertical equity. Horizontal equity is defined as the equal treatment of equals while vertical equity is defined as the unequal treatment of unequals. An example of an horizontal equity element is a formula that provides a fixed dollar amount for one credit hour of lower division English instruction, no matter where the class is taught. Texas and Alabama use this type of element in their instruction funding formulas. An example of a vertical equity element in a formula would be the allowance of \$2.80 per gross square foot (GSF) of space for maintenance of a frame building, but \$3.20 per GSF for maintenance of a brick building.

On the other hand, formulas do have shortcomings, and there have been many heated debates over whether the advantages of formulas outweigh the down side of use. Some disadvantages of funding formulas are the following:

1. Formulas may be used to reduce all academic programs to a common level of mediocrity by funding each one the same. since quantitative measures can not assess the quality of a program.
2. Formulas may reduce incentives for institutions to seek outside funding.
3. Formulas may perpetuate inequities in funding that existed before the advent of the formula since formulas may rely on historical cost data (Millett 1974).
4. Enrollment driven formulas may be inadequate to meet the needs of changing client bases or new program initiatives (Halstead 1974).
5. Formulas cannot serve as substitutes for public policy decisions (Miller 1964).
6. Formulas are only as accurate as the data on which the formula is based.
7. Formulas may not provide adequate differentiation among institutions.
8. Formulas are linear in nature and may not account for sudden shifts in enrollments and costs (Boutwell 1973).

Formula Approaches

Formulas reflect one of two computational approaches: the all-inclusive approach, where the total entitlement or allocation for the program area is determined by one calculation; and the itemized approach, where more than one calculation or formula is used in each budget area. Most states use the latter.

Computational Methods

Three computational methods have been identified under which every formula calculation can be classified: (1) rate per base factor unit (RPBF); (2) percentage of base factor (PBF); and (3) base factor-position ratio with salary rates (BF - PR/SR) (Moss and Gaither 1976). The rate per base factor method starts with an estimate of a given base, such as credit hours or full-time equivalent students (FTES), and then multiplies that base by a specific unit rate. Unit rates generally have been determined previously by cost studies, and can be differentiated by discipline, level, and type of institution.

PBF assumes that there is a specific relationship between a certain base factor like faculty salaries and other areas like departmental support services. The PBF method can be differentiated by applying a varying percent to levels of instruction or type of institution (Miller 1964), but this is unusual. Reportedly, PBF was developed because of the perception that all support services are related to instruction, the primary mission of a college or university (Boling 1961).

BF-PR/SR is based on a predetermined optimum ratio between a base factor and the number of personnel; for example, ratios such as student/faculty and credit hours per faculty member are used. The resulting number of faculty positions determined at each salary level then is multiplied by the salary rate for that level, and the amounts totaled to give a total budget requirement. BF-PR/SR also is used commonly in plant maintenance, and is the most complex of the computational methods.

Base Factors

Base factors used in most formulas can be classified into five categories: (1) head count; (2) number of positions; (3) square footage or acreage; (4) FTES; and (5) credit hours. Square footage or acreage is used most often in operation and maintenance of plant, while credit hours,

FTES, or positions are the most prevalent bases in the instruction, academic support, and institutional support areas. Head count is used as the base unit in student services and scholarships and fellowships.

Differentiation

Formulas may differentiate among academic disciplines (such as education, sciences, and architecture), levels of enrollment (freshman and sophomore (called lower division), junior and senior (called upper division), masters, and doctoral), and types of institutions (community colleges, baccalaureate institutions, and research universities). Recently, some states like Kentucky and Alabama have introduced differentiation for historically black institutions as an institutional type.

States found it necessary to introduce factors that differentiate among institutions in funding formulas because each institution, if examined closely enough, is different and has a different mission and mix of program offerings. Differentiation is used to recognize that there are legitimate reasons for costs to vary, including economies and diseconomies of scale, method of instruction, and class size. Differentiation became more prevalent and more complex as accounting and costing methods improved and reliable cost data became available.

Differentiation is especially commonplace in formulas used to calculate funding requirements for the instruction program area. All of the states using formulas for instruction differentiate by discipline, institutional type, or level of enrollment. Only a few formulas in other budget areas differentiate by these three types of factor.

FORMULA USE BY THE STATES

In 1996, 30 states report¹ that they are using funding formulas in the budget or resource allocation process for four-year public institutions. Twenty states indicate that they are in the process of revising current formulas or adopting new formulas. The number of states employing formulas changes from year to year, since states continually adopt, modify, and drop formulas and since what one person may consider a formula may be called by another name by another person (Meisinger 1976). For example, Louisiana typically is identified as a formula state although the person responding to the survey used to collect data for this chapter indicated Louisiana was not using formulas in 1996. States identified as using funding formulas, peers, or quality/outcome measures for four-year public higher education institutions in 1996 are listed in Table 1 and shown in Figure 1.

Although all the southern states except North Carolina have used funding formulas over the past twenty years, and have been leaders in formula development and innovation, that picture has changed somewhat since 1992. Virginia and Arkansas completely dropped the use of formulas in the resource allocation or budgeting process, and most of the other southern states have modified their formulas since 1992. Of the 13 western states, all except Washington, Hawaii, Wyoming and Alaska used formulas, while eight of the thirteen midwestern states and two of the ten northeastern states used formulas. California has a formula, but has suspended distribution of resources during the current budgetary crisis.

¹ Data were obtained from a survey of each state's SHEEO agency.

Table 1
Comparison of Funding Formula Usage
Among the States, 1984, 1992, and 1996

State	Using Funding Formulas			Using Peers			Using Quality Outcome Factors		
	1984	1992	1996	1984	1992	1996	1984	1992	1996
Alabama	X	X	X		X	X			
Alaska		X							
Arizona	X	X	X		X	X			X
Arkansas	X	X			X	X			X
California	X	X	X		X	X			
Colorado	X	X	X						
Connecticut	X	X	X			X	X		X
Delaware									
Florida	X	X	X		X	X	X		X
Georgia	X	X	X			X	X		
Hawaii						X	X		
Idaho		X	X			X	X		
Illinois	X	X	X	X	X	X			X
Indiana					X	X			
Iowa					X	X			
Kansas	X	X	X		X	X			
Kentucky	X	X	X	X	X	X	X	X	
Louisiana	X	X	X		X	X	X		
Maine						X			X
Maryland	X	X	X				X		
Massachusetts	X							X	
Michigan	X								
Minnesota	X	X	X				X		X
Mississippi	X	X	X		X	X		X	X
Missouri	X	X	X		X		X	X	X
Montana	X	X	X		X	X			
Nebraska					X	X			
Nevada	X	X	X			X	X		
New Hampshire									
New Jersey	X						X	X	
New Mexico	X	X	X			X			
New York	X								
North Carolina					X	X		X	
North Dakota	X	X	X		X	X		X	
Ohio	X	X	X				X	X	X
Oklahoma	X	X	X		X	X			
Oregon	X	X	X		X	X			
Pennsylvania	X		X						
Rhode Island					X	X			X
South Carolina	X	X	X		X	X			
South Dakota	X	X	X						
Tennessee	X	X	X		X	X	X	X	X
Texas	X	X	X		X	X			
Utah		X	X		X	X			
Vermont						X			X
Virginia	X	X			X	X	X	X	X
Washington	X			X	X	X	X		
West Virginia	X	X	X		X	X			
Wisconsin	X				X	X			
Wyoming					X	X			
N	36	32	30	3	28	38	15	10	14

Among the states there is some variety in the type and number of formulas and in the functional or budget areas for which formulas are used. The number of formulas used by the states in each of eight NACUBO functional areas is displayed in Table 2. Of the 30 states identified as using formulas, only Kentucky, Maryland, and Mississippi have at least one formula in each functional area, but twelve states had at least six formulas and Kansas, Idaho, and Arizona have only one basic formula.

Of the states using formulas, twenty-two have only one formula for instruction, while Oregon has four, one of each of the cost areas related to instruction. The majority of states applied formulas to all institutions but differentiate among types. Texas uses 13 formulas to compute budget requirements for E&G expenditures and South Carolina uses twelve. In thirteen of the states, more than one computational formula is used to determine academic support needs. Since most states have a separate formula for determining library needs, the academic support area (which includes libraries, academic computing support, and academic administration) usually will have expenditure needs computed by more than one formula. Academic support is an area for which the itemized approach generally is used.

These data reflect a watershed change in the use of funding formulas that will be discussed in more detail later. Briefly, it appears that states are beginning to eliminate the use of formulas and substitute productivity or accountability methods to determine resource allocations. Other states that previously had used formulas now use incremental budgeting with base budgets that were computed by formula in prior years; this method implies a formula base. These are major shifts apparently away from equity and adequacy goals toward goals of accountability and efficiency.

Table 2

**NUMBER OF FORMULAS USED BY THE
STATES IN 1996 BY FUNCTIONAL AREA**

State	Instruction	Research	Public Service	Academic Support	Student Services	Institutional Support	Scholar & Fellowship	Plant Operations
Alabama	1	1	1	2	1	1		1
Arizona	.	.	.	.	.	.		.
California	.	.	.	.	.	.		.
Colorado #	.	.	.	.	.	.		.
Connecticut	1			3				5
Florida	2	.	.	3	1	1		3
Georgia	1	.	.	1	.	.		1
Idaho	.	.	.	.	.	.		.
Illinois	.	.	.	.	.	.		.
Kansas	.	.	.	.	.	.		.
Kentucky	1	1	1	5	1	1	1	1
Louisiana	.	.	.	.	.	.		.
Maryland	1	1	1	2	1	1	1	3
Minnesota	.	.	.	.	.	.		.
Mississippi	2	1	1	2	1	1	1	1
Missouri	1	.	.	2	1	1		1
Montana	2	.	.	.	.	.	1	.
Nevada	2			2	1	1		2
New Mexico	1			1	1	1		1
North Dakota	1			2	.	.		2
Ohio	.	.	.	.	.	.		1
Oklahoma	.	.	.	.	.	.		.
Oregon	.	.	.	.	.	.		.
Oklahoma	.	.	.	6	1	3		5
Oregon	4	.	.	.	.	.		1
Pennsylv.	.	.	.	.	.	.		.
South Carolina		1	1	2	1	1		5
South Dakota	1			.	.	.		.
Tennessee	.	.	.	.	.	.		.
Tennessee	1		1	2	1	1		1
Texas	2	1		2	2	1		5
Utah	.	.	.	.	.	.		.
Utah	.	.	.	.	.	.		.
West Virginia	.	1		.	.	.		.

* or ** indicates more than one functional area combined in one formula.

Colorado distributes by formula funding for productivity, enrollment increases, and adult literacy. These formulas do not correspond to functional area analysis.

Instruction Formulas

This category includes all expenditures for credit and non-credit courses; for academic, vocational, technical, and remedial instruction; and for regular, special, and extension sessions. Excluded are expenditures for academic administration when the primary assignment is administration (such as deans) (NACUBO 1988). Instruction is the most complex, and most expensive, component of an institution's expenditures. Because of its importance, identification of appropriate cost factors is critical to the validity of the formula development process. Summary information on the instruction formulas used by the states is displayed in Table 3.

State	Calculation Method			Approach		Base			Differentiation			Costs	
	RPBF	PBF	BF PR/SR	All Inclusive	Item- ized	Credit Hours	Head Count	FTES/ FTEF	Disci- pline	Type of Level	Type of Inst.	Fixed	Van- able
Alabama	X				X	X			X	X			X
Arizona*			X		X	X		X		X			X
California*			X		X	X		X	X	X	X		X
Connecticut			X		X	X		X	X	X	X		X
Florida	X		X		X	X		X	X	X	X		X
Georgia					X	X		X		X			X
Idaho*	X			X		X			X	X	X		X
Illinois*			X		X	X			X	X	X		X
Kansas*	X				X	X				X	X	X	X
Kentucky	X				X	X			X	X	X		X
Louisiana*	X				X	X			X	X	X		X
Maryland	X				X	X			X	X	X		X
Minnesota*	X				X	X			X	X	X		X
Mississippi		X	X		X	X			X	X	X		X
Missouri	X				X	X			X	X			X
Montana	X				X	X		X	X	X			X
Nevada			X		X	X		X		X			X
New Mexico	X		X		X	X			X	X	X		X
North Dakota	X		X		X	X			X	X	X		X
Ohio*	X				X	X		X	X	X		X	X
Oklahoma*	X				X	X		X	X	X		X	X
Oregon		X	X		X	X			X	X	X		X
Pennsylvania*			X		X	X		X		X		X	X
South Carolina			X		X	X		X	X	X		X	X
South Dakota*			X		X	X		X	X				X
Tennessee			X		X	X		X	X	X			X
Texas	X				X	X			X	X	X	X	X
Utah*			X		X	X			X	X	X		X
West Virginia*	X				X			X		X			X

*Indicates more than one functional area included in this formula

Since the instruction program is the major component of expenditures at institutions of higher education, formulas for this activity are quite complex. Each state using formulas explicitly or implicitly utilizes at least one formula for instruction. Each state provides differential funding for activities within the instruction program to recognize differences in costs by level of instruction and among academic disciplines. Over time, formulas for instruction have become more complex in part because improvements in cost accounting procedures have resulted in more accurate data.

States use both the all-inclusive approach and the itemized approach in the instruction area, but the majority use the itemized. In the formula(s) for instruction, most states recognize differences in institutional roles and missions, in the mix of classes by level and by academic discipline, and in teaching method; that is, all the states using instruction formulas differentiate. Explicitly, the states have attempted to distribute in an equitable manner state funds for the instructional operations of public institutions within the state by recognizing the equality of class credit hours by discipline and level and the differences in institutional roles and missions.

Since the formula allocations provide varying amounts based on enrollments by level and discipline, each institution in the state may receive differing amounts for instruction and different amounts per student from the formulas. Moreover, the recognition of the differences promotes achievement of vertical equity (i.e., the unequal treatment of unequals).

An example of a simplified formula for instruction follows. Student/faculty ratios by level by discipline vary in the formula.

Instruction funding = the sum of (the number of faculty positions per discipline times the average faculty salary for that discipline), where the number of faculty positions is determined by student/faculty ratios and the number of FTE students is determined by credit hours by level.

Research Formulas

This category includes expenditures for activities designed to produce research outcomes (NACUBO 1988). Explicitly, or implicitly by inclusion with at least one other functional area, 17 states have a formula that provides funds for the research budget area (Table 4).

State	Calculation Method			Approach		Base			Differentiation			Costs	
	RPBF	PBF	BF PR/SR	All Inclusive	Item- ized	Credit Hours	Spons Resear	FTEs/ FTEF	Disci- pline	Type of Level	Type of Inst.	Fixed	Van- able
Alabama		X		X		X			X	X			X
California*			X		X	X			X	X	X	X	X
Florida*			X		X	X			X	X	X	X	X
Georgia			X		X	X		X	X	X		X	X
Kansas*	X				X	X				X	X	X	X
Kentucky		X		X			X					X	X
Louisiana	X				X	X			X	X	X		X
Maryland		X			X	X			X	X	X		X
Mississippi	X				X			X	X				X
Montana*	X		X		X	X		X	X	X			X
Oklahoma*	X				X	X		X	X	X	X		X
Oregon		X		X				X		X			X
Pennsylvania*			X		X	X		X		X		X	X
South Carolina		X		X			X					X	X
South Dakota*			X		X	X		X	X	X			X
Texas	X				X			X					X
West Virginia	X			X				X					X

*indicates more than one functional area included in this formula

Florida's formula is complex and involves computations related to the magnitude of research activities engaged in at each institution. The number of research positions is calculated based on a ratio by specific department and is then multiplied by a specified salary rate. Kentucky uses a formula that calculates a level of support that recognizes differing roles and missions in research among institutions. A sample research formula is shown as follows:

Research amount = 5% of outside funding for research

South Carolina allocates 25 percent of the prior year sponsored and non-general fund

research expenditures. Texas provides an amount equal to the number of full-time equivalent faculty times a dollar amount. Alabama's budget formula for research provides two percent of instruction and academic support allocations, plus five percent of sponsored research dollars expended in the last year for which data were available.

Most of these formulas incorporate horizontal and/or vertical equity features. Features that provide a set amount per position (Texas) or matching funds for each dollar of sponsored research (Alabama and South Carolina) provide horizontal equity, or the equal treatment of equals. Formulas that provide research support based on institutional type like Kentucky's or Oklahoma's meet the goal of providing vertical equity.

Public Service Formulas

This category includes funds expended for activities that primarily provide noninstructional services to individuals and groups external to the institution (NACUBO 1988). Alabama, Kentucky, Maryland, Mississippi, Tennessee, and South Carolina are the only states that use an explicit formula approach for the funding of public service activities (Table 5). In Florida public service positions are generated based on ratios specific to disciplines, and then multiplied by a salary amount per position. South Carolina provides 25 percent of prior year sponsored and non-general fund public service expenditures, while Alabama's funding formula is two percent of the combined allocations for instruction and academic support. A sample of a public service formula is shown below.

$$\text{Public service allocation} = .02 (\text{instruction} + \text{academic support})$$

**Table 5
Public Service Formulas**

State	Calculation Method			Approach		Base			Differentiation			Costs	
	RPBF	PBF	BF PR/SR	All Inclusive	Item- ized	Credit Hours	Expend Mission	FTES/ FTEF	Disci- pline	Level	Type of Inst.	Fixed	Var- iable
Alabama		X		X		X			X	X			X
California*			X		X	X			X	X	X	X	X
Florida*			X		X	X			X	X	X	X	X
Kansas*	X				X	X				X	X	X	X
Kentucky	X				X	X			X	X	X	X	X
Maryland		X			X	X			X	X	X		X
Mississippi	X			X			X			X	X		X
Montana*	X		X		X	X		X	X	X			X
Oklahoma*	X				X	X		X	X	X	X		X
Pennsylvania*			X		X	X		X		X			X
South Carolina		X		X			X						X
Tennessee		X			X	X		X	X	X	X	X	X

*Indicates more than one functional area included in this formula

Academic Support Formulas

Table 6 displays summary information on the academic support formulas used by the states. The category academic support includes funds expended to provide support services for the institution's primary missions of instruction, research, and public service. The area includes expenditures for libraries, museums, and galleries; demonstration schools; media and technology, including computing support; academic administration including deans; and separately budgeted course and curriculum development (NACUBO 1988). However, costs associated with the office of the chief academic officer of the campus are included in the institutional support category.

To fund the library component of the academic support category, Alabama, Connecticut, Florida, Georgia, Kentucky, Maryland, Mississippi, Missouri, Nevada, Oregon, South Carolina, Tennessee, and Texas have at least one formula. Texas allocates an amount per credit hour differentiated by level of instruction.

Table 6
Academic Support Formulas

State	Calculation Method			Approach		Base			Differentiation			Costs	
	RPBF	PBF	BF PA/SA	All Inclusive	Item- ized	Credit Hours	Head Count	FTEF/ FTEF	Disci- pline	Level	Type of Inst.	Fixed	Var- iable
Alabama	X	X			X	X			X	X			X
Arizona*			X		X	X		X		X			X
California*			X		X	X			X	X	X	X	X
Connecticut	X		X		X	X	b	X		b	X	X	X
Florida	X		X		X	X	X	X	X	X	X		X
Georgia*		X			X	X			X	X			X
Kansas*	X				X	X				X	X	X	X
Kentucky	X	X			X	X	X			X	X	X	X
Louisiana*	X				X	X			X	X	X		X
Maryland	X	X			X						X		X
Minnesota*	X				X			X	X	X	X		X
Mississippi		X			X	X		X	X	X	X		X
Missouri	X				X	X			X	X			X
Montana*	X			X									X
Nevada	X	X			X	X		X		X		X	X
New Mexico	X	X			X	X				t	X		X
North Dakota	X				X			X		X			X
Ohio	X				X	X		X	X	X	X	X	X
Oklahoma*	X				X	X		X	X	X	X		X
Oregon	X	X			X	X	b	X	X	t	X	X	X
Pennsylvania*	X				X	X		X				X	X
South Carolina		X			X	X			X	X			X
South Dakota*			X		X	X		X	X				X
Tennessee	X	X			X	X		X			X		X
Texas	X				X	X				X		X	X
Utah*	X		X		X	X			X	X	X		X
West Virginia*	X				X			X			X		X

* indicates more than one functional area included in this formula
b indicates the state uses the Association of College Research Libraries formula

Standards on the size of library collections, number of support personnel, and other factors have been developed by the American Library Association (ALA) and the Association of College Research Libraries (ACRL). Formulas to apply these standards, like the Voight formula and the Clapp-Jordan formula, have been developed so that institutions may determine if their library holdings meet the minimum requirements established by professional librarians. Only three states use a library formula that would permit meeting the ACRL criteria; however, no formula or standard currently in use accounts for the changes in resource requirements necessitated by

increasing use of technology. In fact, the ALA and ACRL standards on size of collection do not consider the use of the "virtual library" found on the Internet where the text of some "books" may be accessed on the computer networks. These technological changes in media availability certainly will have profound impacts on funding of libraries, but such changes have not yet been reflected in funding formulas. An example of an academic support formula is shown below.

$$\text{Academic support funding} = .05 (\text{instruction funding})$$

Florida, Kentucky, Missouri, South Carolina, and Texas each have at least one formula for other components of the academic support category. South Carolina calculates an amount based on a percentage of instructional costs. Since the instructional cost allocation includes vertical equity components, academic support calculations based on instruction implicitly also include vertical equity components to provide an unequal amount for unequals.

Student Services Formulas

This expenditure category includes funds expended to contribute to a student's emotional and physical well-being and intellectual, social and cultural development outside of the formal instruction process. This category includes expenditures for student activities, student organizations, counseling, the registrar's and admissions offices, and student financial aid administration (NACUBO 1988). (See Table 7.)

**Table 7
Student Services Formulas**

State	Calculation Method			Approach		Base			Differentiation			Costs	
	RPBF	PBF	BF PR/SR	All Inclusive	Item- ized	Credit Hours	Head Count	FTEs/ FTEF	Disci- pline	Type of Level	Type of Inst	Fixed	Var- iable
Alabama	X				X		X					X	X
Arizona*			X		X	X		X		X			X
Florida	X				X		X	X		X	X		X
Georgia*		X			X	X			X	X	X		X
Kansas*	X				X	X				X	X	X	X
Kentucky	X				X		X				X	X	X
Louisiana*	X				X	X			X	X	X		X
Maryland	X			X									X
Minnesota*	X				X			X	X	X			X
Mississippi	X				X	X		X				X	X
Missouri	X				X	X			X	X			X
Montana*	X		X		X	X		X	X	X			X
Nevada			X		X		X	X			X	X	X
New Mexico			X		X		X					X	X
North Dakota*	X				X		X			X		X	X
Ohio*	X				X	X		X	X	X		X	X
Oklahoma*	X				X	X		X	X	X	X		X
Oregon	X				X		X					X	X
Pennsylvania*	X				X	X		X				X	X
South Carolina	X				X	X	X					X	X
South Dakota*			X		X	X		X	X	X			X
Tennessee	X				X	X	X	X	X	X	X		X
Texas	X				X		X					X	X
Utah*			X		X	X			X	X	X		X
West Virginia*	X				X			X		X			X

* indicates more than one functional area included in this formula

The student services formulas used by Alabama, Kentucky, South Carolina, and Texas provide a different amount per head count or FTES. As the size of the institution increases, the rate per student decreases to recognize economies of scale. The formula implicitly does this by adding an amount per weighted credit hour to a base. Such a calculation inherently recognizes economies of scale. Each of these formulas attempts to provide vertical equity in the distribution of resources by allocating unequal amounts to institutions of unequal size. A sample student services formula follows.

Student services funding = \$395 per student for the first 4,000 headcount + \$295 per student for the next 4,000 headcount + \$265 per student for all students over 8,000 headcount.

Institutional Support Formulas

This category includes expenditures for the central executive level management of a campus, fiscal operations, administrative data processing, employee personnel services, and support services (NACUBO 1988). Table 8 displays information on the institutional support formulas used by the states. Alabama, Mississippi, South Carolina, and Tennessee multiply a specified percentage by all other E&G expenditures to calculate institutional support needs. Kentucky includes some differentiation and a base amount to recognize economies of scale and complexity of operation. Texas multiplies a specified rate by a measure of enrollment to determine institutional support amounts. All of these methods achieve vertical equity given that unequals are treated unequally. An example of an institutional support formula is shown below.

$$\text{Institutional support} = \text{base amount} + \$150 \text{ per headcount student}$$

Scholarships and Fellowships Formulas

This category encompasses all expenditures for scholarships and fellowships, including prizes, awards, federal grants, tuition and fee waivers, and other aid awarded to students for which services to the institution are not required (NACUBO 1988). Only Kentucky, Maryland, Mississippi, Montana, and Oklahoma calculate an allocation for scholarships and fellowships (Table 9). In each case except Oklahoma, which calculates the amount as a dollar value times the number of FTES, the formula amount is equal to a percent of tuition revenues. These approaches all provide horizontal equity but fail to provide vertical equity in that neither the cost to the student, nor the institution nor the student's ability to pay, are considered in the formula.

**Table 8
Institutional Support Formulas**

State	Calculation Method			Approach		Base			Differentiation			Costs	
	RPBF	PBF	BF PR/SR	All Inclusive	Item-ized	Credit Hours	Head Count	FTEs/ Others FTEF	Disci-pline	Type of Level	Inst.	Fixed	Var-iable
Alabama		X		X		X			X	X			X
Arizona*			X		X	X		X		X			X
California*			X		X	X		X		X	X		X
Florida		X			X	X						X	X
Georgia*		X		X		X				X	X		X
Kansas*	X				X	X				X	X	X	X
Kentucky		X			X	X	X			X	X	X	X
Louisiana*	X				X	X				X	X		X
Maryland	X				X			X					X
Minnesota*	X				X			X		X	X		X
Mississippi		X			X	X				X	X		X
Missouri	X				X	X				X	X		X
Montana*	X			X									X
Nevada		X		X				X				X	X
New Mexico		X	X		X			X				X	X
North Dakota*	X			X			X					X	X
Ohio*	X				X	X		X		X	X	X	X
Oklahoma*	X				X	X		X	X	X	X		X
Oregon	X	X			X		X					X	X
Pennsylvania*	X				X	X		X				X	X
South Carolina		X		X		X		X		X	X	X	X
South Dakota*			X		X	X		X		X	X		X
Tennessee	X	X		X				X				X	X
Texas	X				X		X	X				X	X
Utah*			X		X	X				X	X		X
West Virginia*	X				X			X			X		X

* indicates more than one functional area included in this formula

**Table 9
Scholarships and Fellowships Formulas**

State	Calculation Method			Approach		Base			Differentiation			Costs	
	RPBF	PBF	BF PR/SR	All Inclusive	Item-ized	Credit Hours	Head Count	FTEs/ FTEF	Disci-pline	Type of Level	Inst.	Fixed	Var-iable
Kentucky		X		X				X					X
Maryland		X		X				X					X
Mississippi		X		X				X					X
Montana		X		X				X					X
Oklahoma*	X				X	X	X	X	X	Y	X		X

* indicates more than one functional area included in this formula

Operation and Maintenance of Plant Formulas

Table 10 displays information on the plant formulas used by the states. The plant category contains all expenditures for current operations and maintenance of the physical plant, including building maintenance, custodial services, utilities, landscape and grounds, and building repairs. Not included are expenditures made from plant fund accounts, or expenditures for hospitals, auxiliary enterprises, or independent operations (NACUBO 1988).

Connecticut, Oregon, South Carolina, and Texas use five formulas to calculate detailed plant needs. These complicated methods differentiate among types of building construction, usage of space, and size of institution. Horizontal equity is achieved in that equal dollars are provided for equal components of the physical plant. Moreover, differences among buildings are recognized and the unequal costs of maintaining, cooling, heating, and lighting each building are built into the formulas, resulting in vertical equity. An example of a simple plant formula is given below.

Plant funding = \$6.50 per gross square foot of frame buildings + \$3.75 per gross square foot of brick or masonry buildings

**Table 10
Plant Formulas**

State	Calculation Method			Approach		Base				Differentiation		Costs		
	RPBF	PBF	BF PIVSR	All Inclusive	Item- ized	NSF/ GSF	Replc Cst	Acres	Credit Hours	FTEF/ FTEF	Type of Building	Level	Fixed	Vari- able
Alabama	x				x	x					x	x		x
Arizona*			x		x				x	x		x		x
California*			x		x	x			x			x	x	x
Connecticut	x	x	x		x	x	x				x		x	x
Florida	x				x	x					x			x
Georgia	x				x	x								x
Kansas	x		x		x	x								x
Kentucky	x	x			x	x					x			x
Louisiana*	x				x	x								x
Maryland	x	x			x	x	x							x
Minnesota*	x				x					x		x		x
Mississippi	x				x	x					x			x
Missouri	x				x	x					x	x		x
Nevada		x	x		x	x	x	x						x
New Mexico			x		x	x					x			x
North Dakota	x				x		x	x		x		x		x
Ohio	x				x	x				x	x	x	x	x
Oklahoma*	x				x	x				x		x		x
Oregon	x	x	x		x	x		x			x			x
Pennsylvania	x				x	x	x					x	x	x
South Carolina	x		x		x	x	x	x		x	x			x
South Dakota*			x		x					x				x
Tennessee	x				x	x			x		x			x
Texas	x		x		x	x	x	x		x	x		x	x
Utah*			x		x	x								x
West Virginia*	x				x					x		x		x

* indicates more than one functional area included in this formula

TRENDS IN THE USE OF FUNDING FORMULAS

As was mentioned earlier, there appears to have been a watershed in the use of funding formulas in the budgeting and resource allocation process for higher education institutions. On the one hand, formulas are becoming more complex; on the other hand, states that have used formulas for nearly a quarter century are abandoning their use. In the place of formulas, productivity measures and other accountability techniques are being used to measure institutional performance and allocate resources. In addition, as state support for higher education stagnates, institutions are attempting to protect their base budgets by using an incremental approach to funding over the base formula-developed budget.

Formulas are becoming more sophisticated or complex, especially in the increase in the number of formulas within a budget area (e.g., instruction) and the differentiation within the formulas. The added complexity appears to be a recognition of differences in roles and missions and in costs among academic programs. From a technical or public policy standpoint, the increased complexity can be perceived to be positive. Formulas that more closely model reality, or that which is considered reality, always are preferable to more simplistic models. However, legislators, governors and other state policymakers who are the ultimate "consumers" of formulas generally prefer a formula that is simple to understand.

Institutions appear to be protecting their base budgets by going to incremental budgeting in place of formula budgeting. Several states that had used funding formulas for at least a decade now use the incremental budgeting method. The base budget, however, was computed by formula, so several of these states consider themselves to be "formula states." As state funding for higher education becomes more scarce, institutions understandably are concerned with maintaining the funding they have with minimal restrictions from the state. Formulas are, in effect, a zero-based budgeting method under which each institution justifies its request for state

funds each year. Maintenance of the base can become the primary goal when enrollment declines or shifts into less expensive course offerings.

Many states adopted formula usage to provide and/or achieve equity in the distribution of resources. In the southern states, the provision of equity through a formula appears to be directly related to desegregation orders filed by the federal government. (It also is possible that these equity features are spillovers from state concerns with equity in K-12 funding formulas.) However, no attempt is made to determine whether a formula is "more" or "less" equitable in the distribution of state resources to institutions. Evaluations of formulas, and their impacts, like those done for elementary and secondary education using range ratios, gini coefficients, or other equity measures, are not used yet in higher education, except in a few federal court cases.

Now that states appear to be dropping formula use for four-year higher education, is this a shift away from the commitment to achieve goals of adequacy and equity in the distribution of resources, to a commitment to goals of efficiency and accountability? Clearly, the higher education industry has fallen on hard times in many states (Harman 1995). Many institutions have suffered from absolute cuts in state funding during the 1990s. Tuition and fees have risen dramatically, and enrollments in some states have declined or shifted among institutions. Perhaps the switch away from funding formulas is merely a reflection of the hard times that necessitate a protection of the base budget rather than a movement away from equity and adequacy.

But, maintenance of the base may not be possible when the general public seems to no longer be a willing participant in its love affair with higher education. Hardly a week goes by when the popular media does not have a story pointing out the indiscretions of higher education. Legislators have been calling for reform and accountability fueled by stories of how industries have been restructuring their budgets, rethinking their strategic plans, reorganizing, and reengineering the corporation to be more efficient and produce higher quality outputs. Corporate

leaders, long-time supporters of higher education, have called on institutions to reinvent themselves, to rethink their missions (and return to teaching as the primary mission), and to adopt continuous quality improvements (Harman 1995), just as industry has done. The movement to accountability and performance measures suggests that a watershed may have been reached in the way in which higher education is funded. Perhaps it is time for a new paradigm.

And perhaps the new paradigm is the movement to "productivity" formulas. Tennessee has included productivity measures as a formula component for more than a decade. Colorado now distributes some funds based on productivity measures, and Florida begins its productivity component for four-year institutions in 1997. Arizona, Kentucky, Minnesota, Missouri, Ohio, and Oklahoma have or are developing productivity components to the funding process. In total, fourteen states indicate that they are using productivity components in funding, up from eight reported in 1995 (Caruthers and Layzell 1995). Arkansas, a long-time user of funding formulas, abandoned its formulas to go to productivity funding. This is a significant change.

Some observers (Odden and Clune 1995) call for a restructuring or reinventing of education finance to address the issue of productivity or accountability. They assert that changing state school finance structures and restructuring teacher compensation systems will result in increased student achievement and productivity. Perhaps a new paradigm for higher education funding would lead to increased productivity and student achievement. The challenge to higher education finance researchers and analysts is to develop that new paradigm.

Formulas never will solve the resource allocation problems in higher education. Formulas cannot recognize the full range of objective and subjective differences among institutions, nor can they anticipate changes in the missions of institutions, such as those changes that will come about with the advent of "virtual" universities. Formulas do provide an objective allocation mechanism that can provide more equity than independent funding of each institution with the

power plays and patronage that inevitably characterize such allocation decisions. Determining the method for funding higher education will continue to be part of a political process that involves the art of compromise. Compromise will be necessary to preserve and improve the quality of public higher education and to accommodate the changing condition of education in the new millennium. Perhaps the promise will never be fulfilled, not because the goals were unworthy, but because the goals have changed.

REFERENCES

- Allen, Richard H., and James R. Topping. *Cost Information and Formula Funding: New Approaches*. Boulder, CO: National Center for Higher Education Management Systems, 1979.
- Anderes, Thomas. "Formula Budgeting in Higher Education: An Examination of Past and Present Factors Used in Formula Development." Ph.D. dissertation. University of Connecticut, 1985a.
- _____. "Formula Budgeting in Higher Education." *NACUBO Business Officer*. 19 (November): 33-36. 1985b.
- Bass, Debra D. "High-tech sharing of campuses forecasted." *Las Vegas Sun*, December 1, 1995, p. 2B. 1995.
- Boling, Edward. "Methods of Objectifying the Allocation of Tax Funds to Tennessee State Colleges." Ph.D. dissertation. George Peabody College, Tennessee, 1961.
- Boutwell, W. K. "Formula Budgeting on the Down Side." in *Strategies in Budgeting*, G. Kaludis (ed), pp. 41-50. San Francisco: Jossey-Bass, 1973.
- Caruthers, J. Kent. "The Impact of Formula Budgeting on State Colleges and Universities." Paper presented at the meeting of the American Association of State Colleges and Universities, San Francisco, November 1989.
- Caruthers, J. Kent and Daniel T. Layzell. "Performance Funding for Higher Education at the State Level." Paper presented at the annual meeting of the American Education Finance Association, Savannah, Georgia, March 10, 1995.
- Gross, Francis M. "A Comparative Analysis of the Existing Budget Formulas Used for Justifying Budget Requests or Allocating Funds for the Operating Expenses of State Supported Colleges and Universities." Ph.D. dissertation, University of Tennessee, 1973.
- _____. "Formula Budgeting and the Financing of Public Higher Education: Panacea or Nemesis for the 1980s?" *AIR Professional File 3* (Fall 1979).
- _____. *Formula Budgeting for Higher Education: State Practices in 1979-80*. Boulder, CO: National Center for Higher Education Management Systems, 1982.
- Harman, Sidney. "A Widening Rift." *Trusteeship* (November/December 1995), p. 36.
- Jones, Dennis. *Higher Education Budgeting at the State Level: Concepts and Principles*. Boulder, CO: National Center for Higher Education Management Systems, 1984.

McKeown, Mary P. "Funding Formulas." in McKeown, M.P. and S. K. Alexander (eds.). *Values in Conflict: Funding Priorities for Higher Education*. Cambridge, Mass.: Ballinger, 1986.

_____. "State Funding Formulas for Public Institutions of Higher Education." *Journal of Education Finance* (1989) 15: 101-112.

McKeown, Mary P. and Daniel T. Layzell. "State Funding Formulas for Higher Education: Trends and Issues." *Journal of Education Finance* (1994) 19: 319-346.

Miller, James L., Jr. *State Budgeting for Higher Education: The Use of Formulas and Cost Analysis*. Ann Arbor: University of Michigan, 1964.

Millett, John D. *The Budget Formula as the Basis for State Appropriations in Support of Higher Education*. Indianapolis, IN.: Academy for Educational Development, 1974.

Moss, Charles E. and Gerald H. Gaither. "Formula Budgeting: Requiem or Renaissance?" *Journal of Higher Education* 47 (5) (September/October 1976): 550-76.

National Association of College and University Business Officers. *Management Reporting and Accounting for Colleges*. Washington, D.C.: NACUBO, 1988.

Odden, Allen and William Clune. "Improving Educational Productivity and School Finance." *Educational Researcher*. 24 (9) (December (1995) 6-10.

University of Alaska Resources

	B	C	D	E
2		Faculty	Full Time Equivalent	Head Count
3	University of Alaska Anchorage	321	7,127	13,559
4	Teacher/Student Ratio		22 to 1	42 to 1
5	University of Alaska Fairbanks	376	3,181	5,110
6	Teacher/Student Ratio		8 to 1	13 to 1
7	University of Alaska Southeast	54	1,037	2,604
8	Teacher/Student Ratio		19 to 1	48 to 1
9	University of AK Anchorage Sys	321	8,854	19,063
10	Teacher/Student Ratio		27 to 1	59 to 1
11	University of AK Fairbanks Sys	231	4,565	8,235
12	Teacher/Student Ratio		19 to 1	35 to 1
13	University of AK Southeast Sys	54	1,514	4,337
14	Teacher/Student Ratio		28 to 1	80 to 1
15	University of Alaska Statewide Sys	876	14,933	31,184
16	Teacher/Student Ratio		17 to 1	35 to 1
17	Ketchikan	6	156	576
18	Teacher/Student Ratio		26 to 1	96 to 1
19	Sitka	13	321	1,535
20	Teacher/Student Ratio		25 to 1	118 to 1
21	Rural	52	1,384	5,275
22	Teacher/Student Ratio		27 to 1	101 to 1