Nevada System
of Higher Education

Evaluation of the NSHE Funding Formula

May 2011

submitted by:

MGT
OF AMERICA, INC.

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ACKNOWLEDGEMENTS

MGT of America, Inc. wishes to acknowledge the many individuals who were extremely gracious in providing assistance, data, and advice that contributed greatly to this report. We thank the members of the Nevada System of Higher Education's Board of Regents, the Chancellor of the System and his key senior staff, presidents of the colleges and universities and campus senior staff, the Governor and his staff, State legislative leadership including committee chairs and ranking minority members, staff of the Legislative Counsel Bureau, students, and business people and other Nevada citizens. All of these individuals provided information related to the funding of the System, to perceived strengths and weaknesses of the funding model, and all offered their perceptions of how the formula could be improved. Without the input of all these individuals, this report would not be possible.

Executive Summary

In May 2010, the Nevada System of Higher Education (NSHE) engaged MGT of America, Inc. to provide recommendations on funding formulas through evaluation of the existing Nevada funding formula (the NSHE formula). The review was to include funding sources and consider mission differentials; through review of other states' and systems' funding methods MGT was to contrast and compare the NSHE formula to the other major funding formulas used by the states for public institutions of higher education. Specifically, MGT was engaged to address each of the following:

- Review of other states and/or systems and compare and contrast the NSHE formula to the other major funding methods for public institutions of higher education in the United States.
- Analyze the "drivers" for the formula which include (but are not limited to) enrollment (FTE), student to faculty ratios for program costs (allowing for the range of developmental to professional programs) and rural and small college considerations.
- Evaluate and as appropriate identify and recommend formula attributes to consider that would address mission differences. Without limiting the foregoing, this part of the analysis should address funding for research.
- Identify if, and how, performance standards and outcomes could be included in the funding formula.
- Evaluate and as appropriate identify how administrative functions required for institutions with multiple sites may be a component of a funding formula. Differentiate between full campus-level operations and extended centers.
- Include in the analysis specific alternatives for recommended changes, additions, or modifications to the NSHE formula, including best practices from funding models of other states or higher education systems.

MGT traveled throughout the State to interview the members of the NSHE's Board of Regents, the Chancellor of the System and his key senior staff, presidents of the colleges and universities and campus senior staff, the Governor and his staff, State legislative leadership including committee chairs and ranking minority members, staff of the Legislative Counsel Bureau, and business people and other Nevada citizens. Also, MGT collected information on other states' funding models, including historical information and "best practices" information; information on other states' use of performance funding, "best practices" in performance funding, and use of performance indicators.

There is a new wave of funding formulas in the 21st Century – based on performance and on an increase in the number of "completers" as a means of improving the economy. The new models reflect the needs of the state and its citizens, not merely the needs of the institutions where the state's needs are measured by course completions, degrees or other "completions," and success in meeting the state's needs. More than 20 states now have adopted some form of performance funding formulas.

This new construct was included in the evaluation of the current Nevada funding model. In addition, any alternative to the current funding model was evaluated by the following criteria that the presidents and Chancellor of the Nevada System of Higher Education identified to guide the development of a funding model:

- Outcomes-based
- Mission-sensitive

- Size-sensitive
- Adaptable to economic conditions
- Equitable
- Reliant on valid and reliable data.

The current Nevada funding model or "formula" is multi-faceted and has evolved over the last thirty years into a complex funding model with multiple components related to functional areas of a college or university budget. Overall, the judgment could be made that the formula's many components work together to satisfy most of the criteria determined by the Chancellor and presidents as the important criteria for a formula, with the exception of "outcomes-based." The current funding model does not have a performance component, or an incentive funding component, and could be improved by additions or changes to incorporate performance. There is no linkage to the goals for the colleges and universities, nor any measure of accomplishment, and no link to performance standards.

Moreover, multiple improvements can be made to the Nevada model to make it more mission-sensitive, size-sensitive, adaptable, and equitable. *Any of these possible options for changes should be examined in Nevada's usual orderly process for changes to the higher education formula funding through the legislative interim study committees, and should include consultation with all appropriate stakeholders.*

Instruction

There are multiple components of the Instruction formulas that merit attention: the taxonomy matrix, classification of courses within the taxonomy matrix, remedial classes; faculty mix between full-time and part-time, lower division differentiation of costs by sector, doctoral discipline costs, operational cost factors, productivity factors, rolling average FTE, and the complexity of the Instruction formulas. Instructional costs for multi-campus operations are no different than for single campus operations, as the costs of instructional salaries are the same. Therefore, the issue of multi-campus operations will be discussed under other components of the funding model.

Credit Hour Matrix (taxonomy). The first issue is the credit hour matrix, which collapses all credit hours by discipline and level of instruction into what has been called a four-by-four or 16-cell matrix (four cost categories and four levels of instruction). The matrix is actually a twelve-by-four matrix. The purpose of the matrix is to recognize differences in the cost of instruction that vary by discipline, by size and type of institution, and by level of instruction. Credit hours earned in the Schools of Medicine, Dentistry, and Law are not included in this matrix.

Cost matrices generally are the result of cost studies, but Nevada does not do a periodic cost study; any changes to the matrix will have to rely on cost studies done by other states. In other states, disciplines are not necessarily in the same cost category across all four levels of instruction; doctoral costs are placed into the cost categories not just one as the current Nevada matrix places disciplines.

Using the cost studies from other states, there are a number of classifications into which academic programs may be placed. Nevada also could take an average across all the cost studies and place disciplines into a four-by-four matrix, a three-by-four matrix, or even an eight-by-four matrix, all of which would be simpler than the current matrix. **MGT recommends that NSHE work with appropriate stakeholders to determine an instruction matrix that would more closely approximate the current cost of these courses. Included in the cost matrix would be a differentiation of the costs of doctoral programs.**

New student-faculty ratios that are consistent with the costs of providing services should be included in the matrix.

The current matrix does include a provision to recognize differences in the sizes of the institutions, in that there are different ratios for the smaller community colleges. This is an important component of the matrix, and should be continued in some manner to recognize economies of scale. Such a factor could be done by **keeping the student-faculty ratios the same across all institutional sizes and including a base amount for institutions under a certain size.**

Classification of Disciplines within the Matrix. Correct placement of courses in the matrix is critical to the validity and equity of the formula. Currently, all distance education courses are defined as high cost.

MGT recommends that NSHE consider placing only those distance education credit hours that are two-way interactive video in the "high cost" category. All other distance education would be placed in the appropriate discipline category.

Remedial Courses. Currently courses that are remedial in nature, or not at the college level, are not included in the formula for UNR or UNLV, but are included in the discipline mix for NSC and the four community colleges. **MGT recommends that the NSHE consider allocating an additional instructional faculty person and one-half an FTE staff person at NSC, GBC, WNC, TMCC, and CSN for each 80 successful remedial course completions.** Faculty salary amounts and other allocations could be computed as in the other components of the Instruction formula.

Faculty Mix and Differentiation of Lower Division Courses. For the universities and state college, the faculty numbers generated by the formula are all considered to be full-time positions. At the community colleges, 60 percent of the faculty positions are assumed to be full-time and the remaining 40 percent are part-time. Part-time faculty positions are funded at 60 percent of the full-time faculty salary.

It is recommended that NSHE consider in its discussions with appropriate stakeholders that new FTE faculty positions generated by the formula calculation be 100 percent full-time positions. Of course, this change will have an impact on the total funding requirement for the formula since these positions will be funded at 100 percent of the salary cost, instead of the current 84 percent (60% + 60% of 40%). This change will make the formula more equitable, and addresses the criterion "outcomes based."

Operational Factors. The current formula provides different amounts for operating and wage costs at a predetermined amount which is adjusted at the inflation rate plus 1 percent. Currently, universities are funded at $7,368 per faculty FTE; NSC at $6,141 per faculty FTE; community colleges at $5,650 per faculty FTE; and classified staff at $2,825 per FTE for all institutions. Differences in operating allocations contribute to inequities in the formula; therefore, **it is recommended that NSHE consider that both the operating and wage costs per faculty FTE and the equipment funds per full-time faculty person should be equal for the universities, NSC, and the colleges.**

Performance Factors. The current Instruction formula is based on the number of credit hours for which students are enrolled, rather than the credit hours earned or completed. The use of enrolled credit hours "incents" the institutions to get more students into courses, but not to get the students through the courses successfully. This is an unintended consequence of the formula.

It is recommended that NSHE consider through its formula revision process with appropriate stakeholders whether the number of credit hours used in the instruction formula should be credit hours completed instead of enrolled credit hours. Nevada easily could incorporate this performance feature into its Instruction formula. Such a change would meet the criterion of "outcomes based."

Rolling Average FTE. The use of the rolling three-year average student count has smoothed changes in funding during those times when college or university enrollments are declining, and allowed institutional managers time to plan for change. One of the criticisms that legislators, legislative staff, and the governor's staff have made about the formula is that the rolling average is not being used when enrollments are increasing but only when some enrollments are declining. Since 2001, the NSHE has not had a time when enrollment system-wide declined.

The rolling average FTE works well in times of consistency in enrollment and in funding, but does not provide sufficient opportunity for planning in other economic times. **It is recommended that consideration be given to evaluating and potentially modifying the method of counting enrollment**.

Complexity of the Formulas. Nevada's instruction "formula" actually is comprised of five or six separate formulas, depending on how the salary schedule is counted. Although Instruction is the most complex of all the functional areas for which formulas exist. Nevada's set of formulas is the most complex of all the states. **It is recommended that NSHE consider reducing the complexity of the Instruction component of the formula by incorporating all cost calculations into one.**

Research

Nevada currently does not use a formula for research funding. Rather, funding is determined on an incremental basis. The lack of a research component in the current formula does not meet several of the criteria established as guiding principles for any change to the formula. This component currently is not "outcomes-based" or "mission sensitive."

MGT recommends that NSHE consider adding a component of the formula to recognize the research mission of the System. Any of three alternatives – component of the formula, part of performance funding, or incentive funding – would fulfill the mission sensitive criterion. Either the performance funding or incentive funding component would meet both the mission sensitive and the outcomes based criteria.

Public Service

No change is recommended for this funding.

Academic Support

Nevada's funding formulas for Academic Support include separate calculations for library staffing, operating and equipment, and other areas. For the community colleges, the Academic Support formula recognizes economies of scale by applying a differential percentage of the Instruction budget for GBC and could be perceived as adequate to recognize the additional costs of extended centers and distance education.

On the other hand, there is no recognition of any possible additional costs of full campus-level operations in the Academic Support area at multiple campus sites. In other states where a community college has more than one campus, there is no special or additional formula for Academic Support. For the community colleges, the Academic Support formula follows the best practice formula, and does include a consideration for the size of the college. **No change is recommended for the community college formula since it adequately provides resources that are linked to mission, are size-sensitive, and are equitable in the distribution of resources.**

For UNLV, UNR, and NSC, the formulas provide for economies of scale in the staffing and in the libraries. I**t is recommended that NSHE consider increasing the percentage for NSC to 15 percent.** This is a mission-sensitive adjustment that relates to the special needs of the students attending NSC, many of whom are first-generation students with poor academic backgrounds.

The American Library Association is expected to publish new standards for academic libraries that consider changes in technology and in the ways in which students now use libraries. **When these new standards come out, it is recommended that the Clapp-Jordan formula be replaced by the new standards.**

Student Services

Nevada's funding formula for Student Services provides funding based on the combined headcount and SFTE enrollments. The formula provides additional positions for Student Services based on one additional position for each 100 students residing in dormitories. **This is a best practice that should be adopted by other states.** In addition to these calculations, Nevada's Student Services formula has a unique component: funding to cover compliance costs associated with the provisions of the Americans with Disabilities Act (ADA). Institutions receive $1,000 for each student with a documented disability. **This is a "best practice" and should be emulated by other states although the dollar amount inshoulbe be evaluated periodically based on actual costs.**

The Nevada formulas for Student Services follow for the most part the "best practices" formulas of other states, by including an economy of scale and fixed/variable cost factors, and by basing the count of students on both headcount and full-time equivalent students. Similarly to Academic Support, the Student Services formula does not include an explicit component for colleges or universities that operate multiple sites, whether those are centers or full-service campuses. However, by including headcount students in the calculation, there is adequate consideration of the costs of counseling, registering, advising, and admitting students. The best operational practices of other institutions include only one admissions office, one registrar, and numbers of counselors/advisors consistent with the number of students needing services.

However, the Nevada formulas do not consider the special needs of students who come under-prepared for the rigors of a post-secondary education. **It is recommended that NSHE consider adding an additional dollar amount per Pell recipient to recognize the the costs of providing additional services.**

Institutional Support

Nevada's formula for Institutional Support follows one of the best practices formulas by multiplying a percentage of each institution's operating budget (less institutional support) including all applicable appropriations such as the School of Medicine, Agriculture Experiment Station, Law School, or Dental School. The current formula does not include differentiation for those institutions which have multiple

sites, whether those sites are centers or full campus-level operations. This is consistent with the formulas of other states which consider economies of scale and provide differential funding based on mission.

No changes to Institutional Support are recommended.

Operation and Maintenance of Physical Plant

Nevada's methodology for funding physical plant operations and maintenance includes both formula components and non-formula components. These formulas recognize the differences in the missions of the institutions by allocating funding based on gross square feet. It should be noted that this is the only function of the formula in which the Desert Research Institute participates. **No change is recommended for the Physical Plant formula.**

Scholarships and Fellowships

Nevada does not have a formula for scholarships and fellowships. **No change is recommended at this time, although this is certainly an important issue to consider in the context of affordability of higher education and access.**

Revenue Components

There are two sides in the calculation of funding formulas for higher education; the needs of the institution, and the resources to fund those needs. Many of the states that use funding formulas in the resource allocation process calculate the need to be funded only by state revenues. Others calculate a total resource need that is funded by a combination of state and institutional resources (for example, student fees and tuition). Nevada's formula calculates an amount of need that is funded by a combination of state and institutional resources. The formula has not ever been "fully funded," meaning that the combination of state and institutional resources has not equaled the total amount of "need" as calculated by the funding formula.

MGT recommends that NSHE consider with the Legislature and other appropriate stakeholders a modified method of calculating the institutions' support of the budget.

Other Components, Including Performance or Incentive Funding

To introduce components into the Nevada funding formula that will address performance as well as incent institutions to produce certain results, **it is recommended that NSHE consider in its process for revising the formula two components to add to the funding formulas: a performance funding component and an incentive funding component.**

Performance Funding

To introduce performance funding into the Nevada formulas for higher education, **MGT recommends that NSHE consider two components:**

1. **Count student credit hours completed, not credit hour enrollments.**

2. **Provide a performance pool equal to a portion of the institution's budget, which shall sit in a separate fund to be distributed to the institutions as earned. These funds shall be one-time funds that are allocated each year, and distributed by the Regents when institutions meet certain performance standards.**

Another option for the community colleges is to copy the strategy employed by the Washington State Board for Community and Technical Colleges (WSBCTE) using "momentum points" which are times in a student's college education that lead to continued success.

Incentive Funding

Another component of funding that is tied directly to state goal is incentive funding. Under incentive funding each institution would be eligible to compete for funds in a pool set aside for achieving certain goals. Nevada could establish pools that were linked to state needs, such as nursing graduates or teachers or mining engineers or research funding in specific fields. Each institution that "succeeded" in its goal would share in the pool. Likely, such a pool of funds would not be established in the current economic environment, but could be phased in. DRI would be eligible for participation in this pool of funds.

Summary of Options

MGT has identified a number of areas within the Nevada funding methodology that merit consideration for changes to or improvement on the formula(s) during the NSHE/legislative formula revision process. The following is a summary by functional area.

Instruction:

There are two main options for the Instruction functional area:

1. Modify the taxonomy matrix, keeping all the separate calculations (with optional changes to the separate calculations); or
2. Modify the matrix, including all calculations in one formula to simplify the methodology.

Within those two main options, there are many "sub-options" related to the matrix:

- the size of the matrix; i.e., 4 by 4, or 8 by 4, or 3 by 4, or 12 by 4.
- use of credit hour costs or student-faculty ratios.
- placement of disciplines within the matrix, including across levels of instruction.
- placement of distance education courses.
- student-faculty ratios/credit hour costs for lower division courses.
- base funding for small institutions.
- funding for remedial education.
- calculation of credit hour costs/weights or student-faculty ratios
- use of the rolling average FTE or credit hours.
- use of a performance factor such as completed credit hours.

In addition, if the decision is made to stay with multiple components, an option for equating the formula for operating and wage costs should be considered.

Research:

Three options are provided for adding a research component to the formula for UNR, UNLV, and DRI: part of the formula, a performance funding, or incentive funding component.

Public Service, Scholarships and Fellowships, Institutional Support, Physical Plant:

No changes.

Academic Support:

Replace the Clapp-Jordan formula with the recommendations of the American Library Association when those recommendations are issued.

Increase the percentage of the instruction budget allocated to NSC for other academic support.

Student Services:

Include for the universities, community colleges, and NSC a factor that provides funds based on the number of Pell Grant recipients or some other measure of "need"

Revenue Components:

Consider a modified method of calculating the institution's support of the budget.

Performance Funding:

Establish a pool of a portion of appropriations to be used to "reward" institutions for performance on a set of five performance indicators, two of which are established state-wide (except for DRI) and three of which are institution-specific (all five would be specific for DRI), with weights for each indicator determined by the Chancellor in consultation with the institution's president. OR

For the community colleges, use momentum points.

Incentive Funding:

Establish an incentive pool of state funds to "incent" college, university, and DRI performance in meeting state needs.

1.0 Background

In May 2010, the Nevada System of Higher Education (NSHE) engaged MGT of America, Inc. to provide recommendations on funding formulas through evaluation of the existing Nevada funding formula (the NSHE formula). The review was to include funding sources and consider mission differentials; through review of other states' and systems' funding methods MGT was to contrast and compare the NSHE formula to the other major funding formulas used by the states for public institutions of higher education. Specifically, MGT was engaged to address each of the following:

- Review of other states and/or systems and compare and contrast the NSHE formula to the other major funding methods for public institutions of higher education in the United States.
- Analyze the "drivers" for the formula which include (but are not limited to) enrollment (FTE), student to faculty ratios for program costs (allowing for the range of developmental to professional programs) and rural and small college considerations.
- Evaluate and as appropriate identify and recommend formula attributes to consider that would address mission differences. Without limiting the foregoing, this part of the analysis should address funding for research.
- Identify if, and how, performance standards and outcomes could be included in the funding formula.
- Evaluate and as appropriate identify how administrative functions required for institutions with multiple sites may be a component of a funding formula. Differentiate between full campus-level operations and extended centers.
- Include in the analysis specific alternatives for recommended changes, additions, or modifications to the NSHE formula, including best practices from funding models of other states or higher education systems.

MGT traveled throughout the State to interview the members of the NSHE's Board of Regents, the Chancellor of the System and his key senior staff, presidents of the colleges and universities and campus senior staff, the Governor and his staff, State legislative leadership including committee chairs and ranking minority members, staff of the Legislative Counsel Bureau, and business people and other Nevada citizens. Interviews gathered input from stakeholders related to the funding of the System, to identify perceived strengths and weaknesses of the funding model, and to understand perceptions of how the formula could be improved. MGT also discussed with staff and community representatives other states' performance measures. Information learned from the interviews is summarized in Section 1.2.

In addition, MGT reviewed materials related to NSHE's funding formula, its development, legislative actions, and materials related to the equity of the formula, including the Report of the Committee to Evaluate Higher Education Programs issued in January 2005. These materials were used in the assessment of the current formula.

Also, MGT collected information on other states' funding models, including historical information and "best practices" information. These data are summarized in Chapter 2, which also includes the criteria that the presidents and Chancellor determined were the underlying principles for formula development in Nevada. Information on other states' use of performance funding and "best practices" in performance funding and use of performance indicators may be found in Chapter 3. Chapter 4 examines in depth the

current Nevada funding formulas and assesses the formulas against the guiding criteria. Chapter 5 provides a summary of the report, including options for improvement of the current funding model in the context of best practices for both funding models and performance standards.

The remainder of this chapter includes a summary of the information gathered from stakeholders, and a discussion of the history of Nevada's funding model. A list of the individuals and related organizations that were interviewed and from whom information was gathered may be found in Appendix A.

1.1 The Nevada System of Higher Education and the Funding Formula

Nevada has a long history of using a funding formula to calculate budget requests that would provide adequate resources and equity in the allocation of those resources. In 1968, the Higher Education Advisory Committee and the Chancellor's office of the University of Nevada System both suggested that the state should use an enrollment-driven formula for funding higher education. Beginning with the 1969 Legislature, the Governor recommended funding for the system, which consisted of two universities (University of Nevada Reno [UNR] and Nevada Southern University, now University of Nevada Las Vegas [UNLV]), based on student to faculty ratios of 20 full-time equivalent students to one faculty member. An undergraduate FTE was set equal to 16 student credits in the Fall semester, or 9 student credits at the graduate level. Funding for graduate assistants, the number of classified positions, the number of hourly positions operating expenses, and out-of-state travel were all driven by the number of faculty positions. [1]

Since that time, the formula has been modified several times as well as become more complex. Similarly, the NSHE has grown and become more complex as Nevada has grown. The System now includes a research institution, the Desert Research Institute; two research universities, UNR and UNLV; a state college, Nevada State College; and four community colleges, College of Southern Nevada (CSN), Great Basin College (GBC), Truckee Meadows Community College (TMCC), and Western Nevada College (WNC). To add to the complexity, all the community colleges except TMCC now have limited authority to grant four-year degrees in specific fields, and are classified by the National Center for Education Statistics as "four year colleges."

As shown in **Exhibit 1-1**, headcount enrollment has grown significantly, especially in the recent years as the state of the economy has led to many individuals returning to college. In the 24 years since Fall 1984, enrollments have grown from 47,150 headcount students to 113,911 students in Fall 2009, a 141.6 percent increase. The increase has been the greatest at the community colleges, which enrolled 24,815 headcount students in Fall 1986, and 66,502 in Fall 2009, an increase of 41,687 students or 168 percent. The four-year sector increased from 22,335 students in Fall 1986 to 47,409 students in Fall 2009, a 25,704 student increase or 112.3 percent. Although not as great in terms of number change, similar increases are seen in the number of annualized average full-time equivalent student enrollment (AAFTE) as shown in **Exhibit 1-2.** FTE enrollments increased from 22,155 in 1986-87 to 65,665 in 2009-10, an increase of 46,643 or 210.5 percent. Again, the increase was largest at the community colleges.

[1] Richardson, James T. and K. Donald Jessup, "The History of Formula-Based Budgeting for Nevada Universities," *Nevada Public Affairs Review*, 1981, pp. 64 – 68.

EXHIBIT 1-1
Headcount Enrollment, Fall 1999 To Fall 2009

Fall	College of Southern Nevada	Great Basin College	Nevada State College	Truckee Meadows Community College	University of Nevada Las Vegas	University of Nevada Reno	Western Nevada College	Total
1986	11,763	1,764		7,390	12,722	9,613	3,898	47,150
1987	12,677	1,973		7,889	13,757	9,947	3,916	50,159
1988	13,032	1,872		8,538	14,800	10,503	4,627	53,372
1989	14,491	2,060		8,675	16,332	10,922	4,901	57,381
1990	15,135	2,277		9,211	18,192	11,487	5,178	61,480
1991	15,551	2,481		9,116	19,504	11,714	4,688	63,054
1992	18,111	2,883		8,938	19,209	11,988	4,687	65,816
1993	17,118	2,490		9,041	19,682	12,137	4,656	65,124
1994	17,113	2,565		8,707	20,239	12,379	4,595	65,598
1995	20,741	2,805		8,458	19,769	12,047	4,410	68,230
1996	25,012	3,200		9,338	19,683	12,279	5,143	74,655
1997	26,707	3,372		10,051	20,272	12,442	5,563	78,407
1998	30,440	2,900		10,139	21,312	12,303	5,572	82,666
1999	35,297	2,822		10,539	21,853	12,532	5,574	88,617
2000	32,639	3,251		10,878	22,342	13,149	5,682	87,941
2001	33,364	2,680		10,445	23,618	14,316	5,657	90,080
2002	33,481	2,733	177	11,250	24,965	15,093	5,369	93,068
2003	35,471	2,564	531	11,348	26,131	16,418	5,183	97,646
2004	35,399	2,575	1,272	11,851	27,645	16,460	5,379	100,581
2005	36,242	2,877	1,562	12,043	28,452	16,652	5,524	103,352
2006	36,843	3,390	1,959	12,193	28,010	16,769	5,528	104,692
2007	39,316	3,251	2,196	12,774	28,477	16,730	5,357	108,101
2008	41,766	3,370	2,126	13,137	27,903	16,907	5,218	110,427
2009	43,561	3,621	2,517	13,582	28,152	16,740	5,738	113,911
Increase	31,798	1,857	2,517	6,192	15,430	7,127	1,840	66,761

Source: *NSHE Office of Academic and Student Affairs, 2010.*

EXHIBIT 1-2
Annual Average Full-Time Equivalent Enrollment, 1986-87 To 2009-10

Year	College of Southern Nevada	Great Basin College	Nevada State College	Truckee Meadows Community College	University of Nevada Las Vegas	University of Nevada Reno	Western Nevada College	Total
1986-87	3,656	488		2,512	7,646	6,763	1,090	22,155
1987-88	4,066	500		2,596	8,500	7,011	1,202	23,875
1988-89	4,440	525		2,827	9,387	7,230	1,325	25,734
1989-90	4,899	600		3,104	10,556	7,419	1,507	28,085
1990-91	5,293	794		3,270	11,708	7,890	1,665	30,620
1991-92	6,391	870		3,569	12,605	8,359	1,750	33,544
1992-93	7,345	932		3,741	12,597	8,720	1,796	35,131
1993-94	6,953	906		3,682	12,580	8,732	1,819	34,672
1994-95	6,998	894		3,498	12,823	8,857	1,833	34,903
1995-96	8,857	939		3,434	12,851	8,757	1,746	36,584
1996-97	10,424	1,015		3,908	13,439	8,973	1,842	39,601
1997-98	11,256	1,143		4,287	14,162	9,183	1,982	42,013
1998-99	12,597	1,167		4,516	14,630	9,277	2,012	44,199
1999-2000	14,222	1,236		4,654	15,055	9,581	2,061	46,809
2000-01	14,315	1,321		4,766	15,473	10,172	2,060	48,107
2001-02*	15,208	1,203		4,898	16,046	10,449	2,149	49,953
2002-03	16,647	1,263	146	5,259	17,267	11,295	2,160	54,037
2003-04	17,569	1,427	394	5,523	18,350	11,778	2,179	57,220
2004-05	17,685	1,343	943	5,845	19,675	12,009	2,247	59,747
2005-06	17,891	1,363	1,079	6,026	20,034	12,224	2,331	60,948
2006-07	18,176	1,589	1,327	6,160	19,638	12,039	2,393	61,322
2007-08	19,607	1,643	1,437	6,479	19,543	12,227	2,388	63,324
2008-09	21,042	1,786	1,424	6,796	19,545	12,583	2,489	65,665
2009-10	22,027	1,994	1,726	7,307	20,086	12,770	2,888	68,798
Increase	18,371	1,506	1,726	4,795	12,440	6,007	1,798	46,643

Source: *NSHE Office of Academic and Student Affairs, 2010. Totals do not include UNLV Law School and Dental School, nor UNR Medical School enrollments. Method of calculating FTE was changed in Fall 2001.*

As the System and the institutions have become more complex, awarding more and different types of degrees, and enrolling students in more programs at more levels, the formula also has become more complex. The current formula remains primarily based on student credit hours which are translated into full-time positions. The formula excludes professional schools (the Law and Dental Schools at UNLV and the School of Medicine at UNR), most of the activities of the Desert Research Institute, and certain other programs or activities like the Cooperative Extension Service operated by UNR as part of its land grant mission.

The basic formulas currently used to allocate funds for the universities, state college, and community colleges were developed by the Committee to Study the Funding of Higher Education established by Senate Bill 443 of the 1999 Legislative Session. The primary focus of the Committee was to provide equity in the funding for the institutions. The last formal review of the state funding formula was during the 1999- 2001 biennium and resulted in some changes to the formulas, but retained the basic formula components.

Some of the key elements of the funding formulas are that institutions are allowed flexibility in expenditures when the formulas are not fully funded. The formula has not ever been fully funded, and this is especially true during the last biennium. **Exhibit 1-3** displays funding as a percent of formula for the last two biennia, and shows a significant decline in funding from 85.5 percent of the formula amounts to 74.1 percent.

EXHIBIT 1-3
Funding As A Percent Of Formula

2007-08	2008-09	2009-10	2010-11
85.50%	85.50%	74.10%	74.12%

Also, fluctuations in enrollments are stabilized by the use of a three-year weighted rolling average of enrollment. The use of the weighted average permits institutional managers time to react when enrollments shift. This average methodology is most useful when enrollments are declining. For the 2009-11 biennium only, the Legislature approved a modification to the three-year weighted average. In light of the financial condition of the State and the unknown impact of budget cuts on NSHE enrollments, the formula was calculated using FY 2009 projected enrollments as the budgeted enrollments for FY 2010 and FY 2011.

There are separate formulas used to calculate funding in the following areas:

- Instruction;
- Academic Support, Including Libraries;
- Student Services;
- Institutional Support; and
- Operation and Maintenance of Physical Plant.

Within each functional area, there are multiple "sub-formulas" that calculate the amount of specific elements of the functional area. These formulas also are discussed in detail in Chapter 2, in the context of "best practice" funding formulas used by other states.

1.1.1 Instruction

The Instruction functional area provides for the institution's academic, vocational, and technical programs and provides a pool of resources to fund instructional faculty, classified employees, teaching assistants, student wages, operating and equipment costs, and the fringe benefits associated with employees. Funding for instruction is based on legislatively approved student/faculty ratios and projected student full-time equivalent enrollments. The number of full-time equivalent students determines the number of faculty and staff that are needed to educate these students by using the ratios. Disciplines are assigned to cost categories by level of instruction (freshman/sophomore, junior/senior, masters, or doctoral) and the number of faculty determined by applying student to faculty ratios which differ for the research universities, the state college, and the community colleges. Student credit hours are converted to full-time equivalent students by dividing the number of undergraduate credit hours by 30, the number of master's level by 24, and the number of doctoral level by 18. The number of new faculty positions at the community colleges are assumed to be 60 percent full-time, and 40 percent part-time.

The number of faculty positions generated is compared to the prior year's faculty count, and new positions are funded on specific salary schedules. In addition, for every five new faculty members, a classified position with associated costs is generated. To these personnel costs are added an amount for operating costs and student wages, an amount for equipment funds for each existing position and for new positions, and for teaching and graduate assistants.

1.1.2 Academic Support

Academic Support is the functional area for services that assist the instructional or academic programs of an institution. Included in this category are services such as libraries, academic advising, academic computing, and academic administration, Separate calculations determine the number of positions to be allocated for academic administration, for library staffing, for operating costs and equipment. In addition, funding is provided to maintain and improve library collections.

The funding level for Academic Support is determined by the number of faculty positions, the number of library volumes needed to provide sufficient media resources for the students and faculty, and as a percentage of the instruction budget. The number of positions is determined by the size of the faculty. Because a portion of the resources for Academic Support is calculated as a percentage of the Instruction budget, the Instruction component would be considered a "driver" of the formula amount for Academic Support. The percentage differs by type of institution and by size. Operating costs and equipment are calculated by the same formula as used for the Instruction functional area.

1.1.3 Student Services

The Student Services component of the budget calculates funds needed to support student activities that are outside the formal instructional program, such as registration, financial aid, and counseling. In much the same way as the calculations are made for Instruction and Academic Support, formulas for this area provide funds for professional and classified positions, for operating and wage support, for new equipment for new employees, and for workstation replacements. A "best practice" component of the Student Services formulas is that an amount is allocated for Americans with Disabilities Act (ADA) accommodations for students. No other state has this component in their funding formula.

The amount of resources for Student Services is determined by the number of combined headcount and full-time equivalent students, and varies by institution and by size. The number of positions needed is determined by the student to staff ratios, and funded at the same levels as positions in other functional areas. However, special consideration is given for the needs of Great Basin College and for the number of students residing in dormitories.

1.1.4 Institutional Support

Institutional Support is the function that provides for each institution's executive-level activities related to management, planning, fiscal operations, and security. Institutional support formulas are set as a percentage of each institution's budget for the other areas, and include all institutional appropriations such as Cooperative Extension or the Law School that are not funded through a formula. For each institution, a specific percentage of the budget is allocated. Workstation replacements also are provided under a formula that is consistent with the other functional areas.

1.1.5 Operation and Maintenance of Physical Plant

The Operation and Maintenance of Physical Plant function includes the on-going maintenance of institutional facilities, such as custodial services, grounds maintenance, utilities, and rent. Allocations for utilities, insurance, and rental or lease costs are not formula driven, but rather are budgeted separately based on contractual agreements, rate changes, new facilities, and actual consumption. This is the only component of the formula in which DRI is included.

There are four components to the Plant formula that determine the funding for custodial, building maintenance, supervisory and technical personnel, and grounds personnel, general operating costs, equipment, and workstation replacement. The funding level is determined by the gross square feet of space maintained, by the number of improved acres maintained, and by the age of the facility. New positions are generated based on a formula that allocates a person for each specified amount of gross square feet or acres maintained. Funding for equipment and workstation replacement is under the same formulas as for other areas.

1.1.6 Other Components

In addition to the formula components discussed above, there is an allocation of funds for workstation replacements for non-formula budget areas such as the Cooperative Extension Services, University Press, or the Law School. Funds are provided at the same amount per position as in the formula budgets.

1.2 Perceptions of NSHE's Funding Model

To gather information on the perceptions of the NSHE funding model, MGT traveled throughout the State to interview members of the NSHE's Board of Regents, the Chancellor of the System and his key senior staff, presidents of the colleges and universities and campus senior staff, the Governor and his staff, State legislative leadership including committee chairs and ranking minority members, staff of the Legislative Counsel Bureau, and business people and other Nevada citizens. Individuals throughout the State were interviewed to get a broad range of perspectives on funding of the NSHE. MGT thanks the many individuals who offered their observations on the funding model, and who provided many documents related to the System's funding, the adequacy and equity of the funding, and the efficiency of college and university operations. A list of the individual interviewed may be found as Appendix A.

Discussions centered around several major points:

- Nevada's budget difficulties;
- higher education as a driver of the economy;
- perceptions of inequities in funding, or Nevada as a "divided" state, North vs. South;
- inefficiencies in the System;
- the complexity of the formula, and lack of understanding of the formula; and
- support for the local institution.

1.2.1 Nevada's Budget and the State of the State

Nevada's economy has been heavily dependent upon tourism, gambling, and construction. Because these sectors of the economy have been hardest hit by the recent recession, there have been major reductions in the State's budget. Legislators expressed that the budget gap to be faced during the next legislative session might exceed 50 percent of the State's total budget. To fill that gap would require not only reductions in expenditures, likely greater than faced during the current biennium, but also increases in revenues.

Legislators believed that the State's citizens are reluctant to support tax increases, which will further limit funds available for filling the State's budget hole. The narrowness of the Nevada tax base, coupled with the reluctance of the electorate to increase taxes, exacerbates the problem. The consistently expressed opinion was that higher education, as a large part of the State's budget, should expect significant reductions in State general fund support next year.

The National Conference of State Legislators (NCSL) projected that Nevada would have the biggest budget gap of any state, as measured by the percent of its general fund budget. NCSL predicted that higher education's budget would take a disproportionate reduction under these conditions.[2] Current legislators and local elected officials were aware of the NCSL report and indicated that further reductions for higher education were probable.

Nevada's higher education institutions have had state appropriations reduced in the last several years, resulting in elimination of degree programs, furloughs of faculty and staff, elimination of both faculty and staff positions, and limitations on course offerings. Local citizens were concerned that further limitations of the state budget would result in large additional increases in tuition and fees, which would severely limit or eliminate the option of higher education for many of the State's citizens. Those non-System persons interviewed were not aware, generally, that the Federal stimulus package had made up about 18 percent of "appropriations" that would not continue in the next fiscal year. Without the stimulus funding, cuts would have been deeper, and/or fees would have increased more than they actually did. Even with the stimulus funding, community representatives believed that the campus in their community was not sufficiently funded, and that campus should be getting additional state resources, and should be able to retain their tuition and registration fee dollars.

[2] National Conference of State Legislators Fiscal Affairs Program, "State Funding for Higher Education in FY2009 and FY2010," 2010, NCSL, Denver, CO.

The concern also was expressed that Nevada's financial condition was not likely to turn around for at least three to five more years. While some interviewed were concerned that this slow economic recovery would result in continued disruptions of higher education services to the state's citizens, others expressed the opinion that the institutions were providing excellent services to much greater numbers of students with reduced budgets. Given the apparent ability to continue to "do more with less," some felt that higher education's share of state general funds should continue to be reduced because the institutions were doing well. This opinion was expressed by only a few legislators.

Institutional personnel were concerned that the likely continued budget reductions meant that their ability to provide quality services would be limited. Community college staff indicated that many students had been turned away during the past school year because funding, even with the increased tuition and fee revenue, was insufficient to provide classes.

There was a general belief that the next legislative session would be especially difficult, because over one-third of the Legislature would be new (due to term limits), there would be a new governor, and because the Legislature also would have redistricting to complete. Getting a budget done with constrained resources, at the same time as redistricting, was going to be a difficult job. Changes in legislative leadership and in the staff of the Legislature and Governor's office were perceived as additional challenges.

1.2.2 Higher Education as a Driver of the Economy

Local businesspersons especially were vocal about the Nevada System of Higher Education's role in improvement of the economy. Most individuals interviewed said that higher education has not been valued highly in Nevada, and that mindset had to change if there was to be the rate of economic growth the state previously experienced. There was a growing concern that Nevadans may perceive higher education as a private benefit that the students and their families should pay for, rather than an economic engine for the broader economy.

There had been the impression among young people that higher education was not necessary to get high paying jobs; multiple interviewees gave the example of the young man who dropped out of high school to take a job parking cars and who made $100,000 per year. Those jobs are not as plentiful as they used to be, and so there appeared to be some re-evaluations of the role of higher education. However, the belief that many high paying jobs did not require any training or education beyond high school was still prevalent.

Several statistics were given about Nevada's low ranking on economic indicators. Although Nevada is projected to have the fastest growth rate (between 2010 and 2020) in the number of high school graduates,[3] Nevada ranks 50th among the states in high school completion rates. Also, Nevada ranks near the bottom of the states in the percentage of the adult population with a college degree. The economy and the State itself could not improve or return to its prior level of growth and prosperity without an increase in college completions.

Legislative and System staff stated that diversification of the economy was critical if Nevada was to prosper in the 21st century. Knowledge and skills were considered to be more important drivers of the economy than traditional drivers such as natural resources and location. Citizens were especially vocal that economic diversification into the green energy and high tech arenas was needed to move the

[3] Western Interstate Commission for Higher Education (WICHE) website, 2010.

economy in a positive direction. The universities and Desert Research Institute were cited as key players in bringing about the diversification of the economy, and crucial to expanding the pool of potential educated employees. The community colleges were seen as important in training of employees for new types of jobs in a "green" economy, as well as for the jobs that any community needs to maintain a relatively good standard of living. Among these jobs were auto mechanics, plumbers, electricians, and other skilled laborers. If the universities and DRI could not provide the necessary research base for some of the emerging sectors of the economy, then the perception was that the State would not have a growing economy.

Legislators pointed out that the issue of higher education's role in the economy was addressed in the Report of the Committee to Evaluate Higher Education Programs published in January 2005[4] which had as its charge the following:

- *Examine and evaluate the need for existing and potential higher education programs to ensure economic progress and development within the state to ensure that the educational needs of residents are being met.*
- *Identify areas of high priority where needs are not currently being met, including without limitation, the areas of educational programs for students who desire to become nurses or teachers.*
- *Determine whether it is feasible to reallocate existing resources within institutions to meet the critical needs of the state that are not currently being met.*
- *Determine whether General Fund appropriations and student fee revenues are being efficiently distributed internally at each campus.*
- *Recommend to the Board of Regents and the Legislature such action as may be needed for the efficient and effective operation of higher education if the state is to progress economically and socially.*

The Committee concluded that higher education was a critical component of driving the State's economy, but that the current funding mechanism did not provide incentives either for efficiency of operation or for meeting statewide needs. The link to the public agenda was lacking, and there was a need to focus the Legislature on strategic funding linked to state priorities, rather than on internal management of the institutions. They recommended that a performance funding pool and investment pool be set up to reward progress toward meeting the needs of a growing economy, and to further state priorities such as economic development. Current legislators commented that multiple committees had been unable to change state policy even in good economic times, and that tying higher education funding to certain state goals was the only way to get "new" money. Even that strategy was perceived to be unlikely to succeed in the next legislative session.

Business persons interviewed understood the importance of higher education to moving the economy forward, and looked to the Legislature to improve the situation by linking higher education funding to meeting the needs of the State. They were aware that this linkage has been talked about for some time, but said that nothing had been done. Developing the workforce for the future was perceived to be the role of the NSHE, and that issues related to a technologically-savvy workforce were critical to improvement of the State's economy.

[4] Legislative Counsel Bulletin 05-3: Committee Evaluate Higher Education Programs, 2005, p. 1.

These business persons noted that one component of attracting business and industry (and jobs) to diversify the State's economy was providing an "investment" of seed money in research that could have spillover impacts on Nevada's economy. This was seen as an important, but unlikely, investment of State resources, given the status of the State's budget shortfalls.

1.2.3 Inequities in Funding

In MGT's conversations throughout the State, there was much conversation about the equity of funding. MGT was given documents evaluating the equity of funding, some of which were thoughtfully done and presented cogent arguments about the formula and its application. Many of those interviewed perceived that the current MGT formula study was really an equity study, rather than a formula study.

There were some perceptions that the institutions in the "north" are favored over the institutions in the "south." In addition, a few individuals had the perception that there are inequities in funding by sector: that is, the community colleges may not be funded equitably with the four-year sector, and vice versa.

Many individuals who have been in the System for some years noted that in 1999, MGT completed a study that identified funding inequities for UNLV, CSN (then CCSN), TMCC, and WNC (then WNCC). In part in response to the MGT study, the current formula was developed in 1999 by the Committee to Study the Funding of Higher Education in Nevada. The report of the Committee states that the purpose was "to develop funding formulas that would address the equitable distribution of funds for institutions within the University and Community College System of Nevada."[5] As a result of this study, legislators perceived that they had resolved the issue of funding equity. Although the Committee may have improved the equity in the distribution of resources that was its stated purpose, in some cases the perception continues to exist that the formulas that resulted continue the inequities. In addition, there were components of the institutions' funding that were outside the formula, and that contributed to perceptions of special funding. Set-asides and special arrangements may have eroded the equity that may have been in the formula ten years ago.

A study by the Committee to Evaluate Higher Education Programs published in January 2005[6] noted that there was underfunding of CSN. Other studies completed by the National Center for Higher Education Management Systems (NCHEMS) found that several institutions were underfunded. Underfunding does not necessarily mean inequitable funding.

The 2001 Committee indicated that equity in funding did not necessarily mean equal dollar amounts per student. Differences in the mix of disciplines and in the levels of instruction lead to differences in the dollar amounts per student. The Committee gave as examples the greater costs of graduate education or of courses in the health professions and engineering.

Many of the conversations about the formula included discussions of how the institutions have matured and changed since 2001. UNLV has become a research institution; three community colleges have received limited authority to award bachelors' degrees; NSC has been established as a lower cost option for a four-year degree; and all of the institutions are serving more students than in 2001, some 30 percent more students, many of whom are ill-prepared for college. There was some sentiment that these changes alone make a study of the formula timely to recognize the changes in the institutions, and adapt the formula to changing economic conditions.

[5] Legislative Counsel Bulletin 01-4: Committee to Study the Funding of Higher Education in Nevada, 2001, p. 39.
[6] Legislative Counsel Bulletin 05-3: Committee Evaluate Higher Education Programs, 2005.

1.2.4 Inefficiencies in the NSHE

Closely related to the issue of inequities in funding was the issue of inefficiencies in the System – both by having too many institutions, or by inefficient institutional operations, or by having too many institutions offering a particular degree. Inefficient operation was a condition that concerned local citizens, legislators, and business persons as well as individuals in the System.

Of apparent particular concern was the small size of some institutions, which, because of size, were not able to take advantage of economies of scale. Although this issue was raised by some in the communities where the smaller institutions were located, they also noted that the institution was needed because of the inability of students to travel to other campuses.

Several legislators and business persons raised the issue of multiple offerings of the same program in the same county. For example, UNLV, NSC, and CSN all offer freshman level mathematics and English courses; or Nevada State and UNLV both offer education degrees. The question was, would it be more efficient for only Nevada State to offer education degrees, or only CSN to offer freshman level mathematics. Others raised the issue of which institution could more efficiently offer courses and programs in areas like Parumph which are not close to the physical location of a campus, but which have a need for higher education.

An interesting concern was raised about the "inefficiency" designed into the formula which funds lower division courses, i.e., freshman and sophomore level courses, at different amounts at the universities, at NSC, and at a third amount at the community colleges. This "inefficiency" occurs in the formula through three components of the Instruction formula:

1. The student to faculty ratios differ for high cost programs at the community colleges and the four-year institutions. Other ratios for lower division classes are the same, except at GBC to consider GBC's small size.
2. Faculty salaries in the formula differ for the universities, for NSC, and for the community colleges.
3. New faculty positions at the community colleges are allotted at 60 percent full-time and 40 percent part-time.

The perception was that this creates inefficiency in the System because it costs more for faculty at the lower division level at the universities than at NSC and at NSC than at the community colleges. Whether that is actually the case requires additional analysis.

Another "inefficiency" that was raised by community persons was the separate organization of the Desert Research Institute. While some community and business persons lauded DRI for its attention to economic development through cutting edge research, others stated that it might be more efficient for the Reno operation of DRI to be part of UNR and the Las Vegas portion to be run by UNLV.

Others raised the issue of too many institutions offering bachelors' degrees. The ability of three of the community colleges to now offer bachelors in limited fields of local need was an issue raised by individuals who do not live in or close to those communities. There was some concern with the efficiency of two many institutions with the bachelors in a state with "as small" a population as Nevada's.

Still others were critical of the management and operation of the institutions. There is a perception that there are too many administrators and that faculty members do not teach enough courses. This perception has existed for many years and is unlikely to go away.

1.2.5 Complexity of the Formula

Most of the Board of Regents members, legislators, and citizens interviewed did not understand the funding formula, even though they had clear perceptions of its equity and adequacy. Chief financial officers and budget officers at the colleges, universities, and DRI did understand the model and its many components, at least at a basic level. Presidents were less aware of the underlying components of the formulas, as would be expected.

Although the formula is perceived to be very complex, there were many arguments for additional components to the formula. Every president mentioned the need for a component for remedial education, even at the universities (although this component was explicitly removed several years ago). Institutional staff indicated that 30 to 50 percent of incoming students who had recently graduated from high school needed at least one remedial course before that student could fully benefit from a post-secondary education.

Legislators cited the complexity of the formula as one reason that they do not understand how/why the institutions believe they can justify additional funding. Several legislators mentioned that they think that UNR is funded better than UNLV, or TMCC is funded better than CSN, but they cannot determine if that is in fact true because they do not understand the underlying formula. Legislative staff may understand the formula, but still believe that it is too complex, and does not really deal with critical issues of performance or statewide goals. They also expressed concern that the System's budget request does not follow the formula, and question why the formula should be so hard to understand.

At the same time that legislators and board members say the formula is too complex, several raise the argument that the formula should incorporate additional features that would make it more complex. Of particular interest are components for performance or incentive funding. In any case, there was agreement that a workshop to explain the formula was needed for board members and for any legislators who wished to attend.

1.2.6 Support for the Local Higher Education Institution

As was mentioned above, community representatives, business persons, and legislators all expressed support for the campus or campuses located in their community. The general impression was that the institution located in their community was meeting community needs. Community colleges in particular were perceived as being responsive to the needs of the local community and seeking to offer courses and programs to meet those needs.

Community representatives spoke very positively about the efforts of the colleges to offer programs that contributed to workforce development. Several colleges were cited as excellent examples of community involvement for their proactive establishment of programs that would meet a special need.

The engineering, green energy, and mining communities especially valued the contributions of DRI and the two universities in research activities that had transfer benefits to their industries. The perception was that transfer of university research activities to the general business sector was critical to Nevada's economic development.

Chapter 2
Funding Formula Use in Higher Education

2.0 Introduction and Overview

State-level funding formulas or guidelines for public higher education have been in use in the United States for over 60 years.[1] Originally envisioned as a means to distribute public funds in a rational and equitable manner, funding formulas have continually evolved since then into often-complex methodologies for determining institutional funding needs and allocating public funds. Perhaps the only constant during this period has been the ongoing controversy among participants in the state budgeting process surrounding the design and usage of these funding mechanisms. Even though 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 and that what is acceptable in one political subdivision may not be acceptable in another.

Although the basic purpose of funding formulas remains the rational and equitable allocation of state funds for public higher education, as shown in **Exhibit 2-1,** guidelines are designed and utilized for many purposes including the following:

- by the state higher education agency or governing board as a means of recommending resources for each institution to the legislature and governor;
- by the legislative and executive budget offices as a means of evaluating higher education budget requests;
- by the governing or coordinating board and/or legislature as a means of measuring and rewarding productivity; and
- by the state higher education agency as a means to distribute the state's higher education budget allocation to each institution.

In general, formulas used only for the request phase of activities are often less complex than those used to distribute a lump-sum appropriation within a system.

States use different methods to recommend or allocate funding or articulate funding adequacy.[2] **Exhibit 2-2** provides information on 7 methods that states reported using in 2006. Among the states, 27 use funding formulas based on credit hours or enrollment relative to cost factors; 14 use benchmarks or peer institutions; 11 use an allocation based on performance funding or performance metrics; 2 use performance contracting; 1 (Ohio) uses vouchers {although Colorado uses vouchers, but it did not provide responses to the survey); 17 use a base plus or minus incremental changes to base appropriations; and 8 use a hybrid among the methods. These numbers do not add to 50 because states indicated that they use multiple methods to allocate funding or to articulate funding adequacy. Nevada reported that it uses a formula based on credit hours or enrollment as well as a base plus model.

By 2010, the economy had shifted dramatically, and use of funding model or formulas shifted also. The use of formulas in 2010 will be discussed in section 2.5.

[1] The terms "*funding formula*" and "*funding guideline*" will be used interchangeably throughout this paper.

EXHIBIT 2-1
Reported Uses Of Formulas/Guidelines
In The Budgeting/Resource Allocation Process, 2006

State	Recommend to Governor Legislature	Governor Budget	Legislative Budget	Lump Sum Approp.	Direct Approp.	Allocation	Mid-year Reduction	Other
Alabama	X							X
Arizona	X	X	X					
Arkansas	X				X			
California	X	X		X		X		
Connecticut	X					X		
Florida	X	X	X					
Georgia	X	X	X	X				
Hawaii	X	X		X	X	X		X
Idaho	X	X	X	X		X		
Illinois						X		
Indiana	X	X	X			X	X	
Kansas						X		
Kentucky	X							X
Louisiana	X					X	X	
Maryland	X	X	X					X
Massachusetts	X	X	X		X			
Minnesota						X		
Mississippi	X					X		
Missouri	X					X		
Montana	X	X	X	X		X		
Nebraska	X							
Nevada	X	X	X					
New Mexico	X	X	X		X	X		
North Carolina	X	X	X	X	X	X	X	
North Dakota	X					X		
Ohio	X	X	X	X	X	X	X	
Oklahoma	X					X		
Oregon				X		X		
Pennsylvania						X		
South Carolina	X				X			X
South Dakota						X		
Tennessee	X				X		X	
Texas	X		X		X	X		
Vermont		X	X		X			
Virginia	X	X	X				X	X
Wyoming	X	X	X	X		X		
N	29	17	16	9	10	22	6	6

Source: *Compiled by MGT from SHEEO 2006 Survey of the states.*

EXHIBIT 2-2
Reported Manner Of Allocating Funding Or Articulating Funding Adequacy

State	Funding Formulas/ Enrollment	Formula Benchmark or Peers	Performance Funding	Performance Contracting	Vouchers	Base Plus Increment	Hybrid
Alabama	X					X	X
Arizona	X		X			X	
Arkansas	X		X			X	
California	X						
Florida	X					X	
Georgia	X						
Hawaii		X				X	
Idaho						X	
Illinois	X					X	
Indiana			X			X	X
Kansas	X			X		X	
Kentucky		X	X				
Louisiana	X	X				X	X
Maryland	X						X
Massachusetts	X	X					X
Minnesota	X	X					X
Mississippi	X						
Missouri							X
Montana						X	
Nebraska	X						
Nevada	X					X	
New Mexico	X	X	X			X	
North Carolina	X	X				X	
North Dakota		X					
Ohio	X		X		X		
Oklahoma	X	X					X
Oregon	X	X				X	
Pennsylvania	X		X				
South Carolina	X	X	X				
South Dakota	X		X				
Tennessee	X		X				
Texas	X		X	X		X	
Vermont						X	
Virginia	X	X					
West Virginia		X					
Wyoming	X	X					
N	27	14	11	2	1	17	8

Source: *Compiled by MGT from SHEEO 2006 Survey of the states.*

Development of an optimal or best formula is complex because there are differences in institutional missions, even within the same system, 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 enrollment driven because 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 institutions experienced declines in enrollment.

When enrollments decline or remain constant, methods are sought to 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 use of alternative instructional delivery methods, including telecommunications delivery of instruction, may require a shift in the paradigm on funding, as will large increases in enrollments at a time of declining state resources.

To accomplish the purpose of providing an equitable distribution of available resources, a majority of states and systems have used funding formulas or guidelines in budget development or in resource allocation to higher education institutions. A formula is defined as a mathematical representation of the amount of resources or expenditures for an institution as a whole or for a program at the institution. Programs in this context refer to the categories into which expenditures are placed, as defined by the National Association of College and University Business Officers (NACUBO). The "programs," "functional categories," or "budget areas" commonly used are the following:

Instruction	Institutional Support
Research	Operation and Maintenance of Physical Plant
Public Service	Scholarships and Fellowships
Academic Support	Auxiliary Enterprises
Student Services	Hospitals
Mandatory Transfers	

Many states or systems provide funding based on these functional or budget programs, with the exception of auxiliary enterprises, hospitals, and mandatory transfers. These three areas usually are not funded through state dollars, and hospitals and auxiliary enterprises are not included in Educational and General (E&G) expenditures, which result from the three basic missions of 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 and systems, however, total institutional needs are not determined by a formula mechanism. Additions are made to the amounts determined by formula to recognize special needs or special missions. Similarly, given political structures, competition for funds from other state agencies, and shortfalls in revenue projections, the amount determined by a formula calculation may be reduced to conform to total funds available.

The breadth and coverage of funding formula and guideline usage varies as well among the states. States may use formulas for all public higher education sectors (four- and two-year) or just a particular segment. Further, states may use formulas or guidelines for specific program areas such as instruction and

academic support, or they may be all-inclusive. A trend over time has been to have more "non-formula" components in the higher education budget, given the feeling that formulas are not adequate for meeting the funding needs of certain specialized activities (e.g., co-located instruction, public service activities, cooperative extension).

2.1 Development of Funding Formulas

Funding formulas have been considered the offspring of necessity.[3] The development of an objective, systematic method of dealing with the funding of many diverse institutions prompted many states to begin using formulas.[4] Prior to 1946, institutions of higher education served a limited and relatively homogenous clientele. After World War II, enrollments increased dramatically and each state or system 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 campuses increased and changed (i.e., introduction of community colleges, teachers' colleges becoming regional universities), so did the complexity of distributing resources equitably among competing campuses. Because state resources did not keep pace with increasing enrollments, the competition for funding became greater. And, because no two campuses are alike, methods were sought to allocate available funds in an objective manner, to provide sufficient justification to the Legislature for additional resources, 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.[5] The objective of equity in the distribution of state resources is to provide resources to each of the campuses 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.[6]

The concept of "adequacy" is more difficult to operationalize in the distribution of resources. What might be considered to be adequate for the basic operation of one campus would be considered inadequate for a campus offering similar programs but having a different client base.

Texas was the first state to use funding formulas for higher education. By 1950 California, Indiana, and Oklahoma also were using funding formulas or cost analysis procedures in the budgeting or resource allocation process. [7] In 1964 16 states were identified as using formulas; by 1973, the number had increased to 25 states, and to 33 by 1992.[8]

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[3] Gross, Francis M. 1979. Formu*la budgeting and the Financing of Public Higher Education: Panacea or Nemesis for the 1980s? AIR Professional File, 3*.
[4]Miller, James L. Jr. 1964. *State Budgeting for Higher Education: The Use of Formulas and Cost Analysis*. Ann Arbor, MI: University of Michigan.
[5] Moss, C.E. and Gaither, G.H. 1976. "Formula Budgeting: Requiem or Renaissance?" Journal of Higher Education. 47, 550-576.
[6] Millett, John D. 1974. *The Budget Formula as the Basis for State Appropriation in Support of Higher Education*. Indianapolis, IN: Academy for Educational Development.
[7] Gross, op.cit.
[8] McKeown, Mary P. and Layzell, Daniel T. 1994. "State Funding formulas for Higher Education: Trends and Issues." Journal of Education Finance, 19, 319-346.

Formulas evolved over a long period of time and contributed to a series of compromises between institutions, governing or coordinating boards, and state budget officials. For example, institutions sought autonomy while governing or coordinating boards and budget officials sought adequate information to have control over resources. The development of the Texas formulas is an example of the trade-offs between accountability and autonomy.

When sudden enrollment increases in the late 1940s caused confusion in the amounts to be appropriated to Texas public colleges, each institution lobbied the legislature for additional funds. Texas legislators felt that the institutional requests were excessive and that the division of resources among institutions was inequitable. Consequently, the legislature asked for some rational mechanism to distribute funds. In 1951 a teaching salary formula based on workload factors was developed; this formula did not recognize differences among the campuses in roles and missions. By 1957 a series of budget formulas developed by institutional representatives, citizens, and the new Commission on Higher Education was presented to the legislature. These formulas were developed only after completion of a major study of the role and scope of the institutions. The study included an inventory of program offerings and attempted to measure costs by program. After 1958 a cost study committee was established that recommended adoption of five formulas for teaching salaries, general administration, library, building maintenance, and custodial services. In 1961 two formulas for organized research and departmental operating costs were added. By 1996 Texas used 13 separate formula calculations that were developed through complex cost studies of each of the program offerings on the campuses. Texas continues to use advisory committees to revise and improve its formulas to encompass two broad objectives: provide for an equitable distribution of funds among institutions and assist in determining the funding needed for a first-class system of higher education.[9] At each phase of Texas formula development, compromises were reached between the desire for additional data for increased accuracy and for differentiating among the institutions and the cost and burden of providing the data. This method was used in the dramatic changes to the Texas funding models in 2010.

The trend in formula development in many states parallels the experience of Texas: refinement of procedures, greater detail and reliability in collection and analysis of information, improvement in the differentiation between programs and activities, and eventual inclusion of performance or accountability factors. States have used different methods over time to develop their formulas for both four-year and two-year institutions. Some states have developed their methods from the "ground up". Many of these formulas have been based on the statistical analysis of institutional data (i.e., regression modeling) or the determination of an "average cost" among institutions in a state for providing a particular type of service. Others have been based on staffing ratios and external determinations of "standard costs" or workload factors based on national norms. The key to the process seems to be the isolation or identification of variables or factors that are directly related to actual program costs. Isolation of variables that are detailed, reliable, not susceptible to manipulation by a campus, and sufficiently differentiated to recognize differences in institutional role and mission requires the collection of myriad amounts of data. Data must be collected and analyzed in a manner that does not raise questions of preferential treatment for any campus.

Other states have developed their formulas by borrowing existing formulas from other states. 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 effort required to complete a sound cost study. Accounting procedures are not

[9] Ashworth, Kenneth H. 1994. *Formula Recommendations for Funding Texas Institutions of Higher Education*. Austin, TX: Texas Higher Education Coordinating Board.

refined enough in some states or systems 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 three main missions of most institutions of higher education: 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.

States or systems use funding formulas for a variety of reasons, including the following:

- Formulas provide an objective method to determine institutional needs equitably.
- Formulas reduce political competition and lobbying by the institutions.
- 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.
- Formulas enable institutions to project needs on a timely basis.
- Formulas represent a reasonable compromise between public accountability and institutional autonomy.
- Formulas ease comparisons between institutions.
- Formulas permit policy makers to focus on basic policy questions.

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

However, formulas do have shortcomings, and there have been many heated debates over whether the advantages of formulas outweigh the downside of use. Some disadvantages of funding formulas are the following:

- Formulas may be used to reduce all academic programs to a common level of mediocrity by funding each one the same because quantitative measures cannot assess the quality of a program.
- Formulas may reduce incentives for institutions to seek outside funding.
- Formulas may perpetuate inequities in funding that existed before the advent of the formula.
- Enrollment-driven formulas may be inadequate to meet the needs of changing client bases or new program initiatives.
- Formulas cannot serve as substitutes for public policy decisions.
- Formulas are only as accurate as the data on which the formula is based.

- Formulas may not provide adequate differentiation among institutions.
- Formulas may incent institutions to behave in certain ways, such as enrolling increasing numbers of students without regard to student success.
- Formulas are linear in nature and may not account for sudden shifts in enrollments and costs.

In any event, guidelines or formulas reflect one of two computational approaches: the all-inclusive approach, where the total allocation for a program area such as Instruction or Academic Support is determined by one calculation; and the itemized approach, where more than one calculation or formula is used in each budget area. Most state funding formulas (including Nevada's) use the itemized approach.

Three computational methods have been identified under which every formula calculation can be classified:

- Rate per base factor unit (RPBF);
- Percentage of base factor (PBF); and
- Base factor/position ratio with salary rates (BF-PR/SR).

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 the base by a specific unit rate. Unit rates generally have been determined by cost studies and can be differentiated by discipline, level, and type of institution.

The PBF method assumes 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 percentage to levels of instruction or type of institution, but this is unusual. Reportedly, the PBF was developed because of the perception that all support services are related to the university's primary mission (instruction).[10]

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

The base factors used in most formulas can be classified into five categories:

- head count;
- number of positions;
- square footage or acreage;
- FTE students or staff; and
- Credit hours.

[10] Boling, Edward. 1961. *Methods of Objectifying the Allocation of Tax Funds to Tennessee State Colleges*. Nashville, TN: George Peabody College of Vanderbilt University.

Square footage or acreage is used most often in the operation and maintenance of plant, whereas credit hours, FTE students or staff, or positions are the most prevalent bases in the instruction, academic support, and institutional support areas. Head count is used as the base unit most often in student services and the scholarships and fellowships area.

States have also found it necessary to introduce factors that differentiate among institutions in funding formulas because each institution, if examined closely enough, has a different mission and mix of program offerings. Differentiation is used to recognize that there are legitimate reasons for costs to vary; reasons include 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 attempt to differentiate by discipline, institutional type, or level of enrollment. Enrollment may be based on credit hours attempted or credit hours completed. Only a few formulas in other budget areas differentiate by these three types of factors.

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 (e.g., Alabama) have also introduced differentiation for historically black institutions as an institutional type.

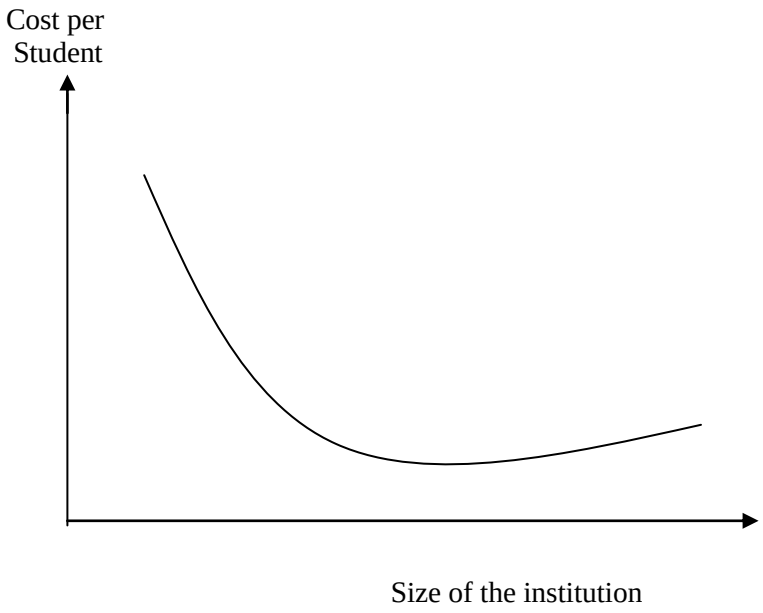
2.2 Economies of Scale and Scope

Formulas also may include factors that consider the size and complexity of the institution so that economies and diseconomies of scale and scope may be recognized. Some higher education institutions long have contended that their small size makes it impossible to take advantage of factors that would reduce unit costs; or conversely, that the institution's large size introduces diseconomies that make unit costs higher. Similarly, institutions have argued that narrowness of offerings, i.e., being a liberal arts college only, results in a reduction of unit costs (because of factors such as less departmental overhead since there are fewer academic departments); while diversity of program offerings, addition of master's and doctoral programs, and diversity of mission cause additional costs, or diseconomies of scope. The economics literature and research provide evidence that not only economies and diseconomies of scale but also economies and diseconomies of scope exist in higher education.

One of the basic principles of economics is that the size or scale of operation is likely to affect the cost of one unit of production. In higher education, an increase in the size of the institution may result in reductions in unit costs, or cost of a full-time equivalent student; this phenomenon is called an *economy of scale*. Similarly, if increases in institutional size result in increases in unit costs or the cost of a full-time equivalent student, the phenomenon is called a *diseconomy of scale*. Formulas may recognize these differences by providing a fixed cost factor such as a minimum guaranteed funding base to ensure that smaller institutions have the necessary resources to offer a basic level of services; or by providing differential amounts for more complex institutions.

A typical relationship between size and cost is shown in **Exhibit 2-3**. As institutional size increases, factors that appear to decrease unit cost tend to predominate until a point is reached when factors raising unit costs tend to be predominant. The result is a u-shaped curve where the minimal point on the curve represents the lowest unit cost. In higher education, this lowest point may actually be a range over which the factors that keep costs down and those that drive costs up are in balance.

EXHIBIT 2-3
Hypothetical Cost Curve Between Size Of Institution And Cost Per Student



Bowen[11] notes that the primary factors that drive the costs of higher education down is what he calls the "lumpiness" of many of the resources used. For a college or university to operate at all, it must have some faculty, a few administrative officers, some buildings and grounds, books, and equipment whether the college enrolls five students or 5,000. These costs to operate an institution or program no matter how many students are involved are called "fixed costs." The cost per student for these initial overhead items or fixed costs decreases as the number of students increases, until a point is reached when the staff and facilities are fully employed and an additional student would require additional resources. The costs that are added for additional students or additional outputs are called "variable costs." "Marginal costs" are defined as those costs associated with the recent addition or deletion of students from a program; the terms "variable" and "marginal" costs are sometimes used interchangeably.

As the institution expands further, more resources would be added in the lumpy fashion, with costs continuing to be spread over additional students, and unit costs again would fall. Large enrollments also increase average class size, resulting in further economies of scale because instructors' salaries remain the same, but are spread over more students.

[11] Bowen, Howard R. 1980. *The Costs of Higher Education*. San Francisco, CA: Jossey-Bass, Inc.

Bowen also notes that the "lumpiness" of resources gives rise to three different types of diseconomies of scale. One of these diseconomies is the rising cost of institutional coordination of larger and more academic units within the institution. While Bowen calls this a diseconomy of scale, other economists label this phenomenon a "*diseconomy of scope*."[12] Economies of scope are defined by Cohn et al as "complementarity between outputs that results in lower per-unit costs when two more outputs are produced simultaneously."[13] In other words, economies of scope occur when a university produces credit hours at multiple levels and it is cheaper to produce those credit hours at the undergraduate and graduate level together than to produce those credit hours in separate departments. Or economies of scope occur when an institution produces multiple products with no increase in cost, as occurs when professors teach and also produce research and public service.

A second diseconomy of scale noted by Bowen is the possible deterioration in quality as the size of the institution increases. He calls deterioration in quality an increase in unit cost because the value of the service decreases.

The third diseconomy of scale occurs, according to Bowen, when increasing size results in additional recruitment expenditures and student financial aid, thus increasing unit costs.

Bowen was not the first economist to study economies and diseconomies of scale in higher education. Early studies were completed in the 1920s, but the first studies of note were completed in the 1960s, all showing that certain economies of scale did exist for colleges and universities.[14] In 1972, the Carnegie Commission on Higher Education determined that there was a definite relationship between size of an institution and cost per student. For public research institutions, cost reductions occurred at the breaking point between 5,000 and 5,500 students.[15] Earlier work by the Commission had resulted in these recommendations for optimal college/university size:

	Minimum	Maximum
Doctoral universities	5,000	20,000
Comprehensive universities	5,000	10,000
Liberal arts colleges	1,000	2,500
Community or junior colleges	1,000	5,000[16]

In his seminal work on college or university costs, Bowen concluded the following:

- Large institutions spend a substantially smaller percentage of their educational expenditures for institutional support and student services than do small institutions.
- Most large institutions spend relatively less per student for plant operation and maintenance than do small institutions.

[12] Cohn, Elchanan; Rhine, Sherrie; and Santos, Maria. 1989. "Institutions of Higher Education as Multi-Product Firms: Economies of Scale and Scope," Review of Economics and Statistics, 71, 2 (May, 1989) pp. 284 – 290.
[13] Ibid., p. 285.
[14] See for example, Hungate, Meeth and O'Connell, "The Quality and Cost of Liberal Arts College Programs" in E.J. McGrath Cooperative Long Range Planning in Liberal Arts Colleges. 1964. New York, Columbia University; Hawley, Boland and Boland, "Population Size and Administration in Institutions of Higher Education," American Sociological Review, 30 (April 1965): pp. 252-255.
[15] Carnegie Commission on Higher Education. 1972. *The More Effective Use of Resources*. New York: McGraw-Hill.
[16] Carnegie Commission on Higher Education. 1971. *New Students and New Places*. New York: McGraw-Hill.

- Large institutions spend a greater percentage of their resources for teaching than do comparable small institutions.
- Size appears to have no consistent effect on the percentages spent for scholarships and fellowships and for academic support. However, large institutions spend relatively less on libraries than do small institutions.[17]

Bowen concluded that economies of scale appear to be most pronounced for institutional support, student services, and plant, resulting in large institutions being able to devote a larger share of their resources to instruction. As a result, larger institutions were able to pay higher average faculty salaries than smaller institutions could. Similarly, larger institutions had less building space per student than smaller institutions and also employed relatively more "other staff" than small institutions.

Paul Brinkman and Larry Leslie completed a meta-analysis on 60 years of research on economies of scale in higher education.[18] The literature in the review included books, dissertations, reports, and journals dating from the 1920s. Their review of the studies found the following:

- Large economies of scale are found in expenditures for administration and operation and maintenance of plant.
- Total educational and general costs per student decrease as size increases.
- Substantive size-related economies of scale are most likely to occur at the low end of the enrollment range.
- Instructional expenditures have the least reductions in unit costs related to size.
- Evidence was inconclusive on whether large institutions experience diseconomies of scale.
- The extent to which a set of institutions (like a state system) experience economies or diseconomies of scale depends on the scope and variety of programs and services offered (i.e., economies and diseconomies of scope), salaries paid, and how resources are used on the campus.
- Institutions with between 1,000 and 2,000 FTE students can experience adverse economies of scale.

In contrast to the meta-analytical results, using regression analysis Broomall et al. examined economies of scale for Virginia institutions and concluded that economies of scale are not a function of the type and size of a college or university. Moreover, no economies or diseconomies of scale or scope appeared as complexity or size of the institution increased.[19]

[17] Bowen, op. cit., p. 182.
[18] Brinkman, Paul and Leslie, Larry. 1986. "Economies of Scale in Higher Education: Sixty Years of Research," Review of Higher Education. Association for the Study of Higher Education, v. 10, no. 1
[19] Broomall, Lawrence W. B.T. McMahon, G.W. McLaughlin and S.S. Patton. 1978. *Economies of Scale in Higher Education*. Blacksburg, VA: Virginia Polytechnic Institute Office of Institutional Research.

Koshal and Koshal examined economies of scale and scope in higher education and concluded the following:

- The marginal cost of graduate education is greater than that of undergraduate education.
- Ray economies of scale (the expansion of all outputs) exist for comprehensive universities. This means that increases in the size of graduate and undergraduate programs and in research and public service programs result in reduced marginal costs.
- Product specific economies of scale for undergraduate and graduate education do exist at all levels of output.
- Global economies of scope (due to complementarity among outputs like research and instruction) exist for all public institutions. For undergraduate and graduate instruction, both product-specific economies and diseconomies of scope exist.
- Comprehensive universities can reap benefits from both economies of scale and of scope. Large comprehensive universities are the more cost-efficient institutions.[20]

Dundar and Lewis examined economies of scale and scope at public universities and concluded that average and marginal costs were highest for research outputs and lowest for undergraduate education. Social sciences have the lowest costs; contrary to conventional wisdom that costs of instruction increase by level, this was not found for all fields, and master's education in the social sciences is more costly than doctoral education. They concluded that the design of funding and tuition policies for universities should consider the joint costs of research and public service and the economies of scope possible with joint production. Most importantly, Dundar and Lewis concluded that economies of scale and scope exist at departmental levels, and differ by discipline but not within the social sciences.[21]

In what has been called "an important advance" [22] in the study of economies of scale and scope in higher education, Cohn, Rhine, and Santos examined three types of economies: ray economies (due to the expansion of all outputs), product-specific economies of scale, and economies of scope. They concluded that there were product-specific economies of scale for undergraduate and graduate enrollment and for sponsored research funding. For institutions engaging in only small amounts of research, they found ray economies of scale up to only 5,000 students while institutions with large amounts of research had ray scale economies up to 25,000 students. There also were significant economies of scope among all outputs, but especially for instruction and research. This means that the cost of producing research and instruction together is cheaper than the costs of producing them separately. Cohn et al concluded that the most efficient institutions are major public research universities that have both large enrollments and substantial research enterprises.[23]

[20] Koshal, R.K. and Koshal, M. 1999. "Economies of Scale and Scope in Higher Education: A Case of Comprehensive Universities," Economics of Education Review. 18, pp. 269-277.
[21] Dundar, Halil and Lewis, Darrel R. 1995. "Departmental Productivity in American Universities: Economies of Scale and Scope," Economics of Education Review, 14, pp. 119-144.
[22] Hoenack, Stephen A. and Collins, Eileen. 1990. *The Economics of American Universities*. Albany, NY: State University of New York Press. p. 139.
[23] Cohn, Rhine, and Santos, op. cit.

Lastly, Brinkman summarized the available information related to costs at comprehensive universities.[24] Studies he reported concluded that total expenditures per student at institutions with 12,000 full-time equivalent students could be expected to be 22 percent lower than cost per student at an institution of 4,000 students. For master's-oriented institutions, economies of scale appear to be maximized at 3,000 to 4,000 students, and that minimum average costs are reached at 5,000 students. Brinkman also reported that direct costs per credit hour for doctoral instruction were, on average, 8 to 9 times as much as lower division undergraduate costs per credit hour; master's level 4 to 5 times as much; and upper division 1.6 to 1.8 times as much. He concluded that factors associated with changes in marginal and average costs were size of institution, scope of services offered, level of instruction or student, and discipline.

2.3 Guiding Principles in Formula/Guideline Usage

Over time, a number of researchers in the area of higher education finance have offered their concepts regarding desired characteristics in state higher education funding formulas. Frequently, what is offered as the "desired characteristic" is in direct response to a perceived shortcoming of a particular state's funding formula or guideline.

Fourteen characteristics, listed and summarized in **Exhibit 2-4** in no particular order of importance from A to N, often tend to be in opposition to one another. For instance, the desire to have a simple-to-understand funding formula may preclude features that might contribute to a greater degree of equity (e.g., more detailed sub-categories to reflect institutional differences). Similarly, a formula that is responsive to changes in enrollment levels may not be able at the same time to provide the desired level of stability. Use of the characteristics provides an objective framework for evaluating funding policy alternatives – both during the phase of review of the current formula and in subsequent years.

EXHIBIT 2-4
Sample Desired Characteristics of a Funding Formula or Funding Model

Characteristic	*Summary Description*
A. Equitable	The funding formula should provide both horizontal equity (equal treatment of equals) and vertical equity (unequal treatment of unequals) based on size, mission and growth characteristics of the institutions.
B. Adequacy-Driven	The funding formula should determine the funding level needed by each institution to fulfill its approved mission.
C. Goal-Based	The funding formula should incorporate and reinforce the broad goals of the state for its system of colleges and universities as expressed through approved missions, quality expectations and performance standards.
D. Mission-Sensitive	The funding formula should be based on the recognition that different institutional missions (including differences in degree levels, program offerings, student readiness for college success and geographic location) require different rates of funding.

[24] Brinkman, Paul. 1990, "Higher Education Cost Functions, " in Hoenack and Collins, op. cit.

EXHIBIT 2-4 *(continued)*
Desired Characteristics of a Funding Formula or Guideline

Characteristic	*Summary Description*
E. Size-Sensitive	The funding formula should reflect the impact that relative levels of student enrollment have on funding requirements, including economies of scale.
F. Responsive	The funding formula should reflect changes in institutional workloads and missions as well as changing external conditions in measuring the need for resources.
G. Adaptable to Economic Conditions	The funding formula should have the capacity to apply under a variety of economic situations, such as when the state appropriations for higher education are increasing, stable or decreasing.
H. Concerned with Stability	The funding formula should not permit shifts in funding levels to occur more quickly than institutional managers can reasonably be expected to respond.
I. Simple to Understand	The funding formula should effectively communicate to key participants in the state budget process how changes in institutional characteristics and performance and modifications in budget policies will affect funding levels.
J. Adaptable to Special Situations	The funding formula should include provisions for supplemental state funding for unique activities that represent significant financial commitments and that are not common across the institutions.
K. Reliant on Valid & Reliable Data	The funding formula should rely on data that are appropriate for measuring differences in funding requirements and that can be verified by third parties when necessary.
L. Flexible	The funding formula should be used to estimate funding requirements in broad categories; it is not intended for use in creating budget control categories.
M. Incentive-Based	The funding formula should provide incentives for institutional effectiveness and efficiency and should not provide any inappropriate incentives for institutional behavior.
N. Balanced	The funding formula should achieve a reasonable balance among the sometimes competing requirements of each of the criteria listed above.

For this study, the presidents and Chancellor of the Nevada System of Higher Education identified a subset of these characteristics to guide the development of a funding model. These guiding characteristics are shown in **Exhibit 2-5.**

EXHIBIT 2-5
Guiding Criteria For The Nevada Model

Characteristic	Summary Description of Principles
A. Outcomes-Based	The funding model should incorporate and reinforce the broad goals for the state's system of colleges and universities as expressed through approved missions, quality expectations, and performance standards.
B. Mission-Sensitive	The funding model should be based on the recognition that different institutional missions (including differences in degree levels, program offerings, student readiness for college success and geographic location) require different rates of funding.
C. Size-Sensitive	The funding model should reflect the impact that relative levels of student enrollment have on funding requirements.
D. Adaptable to Economic Conditions	The funding model should have the capacity to be applied under a variety of economic situations, such as when the state appropriations for higher education are increasing, stable, or decreasing.
E. Equitable	The funding model should provide both horizontal equity (equal treatment of equals) and vertical equity (unequal treatment of unequals) based on size, mission, and growth characteristics of the institutions.
F. Use of Valid and Reliable Data	The funding model should rely on data that are appropriate for measuring differences in funding requirements and that can be verified by third parties when necessary.

2.4 States' or Systems' Funding Formulas

In 2006, 38 states or systems reported that they were using funding formulas and guidelines in the budget or resource allocation process for public institutions, the most since 1980. The number of states or systems 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. For example, Louisiana typically is identified as a formula state although the person responding to the survey used to collect these data indicated Louisiana was not using formulas. States identified as using funding formulas in 2006 are listed in **Exhibit 2-6**. **Exhibit 2-7** provides information on the sectors to which formulas apply.

Although all of the southern states except North Carolina used funding formulas in the 70s and 80s, and have been leaders in formula development and innovation, that picture changed during the last half of the 1990s. Delaware, Kentucky, Mississippi, and Virginia dropped the use of formulas in the resource allocation or budgeting process. Instead, these states focused budget requests and the allocation process on inflationary increases and special initiatives. Most of the other southern states modified their formulas since 1992, and the University of North Carolina System now uses formulas to determine increases or decreases in institutional funding requests based on changes in enrollment. Virginia developed a new funding formula that had performance components in the 1990s.

As the national economy has declined in the last half of the decade, state funding for higher education also has been constricted, leading to significant changes in funding formulas. This new wave of funding models will be discussed in Section 2.7.

EXHIBIT 2-6
States/Systems Using Formulas
In 1988, 1992, 1996 And 2006

State	Using Funding Formulas			
	1984	1992	1996	2006
Alabama	X	X	X	X
Alaska		X		
Arizona	X	X	X	X
Arkansas	X	X		X
California	X	X	X	X
Colorado	X	X	X	
Connecticut	X	X	X	X
Delaware				
Florida	X	X	X	X
Georgia	X	X	X	X
Hawaii				X
Idaho		X	X	X
Illinois	X	X	X	X
Indiana				X
Iowa				
Kansas	X	X	X	X
Kentucky	X	X	X	X
Louisiana	X	X	X	X
Maine				
Maryland	X	X	X	X
Massachusetts	X			X
Michigan	X			*
Minnesota	X	X	X	X
Mississippi	X	X	X	X
Missouri	X	X	X	X
Montana	X	X	X	X

EXHIBIT 2-6 *(continued)*
States/Systems Using Formulas
In 1988, 1992, 1996 And 2006

State	Using Funding Formulas			
	1984	1992	1996	2006
Nebraska				X
Nevada	X	X	X	X*
New Hampshire				
New Jersey	X			
New Mexico	X	X	X	X
New York	X			*
North Carolina				X
North Dakota	X	X	X	X
Ohio	X	X	X	X
Oklahoma	X	X	X	X
Oregon	X	X	X	X
Pennsylvania	X		X	X
Rhode Island				
South Carolina	X	X	X	X
South Dakota	X	X	X	X
Tennessee	X	X	X	X
Texas	X	X	X	X
Utah		X	X	
Vermont				X
Virginia	X	X		X
Washington	X			
West Virginia	X	X	X	
Wisconsin	X			
Wyoming				X
N	36	32	30	38

* State did not complete survey; information taken from websites.

EXHIBIT 2-7
Sectors To Which Formulas Apply

State	All	All but Differ-ent	Research Universities	State Colleges/ Universities	Comm-unity Colleges	Voc/ Tech College	Private Institution	Special Institution	Other
Alabama		X							
Arizona			X		X				
Arkansas			X	X	X				
California			X	X	X				
Connecticut			X	X					
Florida			X	X	X				
Georgia	X					X			
Hawaii	X								
Idaho			X	X	X	X			
Illinois					X				
Indiana	X								
Kansas					X	X			
Kentucky			X	X	X	X			
Louisiana	X								
Maryland		X					X		X
Massachusetts		X							
Minnesota				X	X	X			
Mississippi									X
Missouri			X	X	X				
Montana			X	X		X			
Nebraska					X				
Nevada	X		X	X	X				
New Mexico			X	X	X	X			
North Carolina			X	X	X		X		
North Dakota	X								
Ohio			X	X	X	X			
Oklahoma	X								
Oregon			X	X					
Pennsylvania				X					
South Carolina	X								
South Dakota				X					
Tennessee			X	X	X	X			
Texas			X	X	X	X		X	
Vermont			X	X	X	X			X
Virginia			X	X	X	X			X
Wyoming					X				
N	8	2	18	20	20	12	2	1	4

2.4.1 Funding Formulas for Two-Year Colleges

In many states, two-year colleges originally were governed under the auspices of state departments of education and/or local school boards. Because of this governance structure, early funding formulas for two-year colleges were patterned off elementary and secondary education funding formulas. Funding generally was calculated at a dollar amount per student, with both the state and the local district contributing to total funding. The level of local funding was based on the district's ability to support the college, which generally was calculated based on an equalization formula using taxable property wealth per full-time equivalent student. Use of ability-to-pay formulas is one method of distributing funds equitably across college districts within a state. Ability-to-pay is similar to the subtraction of different revenue amounts from the "needs" of four-year institutions based on the amount of revenues that the institution can generate.

When governance for two-year colleges was transferred from the local school district board (and the state board of education) to a board for the college (and either a statewide two-year college board or other state higher education board), most funding formulas migrated away from the "ability to pay" formulas used for elementary/secondary education.[25] Many states (e.g., Georgia, North Dakota, Nevada, Montana, West Virginia) now incorporate funding for two-year colleges within the funding formulas used for all higher education by differentiating by type of institution. Other states (e.g. Texas, Alabama, Arizona) have separate funding formulas for two-year colleges, while some states (e.g., Wyoming) use funding formulas for two-year colleges but not for the four-year segment.

The Arizona, Indiana, Kansas, Missouri, Nebraska, and Illinois community college formulas continue to use the ability of the local community college district to support the college (as measured by local property wealth) as a formula component. Other states include equity factors in their formulas by recognizing variations in the cost of offering different types of educational programs and services (like South Carolina does) and by recognizing economies of scale (e.g., North Carolina). Nevada's two-year colleges do not receive local "appropriations" from a property tax to support part of the cost of operations.

Several states determine the adequacy of their two-year college funding formula by comparing funding to regional averages or to institutional peer groups. Alabama, Kentucky, and South Carolina compare funding for two-year colleges to the SREB regional average funding for each type of college, as defined in the SREB Data Exchange. Oklahoma uses national peer group averages to determine the adequacy of institutional funding levels.

2.4.2 Formulas by NACUBO Classification

Practices in formula use vary significantly among the states/systems. Formula usage and identification of "best practices" in each area are described below for each of the areas.

2.4.2.1 Instruction

This category includes all expenditures for 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). Nevada includes remedial instruction at the community colleges and Nevada State College only. Instruction is the most

[25] Mullin, Christopher and David Honeyman, "The Funding of Community Colleges," Community College Review, Vol. 25, # 2, (October 2007), pp113-127.

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.

Since the instruction program is typically the major component of expenditures at institutions of higher education, formulas for this activity are often quite complex. Each of the states using formulas explicitly or implicitly utilizes at least one formula for instruction. States provide differential funding for activities within the instruction program to recognize differences in costs by level of instruction, among academic disciplines, and among institutional roles and missions. 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 approach. Explicitly, 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. Some of the states/systems such as Pennsylvania recognize economies of scale in the Instruction formula by using fixed and variable costs.

Examples of two formulas for instruction follow. Student/faculty ratios by level by discipline vary in the first sample formula, while the rate varies by level in the second.

1. *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.*
2. *Instruction funding = Base amount plus the sum of [(a rate times the number of weighted credit hours in Discipline Group 1) (rate times the number of weighted credit hours in Discipline Group 2) and (rate times the number of weighted credit hours in Discipline Group 3)] where the number of weighted credit hours is the rolling three-year average credit hours, and all academic disciplines are assigned to one of three discipline groupings based on cost factors. A discipline may be in Discipline Group 1 for undergraduate instruction and in Discipline Group 2 or 3 for Master's or Doctoral instruction.*

Each state that uses a formula for instruction utilizes a unique methodology. In fact, no two states rely on the same parameters for determining funding needs for their institutions of higher education. A common problem faced by those states with large numbers of instructional cost categories in their funding formulas is the need to monitor the appropriateness of the classification of student credit hours by program or discipline. Formulas with too many program levels can create a temptation for institutions to assign their credit hour production to those program categories with the highest rate of reimbursement. The need to audit the correct reporting of student credit hour production exists in any enrollment-driven funding formula. However the problem grows exponentially with the level of differentiation.

In general, too much differentiation within the instructional component creates incentives for "gaming" the formula and leads to extra administrative expense in auditing enrollment reports and projecting future enrollment levels. For these and related reasons, some states (e.g., Florida) have refined

their formulas in recent years to rely on a smaller number of cost categories in their instructional formula. Other states also are evaluating the use of simpler formulas.

Nevada's Instruction Formula

Nevada's current formula for Instruction differentiates between the four-year and two-year campuses. No Instruction component is included in the funding for the Desert Research Institute (DRI).

The Nevada formula uses a legislatively-approved credit hour matrix that differentiates between high, medium, and low cost and clinical classes at the lower division, upper division, masters, and doctoral levels. A student/faculty ratio is used to determine the number of instructional faculty required for each institution according to the number of students projected to enroll by level of instruction and by the relative cost of the discipline. A separate matrix is used for the universities, for Nevada State College, and for each of the colleges/community colleges. Higher levels of instruction and higher discipline costs are reflected by lower student to faculty ratios. Once GBC and WNC reach a SFTE level of 3,000, lower division funding is to be the same for all colleges/community colleges. **Exhibit 2-8** displays this matrix.

EXHIBIT 2-8
Student: Faculty Ratios

	Lower Division	Upper Division	Masters		Doctoral	
UNR and UNLV:						
Clinical	8	8	8		8	
High Cost	18	13	10		8	
Medium Cost	21	16	13		8	
Low Cost	26	22	16		8	
NSC:						
Clinical	8	8	8			
High Cost	18	15	12			
Medium Cost	21	18	15			
Low Cost	26	24	18			
Colleges/Community Colleges:	Lower, TMCC & CSN	Upper, CSN	GBC Lower	GBC Upper	WNC Lower	WNC Upper
Clinical	8	8	8	8	8	8
High Cost	14	14	12	12	12	12
Medium Cost	21	16	21	16	21	16
Low Cost	26	25	23	22	26	25

The institutions report actual student credit hours (SCH) for the previous year by level of instruction and by discipline, which are converted to full-time student equivalents (SFTE) by dividing the number of credit hours by 30 for undergraduates, by 24 for masters level, and by 18 for doctoral. The percentage distribution of SFTE enrollment by levels of instruction and discipline is calculated and the same percentage is applied against projected enrollments. SFTE enrollment projections are based on a weighted three-year average rolling growth rate that is applied to the current actual annual full-time enrollments. The previous three years of the percentage of growth are weighted with the most recent year given 50 percent, the second year 30 percent, and the earliest year, 20 percent.

The number of faculty members required as calculated by this formula is then compared to the prior year's budgeted number of faculty. Any change in faculty positions are funded at (or reduced by) established rates that are different for the two universities and NSC and for the community colleges. For the universities and NSC, new faculty positions are funded at the mid-point of Q1 and Q2 of the academic salary schedule for an associate professor, plus associated fringe benefits. For the community colleges, new faculty members are funded at Rank 4, Step 10 of the academic salary schedule, plus fringe benefits.

For the colleges, new instructional positions are distributed at the ratio of 60 percent full-time positions, and 40 percent part-time. New part-time faculty positions are funded at 60 percent of the base salary for full-time faculty, plus associated fringe benefits.

In addition to faculty positions, the Instruction formula provides one additional classified position for every five new instructional faculty members. Classified positions are funded at Grade 27, Step 1 of the State's employer paid compensation schedule, plus associated fringe benefits.

The Instruction formula also provides for operating and wage costs at a predetermined amount which is adjusted at the inflation rate plus 1 percent. Currently, universities are funded at $7,368 per faculty FTE; NSC at $6,141 per faculty FTE; community colleges at $5,650 per faculty FTE; and classified staff at $2,825 per FTE for all institutions.

The instruction formula also generates equipment funds for each existing full-time faculty and classified position. These funds are used for faculty start-up packages, instructional equipment replacement, and other workstation replacement. For faculty, universities are currently funded at $6,387 annually per faculty position; NSC at $5,527; and community colleges at $4,350; and all classified positions at $1,228 per position.

For new positions, equipment is calculated by a separate formula as defined by the State Budget Division guidelines as $6,000 per new FTE faculty position and $4,000 per new classified position.

Graduate assistants at the universities and NSC and college teaching assistants at the four colleges are provided through formula calculations. For the community colleges, $1,000 per faculty member, plus associated fringe benefits is allocated to fund teaching assistants. For UNR, UNLV, and NSC, one graduate assistant is allotted for every eight project master's level student headcount enrollments, and one for every 3.33 projected doctoral student headcount enrollments. Assistantships are funded at one-half the cost of an instructor position, plus associated fringe benefits.

In addition to all of the above calculations, a separate salary equity pool was designated to eliminate the inequity in faculty salaries between UNLV and UNR. The pool of funds was determined by multiplying 10 percent of the FTE turnover rate by the difference in the all-ranks salary at the two institutions. UNLV drew the equity pool funds for each faculty vacancy filled at a salary higher than the current budget for the position. The equity pool was to be funded for three biennia, and was to result in equal salaries by the 2005-2007 biennia.

2.4.2.2 Research

This category includes expenditures for activities designed to produce research outcomes. 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.

Florida's formula is complex and involves computations related to the magnitude of research activities 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 used a formula that calculated a level of support that recognizes differing roles and missions in research among institutions. Because different systems have differing goals, there are no generic "best practice" research formulas. Two sample research formulas follow.

1. *Research amount = 1% of outside funding for research.*
2. *Research amount = 2% of the sum of the formula amounts for instruction and academic support plus 5% of sponsored research*

Nevada does not use a formula for research funding. Rather, funding is determined on an incremental basis.

2.4.2.3 Public Service

This category includes funds expended for activities that primarily provide non-instructional services to individuals and groups external to the institution. Alabama, Kentucky, Maryland, Tennessee, and South Carolina were the only states who have reported using an explicit formula approach for the funding of public service activities. In Florida, public service positions were generated based on ratios specific to disciplines and then multiplied by a salary amount per position. South Carolina provided 25 percent of prior year sponsored and non-general fund public service expenditures; Alabama's funding formula was 2 percent of the combined allocations for instruction and academic support. Sample public service formulas are shown below.

1. *Public service amount = 2% of the sum of instruction and academic support*
2. *Public service amount = $75,000 + 1% of instruction, or $150,750 whichever is greater*

Nevada does not have a formula for the public service components of college and university operations. However, for workstation replacements for non-formula budgets, which include Cooperative Extension, a public service activity of UNR, $1,228 is allocated for each professional and classified FTE position.

2.4.2.4 Academic Support

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. However, costs associated with the office of the chief academic officer of the campus are included in the institutional support category. (NOTE: Nevada includes the costs of the chief academic officer in the academic 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 had at least one formula. Texas allocated an amount per credit hour differentiated by level of instruction.

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 four states, including Nevada, used a library formula that would permit meeting the ACRL criteria.

However, library holdings calculated by formulas like the Clapp-Jordan are not sensitive to 21st century libraries or information storage and retrieval. 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" where the text of some "books" may be accessed electronically via the Internet. These technological changes in media availability certainly have profound impacts on library resource needs. In fact, such changes could actually make the distinction between "libraries" and "academic computing" currently found on most campuses irrelevant in the future. As such, the practice of having separate formulas for libraries could become outdated. In 2010, the American Library Association issued new guidelines for funding of academic libraries. As of this point in time, those new standards have not been incorporated into any funding formula, although it is likely that states which have used the Clapp-Jordan or Voight formula may change in the near future.

An example of a simple and a more complicated academic support formula is shown below.

1. *Academic support funding = 5% of instruction formula calculation*
2. *Academic support funding = $750,000 + 15% of instruction formula calculation + $10 per undergraduate credit hour over 50,000 credit hours + $20 per masters credit hour + $80 per doctoral credit hour + $5 per continuing education hour*

Florida, Kentucky, Missouri, South Carolina, and Texas each had at least one formula for other components of the academic support category. South Carolina calculated an amount based on the average expenditure per student by type of institution. Data from the most recent IPEDS surveys were updated using the Higher Education Price Index (HEPI) to arrive at the amount per student.

Nevada's Formula for Academic Support

Nevada's funding formulas for Academic Support include separate calculations for library staffing, operating and equipment, and other areas. For UNLV, UNR, and NSC, for the office of the chief Academic Officer, base funding is provided for two professional positions and one classified position. Additional positions are added based on the size of the faculty: 200 to 499 faculty FTE generate one additional professional position and one additional classified position; more than 500 faculty FTE generates two additional professional positions and two additional classified positions.

For the schools and colleges at UNLV, UNR, and NSC, base funding is provided for one professional position (such as a dean) and one classified position. For 50 to 174 faculty FTE in the school or college an additional professional and one additional classified position are added. More than 175 faculty FTE in a school or college generates two additional professional positions and two additional classified positions. New professional positions for the Academic Support function are added at Q1 of the academic salary schedule for Professor, Rank 4, on a 12-month contract, plus associated fringe benefits. New classified positions are added at Grade 27, Step 1, of the State's employer paid compensation schedule, plus associated fringe benefits.

For other Academic Support areas such as academic advisement, technology, and testing services, a percentage of the Instruction budget is added, equal to 9.5 percent of the Instruction budget for UNLV and UNR and 6.5 percent of the Instruction budget for NSC.

For the community colleges, the Academic Support formula is based on a fixed percentage of the Instruction budget. For GBC, 30 percent of the first $7.5 million of the Instruction budget, and 25 percent of any Instruction budget over $7.5 million is allotted. Once GBC reaches 3,000 SFTE, the Academic Support funding percentages will be consistent for all the community colleges. For CSN, WNC, and TMCC, 22 percent of the Instruction budget is allocated.

For the library, for UNLV, UNR, and NSC, staffing is determined by the number of volumes in the library collection, adjusted by an inflation factor; 50 positions are allocated for the first 500,000 volumes. One new position is added for every additional 16,000 volumes above 500,000. New positions generated as a result of the formula are added at a 40:60 professional to classified ratio; that is, for every five positions added, two are professional positions and three are classified. New professional positions are added at the mid-point of Q1 and Q2 of the salary schedule for an Assistant Professor, Rank 2, plus associated fringe benefits. Classified positions are added at Grade 27, Step 1, of the State's employer paid compensation schedule, plus associated fringe benefits.

The Academic Support formula also provides for operating costs for the libraries at a predetermined rate, adjusted at the inflation rate plus one percent. Universities are funded at $6,260 per FTE position for all library positions, while NSC is funded at $4,913 per FTE library position.

Equipment funds for each classified and professional FTE is provided for workstation replacement at the rate of $1,025 for each existing professional and classified position. One-time equipment funds for new professional and classified positions are funded at $6,000 or $4,000 per new professional or classified position, respectively.

Under the Clapp-Jordan formula, the universities, NSC, and the community colleges add volumes to improve library collections. For the universities and NSC, the base number of volumes is 85,000, and to that is added 125 volumes per faculty member, 20 volumes per FTE student, 610 volumes per baccalaureate degree program, 10,000 volumes for each Master's program without a doctoral program, 3,750 volumes for each master's program with a doctoral program, and 31,250 volumes for each doctoral program. For the community colleges, using the Learning Resources Center Standards for College Libraries, community colleges are allotted 32,125 volumes for student FTE enrollment under 1,000; a total of 55,250 volumes for student FTE enrolment between 1,000 and 3,000; a total of 79,100 total volumes for student FTE enrollment between 3,001 and 5,000' and 100,100 total volumes for student FTE enrollment between 5,001 and 7,000. For each 1,000 student FTE enrollment over 7,001 an additional 12,890 volumes are allotted.

The universities and NSC are given an annual acquisition rate of 4.3 percent of total collections, while the colleges/community colleges are allotted 5.0 percent at an average cost per volume of 118.

2.5.2.5 Student Services

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.

The student services formulas used by Alabama, Kentucky, and Texas provide a different amount per head count or FTE student. 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. South Carolina used a flat amount per student, determined as the average IPEDS expenditure, updated by the HEPI. No economy of scale factor is included. Two sample student services formulas follow, both including consideration of economy of scale.

1. *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.*
2. *Student services funding = Base funding of $2,345,585 up to 4,000 headcount + $282 per student from 4,001 to 8,000 headcount + $255 per student over 8,000.*

Nevada's Student Services Formula

Nevada's funding formula for Student Services provides funding based on the combined headcount and SFTE enrollments. The existing combined number of FTE positions are subtracted from the formula-generated positions to determine the number of new positions. New positions are distributed according to a 60:40 ratio of professional to classified positions; that is, for every five new positions, three would be professional and two classified. Professional positions are added at the mid-point of Rank 2 on the administrative salary schedule, plus associated fringe benefits. Classified positions are added at Grade 27, Step 1, of the State's employer-paid salary schedule, plus associated benefits.

New positions are determined by the following:

If the combined headcount and SFTE is equal to or less than 10,000:
Universities divide by 200;
NSC divide by 275
CSN,TMCC, and WNC divide by 350
Plus:
If the combined headcount and SFTE is greater than 10,000:
Universities divide by 350
NSC divide by 375
CSN,TMCC, and WNC divide by 400
For GBC:
If combined headcount and SFTE is equal to or below 4,500, divide by 210
Plus If combined headcount and SFTE is between 4,501 and 10,000, divide by 275
Plus If combined headcount and SFTE is between 10,001 and 25,000, divide by 375
Plus If combined headcount and SFTE is above 25,000, divide by 425.

The formula provides additional positions for Student Services based on one additional position for each 100 students residing in dormitories.

In addition to these calculations, Nevada's Student Services formula has a unique component: funding to cover compliance costs associated with the provisions of the Americans with Disabilities Act (ADA). Institutions receive $1,000 for each student with a documented disability. **This is a "best practice" and should be emulated by other states.**

In addition to the components listed above, the Student Services formula also provides in a manner consistent with the Instruction and Academic Support formula methodologies, funding for operating and wage costs, workstation replacement, and new equipment for professional and classified employees.

2.4.2.6 Institutional Support

This category includes expenditures for the central executive level management of a campus, fiscal operations, administrative data processing, employee personnel services, and support services. Alabama, Mississippi, South Carolina, and Tennessee multiplied a specified percentage by all other E&G expenditures to calculate institutional support needs. Kentucky included some differentiation and a base amount to recognize economies of scale and complexity of operation, and Texas multiplied a specified rate by a measure of enrollment to determine institutional support amounts.

Most institutional support formulas recognized fixed and variable costs by including a base amount and a specified amount per student or percent of base. Examples of "best practices" institutional support formulas are shown below.

1. *Institutional support = base amount + 15% of total E&G budget (excluding institutional support)*
2. *Institutional support = 11% of total E & G formula amount (excluding institutional support) for institutions with more than 8,000 headcount students or 15% of total E & G formula amount (excluding institutional support) for institutions with less than 8,000 headcount students.*

Nevada's Institutional Support Formula

Nevada's formula for Institutional Support follows one of the best practices formulas by multiplying a percentage of each institution's operating budget (less institutional support) including all applicable appropriations such as the School of Medicine, Agriculture Experiment Station, Law School, or Dental School.

For UNR and UNLV, institutional support is equal to 15 percent of the first $25 million plus 10 percent of the second $25 million, and 7.5 percent of any operating budget over $50 million. For NSC, institutional support is equal to 15 percent of the first $20 million in expenditures, plus 10 percent of the second $20 million, and 7.5 percent of any budget over $40 million. For CSN and TMCC, the allocation is equal to 15 percent of the first $17.5 million, while for GBC and WNC, the percentage is equal to 17 percent of the first $17.5 million; for all four colleges, 10 percent of the next $17.5 million is added, and 7.5 percent for those amounts above $35 million. Once GBC and WNC reach 3,000 SFTE, funding percentages will be consistent with those of CSN and TMCC.

In addition to these amounts, the Institutional Support formula provides workstation replacement at $1,228 for each existing employee, similar to the other functional areas discussed above.

2.4.2.7 Operation and Maintenance of Physical Plant

This category includes 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 (for items such as building construction and major renovation, purchase of lands, etc.), or expenditures for operations and maintenance of the physical plant component of hospitals, auxiliary enterprises, or independent operations.

Because the physical facilities of colleges and universities are quite complex, and each is unique, funding formulas for the operation and maintenance of the physical plant may be very complex. All of the states (except Montana) that reported using funding formulas provide state resources for plant operations through a formula. Connecticut, Oregon, South Carolina, and Texas use multiple formulas to calculate detailed plant needs. These complicated methods differentiate among types of building construction, usage of space, and size of institution. Differences among buildings on each campus are recognized, and the unequal costs of maintaining, cooling, heating, and lighting each building are built into the formulas.

On the other hand, some states provide a flat dollar amount per gross square foot of building space. A plant formula that uses this rate per base factor method has the advantage of being simple and easy to calculate. However, unless the dollar amount per square foot is differentiated by type of building construction (i.e., one rate for frame buildings, another for brick or masonry, and a third for steel), legitimate differences in maintenance costs are not recognized.

Examples of the more complex formulas for plant operations follow. Although this set of formulas is more detailed than a simple rate per gross square foot, it recognizes that there are important differences in a campus' physical facilities that impact on cost.

1. Plant funding = the sum of Building Maintenance + Custodial Services +Grounds Maintenance + Utilities

   Where: Building Maintenance = a maintenance cost factor times the replacement cost of the building, and the maintenance cost factor varies by type of construction and whether or not the building is air-conditioned;

   Custodial services = square footage divided by the average square footage maintained by one person per year times a salary rate;

   Grounds maintenance = rate times the number of acres maintained; and Utilities = actual prior year expenditures, adjusted for inflation and other cost Increases.

2. *Plant funding = $4.17 times the number of category I GSF space + $3.44 times the number of Category II GSF + $5.54 times the number of health care GSF + utilities + $2,267 per acre maintained + lease costs – 25% of indirect cost recovery funding*

One of the problematic issues in plant funding formulas is the decision related to which buildings and areas of campus the state should provide funding. Texas, for example, includes within the formula only the square footage and acreage of buildings and grounds that relate to instruction, research, and public service (or E & G buildings). When Arizona had a formula for plant renewal for the universities, that formula excluded research buildings constructed with private funds even though those buildings

would be considered "E & G" buildings by other states. Some states include buildings and grounds used by intercollegiate athletics, while others exclude these facilities as "auxiliary."

Another issue related to plant funding is whether to include funding for building renewal within the operating budget formulas. Texas includes an amount equal to a percentage of the replacement cost of the building, where the percentage varies by type of building. On the other hand, Arizona has a formula for the universities that allocates a percentage equal to the replacement cost of the building, but the funding is included in the capital budget appropriation, not the operating appropriation, and is placed in the plant fund portion of the universities' budgets (when this was funded). Arizona's community colleges also had a building renewal formula which has been suspended for the last few years. From a different perspective, Maryland does not place any funding for building renovation in the college and university budgets but funds all building renovation and major maintenance from the budget of the State Department of Planning and Construction.

Nevada's Formula for Operation and Maintenance of Physical Plant

Nevada's methodology for funding physical plant operations and maintenance includes both formula components and non-formula components. Allocations for utilities, insurance, and rental or lease costs are not formula driven and are budgeted separately based on consumption, rate changes, contractual agreements, and addition or subtraction of any facilities. The formula components include custodial, building maintenance, supervisory and technical personnel, and grounds maintenance personnel. Funding is provided for professional and classified positions, general operating costs, equipment for new positions, and workstation replacements. Funding level is determined by the gross maintained square feet of space, number of improved acres, an average cost per square foot of space, and the age of the buildings.

The formula generates one new position for every 10,500 gross square feet of maintained space at an institution, with a 10 percent adjustment to building maintenance and services positions to provide additional funding for the increased costs of maintaining older buildings (over 25 years old). New positions are distributed across types of personnel by allocating 42.86 percent of total positions as custodial at Grade 21, step 1, plus fringe benefits; 42.86 percent of total positions as maintenance at Grade 31, step 1, plus fringe benefits; and 14.28 percent of total new positions as professional/technical funded at the midpoint of Rank 2 for UNLV, UNR, and NSC and at Grade 7 (colleges) on the administrative salary schedule, plus fringe benefits. A new grounds position at Grade 22, step 1, plus fringe benefits, is allocated for every 4.5 improved acres.

For general operating costs of the plant, $1.02 per gross square foot of maintained space is allotted, with $1.28 allocated for gross square footage in buildings over 25 years old. For workstation replacement and new equipment for professional and classified employments, funding is provided in a manner consistent with other functional areas.

2.4.2.8 Scholarships and Fellowships

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.

Only Kentucky, Maryland, Mississippi, Montana, and Oklahoma calculated an allocation for scholarships and fellowships. One reason for the presence/absence of a formula here is whether the state has a robust statewide student financial aid program. In each case except Oklahoma, which calculated the amount as a dollar value times the number of FTE students, the formula amount was calculated as equal to a

percentage of tuition revenues. These approaches all provide horizontal equity but fail to provide vertical equity in that neither the cost to the student or the institution nor student's ability to pay are considered in the formula. Consequently, there really is no "best practices" example of a formula for this program area. Two examples of scholarships and fellowship formulas are given below.

1. *Scholarships and fellowships amount = 10.5% of estimated income from undergraduate student tuition and fees.*
2. *Scholarships and fellowships amount = amount times the number of full-time equivalent students*

Nevada does not have a formula for scholarships and fellowships.

2.4.2.9 Revenue Components

There are two sides in the calculation of funding formulas for higher education: the needs of the institution, and the resources to fund those needs. Many of the states that use funding formulas in the resource allocation process calculate the need to be funded only by state revenues. Others calculate a total resource need that is funded by a combination of state and institutional resources. Institutional resources may be tuition and registration fees, tuition and all fees, or tuition/fees and other institutional resources such as investment income. Nevada's formula calculates a combined resource need.

Where the resources to fund needs include tuition or other institutional revenues, the amount of those institutional resources may be called a "revenue deduction component." The most common calculation of the revenue deduction component is a percentage or all of non-resident tuition and fees. Alabama's revenue deduction was based on the weighted average credit hour charged to full-time students. Each institution charges a different tuition, so the average tuition charge per weighted average credit hour across all campuses was calculated and then multiplied by the number of credit hours. For historically black institutions, the amount deducted was equal to 90 percent of the actual weighted credit hour charges.

Mississippi deducted a percentage of the total calculated by the formula, with the percentage varying by sector. Georgia deducted not only all unrestricted tuition and fee revenues but also certain other unrestricted revenues. Kentucky and Tennessee deducted an amount equal to a tuition rate times enrollment, plus a percentage of investment income. West Virginia deducted only tuition revenues generated by a higher percentage of non-resident students than average for each institution's peer group.

South Carolina deducted an amount equal to non-resident full-time student enrollment times the "cost of education," up to total non-resident tuition and fee revenues received; and resident tuition and fee revenues equivalent to 25 percent of the "cost of education." In this deduction step, a calculation is made to determine undergraduate and graduate "cost of education," defined by a formula unique to South Carolina. State law requires that non-resident students pay at least the full cost of education, which results in the deduction on non-resident fees up to the cost of education. Institutions are permitted to retain any non-resident revenues above the calculated amount to encourage institutions to charge non-residents higher amounts to keep resident tuition and fees as low as possible. For resident students, the South Carolina Commission on Higher Education has interpreted the state policy of low tuition to mean that state residents pay 25 percent of the cost of education determined separately for undergraduate and graduate students. If total resident tuition revenues exceed 100 percent of the calculated "deduction" amount, then the institution may retain the first 10 percent of the excess, but all amounts over 110 percent of the calculated amount are deducted from the institution's allocation. In South Carolina, institutions

charge different tuitions, and have differing costs of education; consequently, the deduct amount must be calculated for each institution. Institutions have been critical of the deduction since the formula has not been fully funded for some time, and tuition has increased to supplant state revenues insufficient to meet the institutions' "needs" as calculated by the funding formula.

Nevada's Revenue Component

Nevada's formula calculates an amount of need that is funded by a combination of state and institutional resources. Non-resident tuition and fees and varying percentages of resident registration fees, as well as certain other revenues including investment income, are used to fund institutional needs.

2.5 Emerging Trends in Formula Design and Usage

As indicated at the beginning of this section, there has been a constant evolution in both the design and usage of funding formulas and guidelines during the 60+ years that they have been in use. Some of the major trends are listed below:

More Detailed Categories. One long-term trend has been the development of more detailed guideline categories. Within the instruction component, for example, there has been a tendency toward the use of more discipline categories, more levels of instruction, and separate add-on rates for non-personal services expenses. As discussed earlier, however, some states have found that adding more complexity in their formula has had adverse results.

Greater Use of Non-formula Categories. As a result of the increasing scale and complexity of state systems of higher education, there has been a greater use of non-formula categories as a supplement to formula/guideline calculations in recognition of the fact that the formula approach may not be adequate to meet the needs of some programs and activities (e.g., unique or specialized academic and administrative programs).

Use of Formulas During Times of Budget Constraint. During the early 2000s, most states experienced a time of budget constraint or reduction. Higher education budgets, as one of the largest non-mandatory components of state budgets, were similarly constricted, and faced a period of severe cuts in many states.

During the first decade of the 21st century, funding formula usage declined across the nation. States protected base budgets as much as possible and eliminated the use of funding formulas. Because college and university enrollments are counter-cyclical (that is, when the economy experiences a downturn, enrollments go up), many colleges and universities are faced with increasing enrollments with fewer state resources to serve students. Consequently, tuition and fees escalated sharply, and there was less reliance on enrollment driven funding formulas to provide college and university funding.

When state resources increased in the mid 2000s, states appeared to return to the use of funding formulas as a method to distribute available resources equitably, or to calculate adequate resources. As state budgets have become constricted again, college and university budgets again will be restricted, causing tuition and fees to escalate. Missouri and Michigan have discontinued use of their formulas during this budget crisis.

Increasing Focus on Quality and Performance. In response to growing public concerns over accountability and quality, some states have begun to implement funding mechanisms, either implicitly or explicitly, based on institutional performance. This shifts the focus from equity and adequacy in funding to outcomes achieved with the funding received. This trend is discussed more fully below.

2.6 The New Wave of Funding Formulas in 2010

As the national economy went into a period of recession in the last half of the first decade of the 21st century, state appropriations for higher education declined, and in some cases, declined more than 20 percent. Because higher education enrollments are counter-cyclical, enrollments increased at the same time that state appropriations decreased, putting significant pressures on institutional budgets.

At the same time, there was a national focus on performance, and in increasing the numbers of college "completers" as a means of improving the economy. From the White House to state houses to foundations such as the Bill and Melinda Gates Foundation and the Lumina Foundation, the demand was made for increased graduation rates, at lower costs for students, and at a lower cost to taxpayers. The economic crisis of the states led to demands for graduation of more students, with higher quality educations, more efficiently, and more quickly.[26]

This shift in focus away from the "needs" of the college or university to allocation methods that are student-centered, or based on measures of "success," is a sea change in college and university formula funding. Measures of success in this case relate to student success and institutional success in meeting the needs of the state or local community. In this time of financial crisis, there appears to be a much greater recognition of the fact that higher education is a major driver of the economy and that the state and local community need higher education to provide educated citizens with their greater earning power and ability to pay more in taxes, as well as the other benefits of higher education, including the transfer of knowledge. Policymakers appear to believe that higher education budgets are not aligned with state or local priorities, and want institutions to produce "graduates" in high-demand fields like nursing or teaching.

Some of the new measures in the new wave of funding formulas may sound like the old measures: graduation rates for example used to mean the number of full-time first-time freshmen who complete within 150 percent of the traditional time to degree (i.e., six years for a four-year institution, and three years for a community college). The new measure of "graduation rate" includes students who take longer because of their part-time status, or adults who have other responsibilities and are not "first-time" nor "full-time." The new measure may be called "completions" and refers to not only graduations, but certificates, apprenticeships, and completion of the student's plans, which may be 12 hours of a computing programming strand or qualifying for a teaching certificate, or some other credential.

The new funding models reflect the needs of the state and its citizens, not merely the needs of the institution. Instead of additional funding to educate more students and maintain quality, the economic crisis in states has led to reduced funding to educate more students, and still maintain quality. This has been called the "upending of conventional ways" that are "out-of-touch with economic and demographic realities."[27] Instead of funding based on the level of resources needed to maintain the "market basket" of courses, programs, and degrees, given the make-up of the student body, the new funding mechanisms shift to funding based on results as measured by course completions (not enrollments), degrees or other "completions" as mentioned above, and other measures of institutional success in meeting the state's and the students' needs.

[26] Albright, Brenda. 2010. "Reinventing Higher Education Funding Policies: Performance Funding 2.0 – Funding Degrees" paper for the Making Opportunity Affordable Initiative of the Lumina Foundation.
[27] Ibid, p. 1.

This new paradigm may be called "performance funding," with a twist. Performance funding is not new to higher education – some states have been using performance funding to incent certain behaviors for over 30 years. States that had model performance funding under the old methodologies as described in Section 2.4 above include Florida, Missouri, Ohio, and Tennessee. The new methodology does not do away with the underlying principles of equity, responsiveness, or adequacy, but rather calculates the amount of funding by including some different variables. The new methods have state goals as an important component, but give institutions flexibility in reaching the goals. A small proportion of the overall budget is allocated based on performance, but measures consider the differences between institutions and their students. These new models are phased in over time, to give institutions time to change and realign their priorities.

States adopting new models have taken their long-standing formulas and adapted those formulas to emphasize results (such as graduation or course completions) and cost-effectiveness. In Ohio, for example, the measure of "enrollment" has moved away from the number of credit hours in which students are enrolled at the beginning of the semester to the number of credit hours for which students successfully complete the course. The weighting of the credit hours, remains the same to recognize differences in the costs of providing courses in different disciplines and at different enrollment levels (undergraduate, graduate). Texas has proposed to do the same – calculate credit hours at course completion rather than enrollment. Other calculations in the funding model in Ohio and Texas remain the same, with calculations for student services, academic support, physical plant, etc.

There is some concern on the part of faculty that counting only successful completion of a course will lead to grade inflation and pressure to graduate unqualified students. These are real concerns, as is the concern that responding to state priorities that change results in trying to hit a moving target, making it impossible for institutions to be "successful."

Most states using course completion credit hours are funding performance at the margins, that is, only a small proportion of funds are allocated based on performance. South Carolina's performance funding system failed because it was based on 100 percent of the funds, and was too complex. Other performance funding systems have failed when the political support from the governor or legislature changes, and state priorities change. Term limits and legislative turnover also were blamed for the failure of the South Carolina and Missouri performance funding systems.

Exhibit 2-8 provides a comparison of the new paradigm of funding formulas in six states: Indiana, Louisiana, Ohio, Tennessee, Texas, and Washington (community and technical colleges only). Each of these states a new paradigm funding model at some point in the resource allocation process. Each state considers its funding model to be performance-based, although performance may have different names. Each state developed its funding model based on a set of guiding principles that were linked to a state master or strategic plan and involved and received support of the governor, key legislators, and other stakeholders.

The Texas and Ohio formulas are based on the "old" or traditional funding formulas that had been in use for many years, in which credit hours weighted by varying factors related to the discipline and level, are multiplied by a cost factor to determine the amount for Instruction. The difference in the new formula is that the credit hours are credit hours completed, not credit hours attempted or enrolled. Ohio and Texas are phasing in the new formulas and have hold-harmless factors in effect for the next biennium.

EXHIBIT 2-8
New Paradigm Funding Models

	Indiana	Louisiana	Ohio	Tennessee	Texas	Washington
Year began performance funding	2003	2008	1980s	1979	1990s	2007
Guiding principles	yes	yes	yes	yes	yes	yes
Linked to state master plan	yes	yes	yes	yes	yes	yes
Basic Formula	7 performance based funding formulae: credit hours enrolled with 65% of the marginal increase in approp. based on performance indicators; starting in 2009, phase in to completed credit hours - in 2010, 90% of enrollment $ on attempted, 10% completed; by 2014 100% on completed; change in total degrees awarded, change in # of on-time degrees; low income # degrees;	6 parts in 2 components: instruction cost by discipline by level by type of inst; O&M based on APPA cost per GSF adjusted by FTES; IS and SS by % of core, research, and O&M; research by match of 50% of federal $; completers based on more degrees, sp. Fields, Pell, and other; workforce programs that meet state needs	separate for univ, regional, and cc: univ main and regional: course cr. Hrs completed at main - phase-in at reg'l, , weighted by level and discipline, with extra for at-risk, multi-yr average phased in slowly, set asides for doctoral and medical; 99% hh in 2010, 98% hh in 2011; cc: enrollment, student success, institutional goals, enrollment in course averages for last 6 yrs. adjusted for student fees, by discipline extra wts for STEM; success component starting in 2011 at student success pts - 15, 30 cr hrs; remedial, degrees or 45 cr hrs, 5 cr hrs math, high school enrolled, transfers, with 3 yr. average.	changed enrollment base of 3-yr rolling average of fall enrollment; = 60% of formula with incentives focused on inputs and performance = 10% of funding; now focuses on outputs with more variables; base + "points" times average SREB salary by inst. Type+ performance funding	cc: 90% on attempted contact hrs with a matrix of 26 disciplines, 10% on momentum pts, with special amounts for critical fields; technical and state colleges: momentum pts and attempted hrs with wts for disciplines; univ (non-med): instruction and operations based on completed cr hrs, with teaching exp supplement and small inst. supplement phased in over 4 yrs. ; medical: headcount by program wts by base $ + research enhancement+ mission specific	base budget, plus $ for each momentum point in 1st yr; then base adjusted by increase in momentum points from previous year

EXHIBIT 2-8 *(continued)*
New Paradigm Funding Models

	Indiana	Louisiana	Ohio	Tennessee	Texas	Washington
Performance Funding	15% of core state funding phased in; since 2003, 7% of total funding; in 2009, 100% of new $; for 2009-11, about 2% of all $, increasing	phased in	10% of funding phased in since '80s; 3 components - institutions, students, faculty; only institutions funded in 1st phase; then student incentives	outcomes weighted and linked to institution's mission	measures of student success funding at 100% of growth	momentum points, phased in over 5 years
Performance Indicators	increase in number of degrees $5,000 per bac, $3,500 per aa; completion on time - change funded at same as degrees; number of at-risk students same as degrees awarded to Pell recipients; community college transfers $875 per FTE for cr hrs transferred from VU or IT; , and for tech: provision of non-credit workforce training	completers overall, completers in sp. Fields, at-risk completers, graduation rates, cc transfers, course completions, adult (25+) completers, grad/prof completers; for cc: remedial completions, pass math, 15 cr hrs, 30 cr hrs, job placement, certificate, licensure pass rate	course completions, degree completions, sponsored research; lower tuition at access campuses, decreased time to ug degrees, increase in non-credit job-related training with specific reg'l needs given wts up to 5%of funding for cc	degree attainment, transfer activity, student retention, time to degree, research, first time students, etc. based on "points"	momentum points, course cr hrs completed	4 categories of momentum points: first yr retention (15 cr. Hrs.; 30 cr. Hrs.); 45 cr hrs.; completing college level math (5 college level math hrs); building toward college level skills (remedial math; remedial English, pass standardized test); and completions (degrees, certificates, apprenticeship training)
Incentive funding	yes	included in formula components	"challenges"	separate from performance and base funding	for medical schools	incentives are the $ for momentum points
Incentives	based on federal research , funded at $10M; now linked to performance indicators; 2-yr transfer incentive; non-credit "eco-devo" incentive new formula	50% of federal research $; $ for workforce programs;	research funding; special needs of region	linked to state plan	1.28% of research funding	$500,000 for student achievement rewards; asked for $7M for 2009-11
Used in times of budget cuts	yes: better performance meant lower cuts	yes, but differently for increase, stable, and decrease	yes	?	not yet	yes
Support of governor and legislature	yes	yes	yes	yes	yes	yes
support of business community	yes	yes	yes	yes	yes	yes

2.6.1 Indiana

In Indiana, the funding method is being restructured to one that focuses on results, such as graduating more students on-time, successfully transferring students, increasing federal research dollars, and completing credit hours. Indiana's formula provides 65 percent of the marginal increase in appropriations to be based on performance, phasing in to completed credit hours rather than attempted hours. In 2010, 90 percent was based on attempted and 10 percent on completed hours. By 2014, 100 percent will be based on successfully completed hours. Also, by 2014, all new appropriations will be based on the performance factors. Currently, Indiana also is providing a "capitation grant" which can be either a decrease or an increase in funding, based on the change in total degrees awarded to in-state students or in the on-time graduation of (full-time, first-time) in-state students from one year to the next, of $5,000 per baccalaureate degree and $3,500 per associate degree. In addition, because of a perceived state need to increase the number of low income graduates, an additional $5,000 per baccalaureate degree and $3,500 per associate degree is earned for an increase in the number of degrees to low-income graduates, where "low income" is measured by being a Pell Grant recipient.

Indiana also provides incentive funds for both the college and university who transfer or receive transferred credits. Another incentive fund provides a 75 percent state fund match for sponsored federal research dollars, although the legislature did not provide funding for this incentive in 2010. A third incentive fund provides resources to ITCCI and VU to expand non-credit workforce instruction. All of these performance and incentive funds in Indiana make up about 10 percent of all state appropriations to Indiana's public colleges and universities.[28]

2.6.2 Louisiana

In Louisiana, the funding formula is designed for the equitable distribution of limited dollars. However, pay for performance has become the dominant topic, and a portion of funding has been allocated to performance measures and to more accurately base funding on the role, scope, and mission of institutions. At the same time, fiscal demands have reduced funding to higher education. The new revisions to the formula drive improved performance by measures of progression from one year to the next, completion, time to degree, and fulfilling state needs. In addition, the new formula equalized funding for associate degree and lower division course work, moved to end of semester credit hours completed as the basis of "enrollment," and established performance measures for each institution.[29]

For the 2010-11 year, 75 percent of funding was distributed based on the traditional, equity-based formula and 25 percent based on performance. The formula has two parts, cost and performance, where the cost portion has three components: instruction, general support, and plant operations; and the performance piece also has three components: student access and success, articulation and transfer, and competitiveness and workforce. In the cost components, amounts per credit hour are determined based on level and discipline of credit hours. For general support, a percentage of instructional costs depending on the SREB averages by type of institution is used. For physical plant, amounts per gross square foot (GSF) are allowed, depending on a calculation of the space the institution should have. These amounts are summed to get the cost component. State funding of the cost component is set equal to the SREB average percentage support by type of institution, plus 5 percent.

[28] Indiana Commission for Higher Education, "Final Report on 2009-11 As-Passed Higher Education Budget," Indianapolis, August 14, 2009.
[29] Louisiana Board of Regents, *Learn More, Earn More, Be More: The Formula for Enriching Louisiana*, paper presented to LAIR, August 4, 2010.

For the performance components, the count of the number of degrees awarded, undergraduate degrees awarded to individuals who are over 25 years old, and degrees awarded to minority and Pell Grant recipients is determined for each institution, and are weighted. For the articulation and transfer component, a count is made of the number of students transferring from a two-year to four-year institution with equal incentive given to the transferring and receiving institution. For the competitiveness and workforce component, the number of completers in health professions and STEM disciplines are counted. In addition, the three-year average of federal funding for research and development is calculated.

Percentages of the total performance pool are assigned to each component, and the total performance funding is then allocated to each institution.

2.6.3 Ohio

Ohio began its performance funding in the 1980s, and has recently modified its traditional performance funding model to the new paradigm of funding based on course completions, graduates, and goals aligned with the statewide plan. During the 20th century, Ohio had a number of performance-based incentives (called "Challenges") as components of its funding model: Access Challenge, Success Challenge, Economic Growth Challenge, and Jobs Challenge. Total funding for the challenges equaled about 10 percent of total state appropriations. Success of the performance funding of the 80s and 90s led to new changes in 2010.[30]

Ohio's new model was mandated by the legislature and contained explicit goals for Ohio: enroll and graduate more Ohioans, increase state aid, improve efficiency, lower out-of-pocket costs for undergraduates, increase participation and success of first-generation students, and increase participation and success by adult students. As a result, there has been a major shift in the funding model to success-based formulas, one for the university main campuses, one for regional campuses, and one for community colleges, all of which were endorsed by the Governor and approved by the Ohio legislature.

The model for university main campuses shifted from enrollment based calculations to course and degree completions, using a three-year average, weighted by discipline and level, and adjusted for the costs of at-risk students. The degree completion component is being phased in slowly, as are hold harmless adjustments to course completion from enrollment. Set-asides were made for doctoral and medical education. For university regional campuses, the shift to course completion also is being phased in over time, although the plan is to add the degree completion component in two years, to allow regional campuses to adjust their missions.

For the community colleges, the funding model consists of three components: an enrollment component, a student success component, and an institutional goals and metrics component. In addition, each college received an amount equivalent to the FY2009 Access Challenge and Tuition Subsidy allocation. The new formula will be phased in over several years. Community college receive extra funds for STEM enrollments and graduates.

The student success component is based on "success points" which in the Washington, Tennessee, and Texas models discussed in the remaining sections are called "momentum points." Success points are intended to measure the significant steps that students take toward higher education achievement.[31] Points are counted or earned at each institution for earning the first 15 semester credit hours, the first 30 semester credit hours, completing remedial credit hours, completing an associate degree or 45 credit hours, earning

[30] Petrick, Rich, "Funding Based on Course Completions: The Ohio Model," Ohio Board of Regents, April 22, 2010.
[31] Ohio Board of Regents, "Methodology for Allocating State Share of Instruction, Community Colleges," downloaded from Ohio Board of Regents web site.

the first 5 credit hours of college level mathematics, being dually enrolled, or transfer to a university. The three-year average is used to calculate each community college's share of student success funding. Amounts are prorated to ensure that each institution does not lose a disproportionate share of funding in any one year.

In addition, for the community colleges, five percent of funding was set aside for meeting specific regional or community needs. Each institution negotiates with the chancellor to determine if it has met the criteria to receive these funds.

2.6.4 Tennessee

Tennessee has used performance funding since 1979, and had set aside 5 percent of funding for performance. The prior funding model was linked to the Tennessee Master Plan, and focused attention on student retention, enrollment of adult students at community colleges, research funding, and enrollment. Approximately 60 percent of the traditional formula was enrollment-driven and the incentive or performance factor was heavily focused on inputs.

In 2010, the formula was redesigned to focus on outputs, with broad agreement on the activities and outcomes higher education ought to pursue. The new formula strengthened links to the master plan, enhanced incentives for student retention and research, and focused on productivity linked to each institution's mission. Outcomes such as degree completion, transfer, retention were identified and data compiled. Points are awarded for those outcomes, weighted by the institution's mission. For example, for a university, the number of bachelor's degrees, graduation rate, time to degree, research expenditures, number of first-time students, number of sophomores, juniors, and seniors, doctoral degrees, masters degrees, adult student enrollment, and transfers in from community colleges, were counted, awarded points, and weighted to come up with a total number of points. These points were then multiplied by the average SREB salary for the type of institution, added to an amount for fixed costs, and added to performance funding to get the total allocation for the institution. For community colleges, the outcomes included the number of associate degrees, certificates, job placements, remedial and developmental success, first time students, adult student enrollment, and transfers out to a university.

This formula will be phased in over several years. This formula recognizes that each institution has a fixed cost, which is unrelated to the number of students enrolled. It will be interesting to see if the formula has the desired effect of incenting certain behaviors.

2.6.5 Texas

Texas has been the leader in funding formula development since 1950. Texas' formulas and models have been copied by many states, especially since Texas has done a cost study every other year since the 1950s. This long record of discipline costs, facility costs, and the relationships to other components of institutional costs is one of the best in all the states.

In 2010, the Texas Higher Education Coordinating Board (THECB) determined that it should move to the new paradigm of funding formulas. Although Texas had used several forms of incentive and/or performance funding since the 1990s, the 2012 request budget is focused on student success and a comprehensive shared responsibility model. The state must provide adequate levels of support, the institutions must provide support services, the students and their families must enter college ready to benefit, aware of financial aid opportunities, the community must foster a college-going culture, and the K-12 system must prepare students academically.

The new funding model aligns the formula to the mission of the institution based on measures of student success, and provides performance funding to recognize achievement in meeting student success. For the universities, funding is based on an instruction and operations formula that provides funding for the general operations of the institution, based on discipline and level, and a formula for facilities, with a supplement for teaching experience and for small institutions. In the new formula, the count of credit hours is based on enrollment at the end rather than the beginning of the semester, with weights for at-risk students. Performance incentive funding was to be continued to ensure institutions would continue to meet state needs. This was to be phased in over time to allow for institutions to plan.

For the community and technical colleges, funding is to be based on two formulas: 10 percent on momentum points and 90 percent on attempted contact hours. Attempted credit hours were weighted by critical fields, and by the difference in the costs of providing education. In addition the small institution supplement, and funds for alternative teacher certification were continued.

For health-related institutions, five formulas were used to calculate the institution's allotment: instruction and operation, infrastructure, research enhancement, graduate medical education, and mission specific allowances.[32]

2.6.6 Washington

In 2006 the Washington State Board for Community and Technical Colleges (WSBCTE) adopted a new performance funding system for the community and technical colleges. The system was based on work done by Teachers College Columbia University funded by the Bill and Melinda Gates Foundation that identified "momentum points" which are times in a student's college education that lead to continued success. These points have also been called "tipping points."

These points are key academic benchmarks that students meet that lead to successful completion of degrees and certificates. There are four categories of momentum points: building toward college levels skills, first year retention, completing college level math, and completion. These intermediate points in a college career provide "momentum" toward completion Washington studied these measures, and in 2008 allotted $52,000 to each college to develop student success strategies. After the successful implementation, in 2011, $3.5 million was allotted to fund the momentum points.

Momentum points directly measure results. These measures have been used by WSBCTE: test score gains on basic skills tests, or earning a GED; passing a remedial math or writing course; earning 15 credit hours; earning 30 credit hours; completing five credit hours of college level math; earning a degree, completing an apprenticeship, or earning a certificate. Colleges are awarded one point for each momentum point earned above the previous year level of performance. Funding is set at a flat dollar amount for each point and if available funding does not cover all rewards, points are banked for the following year. All awards become part of the institution's base, and if the college's enrollment declines, momentum points are pro-rated.[33]

[32] Texas Higher Education Coordinating Board, "Texas Higher Education Finance and the Formulas" Austin, TX. April 29, 2010.
[33] Washington State Board for Community and Technical Colleges, "Student Achievement Initiative," downloaded from WSBCTC web site, May, 2010.

3.0 Introduction

Over the past several years, public higher education, both in the U.S. and internationally, has increasingly been required to explain, defend, and validate its performance and value to a wide variety of constituents, including governors, legislators, students, parents, employers, and taxpayers. This trend is related to a number of converging factors:

- the economic crisis in state funding;
- intense competition for extremely limited state tax dollars among all areas of government, and an increased focus on results and outcomes for public services;
- increased societal needs and expectations for public higher education; and
- increased skepticism and scrutiny of all social institutions.

This focus on "accountability" has led to the development of a continuum of performance-oriented mechanisms ranging from higher education "report cards" to performance-based funding for public colleges and universities. The latter is by no means a new concept in public budgeting, either in general or for higher education specifically. The federal government experimented with this kind of budgeting in the 1960s, and the state of Tennessee has had an ongoing performance-based funding program for higher education in place since 1979. In 2000, at the height of performance funding in higher education, more than three-fifths (35) of all states engaged in at least one form of performance-based funding.

However, the current wave of performance-based funding is quite different from that of a decade ago. State higher education leaders have begun to link calls for additional funding to increased accountability and increased efficiency of operations. *One of the main differences between performance-based funding then and now is the change in the focus from meeting the needs of higher education to meeting the needs of students, the state and its economy.*

In 2006, then U.S. Secretary of Education Margaret Spellings formed a bipartisan Commission on the Future of Higher Education that looked at the problems of higher education. Among those was the absence of accountability mechanisms to ensure that colleges succeed in educating students.[1]

3.1 Best Practices and Guiding Principles in Developing and Implementing Systems of Institutional Performance Measurement

The driving force behind any performance-based funding model is the desire to establish a formal link between institutional performance and funding received. These are ultimately translated into a system of performance indicators on which the allocation is based. The concept of what is a "best practice" in measuring the performance of higher education institutions continues to evolve. However, there are a number of guiding principles that are generally accepted as "good practice" in the development of institutional performance measurement mechanisms. **Exhibit 3-1** outlines 11 guiding principles that are presented in no particular order of importance. The process for developing and establishing a system of performance indicators is unique to every enterprise; however, we believe that all 11 of these principles need to be considered during this process to ensure a successful and effective outcome. Performance

[1] Spellings Commission, "A Test of Leadership: Charting the Future of U.S. Higher Education," Washington, D.C.: Commission on the Future of Higher Education, 2006.

indicators are not the same as a funding model, and so these principles relate only to performance indicators.

EXHIBIT 3-1
Guiding Principles For Developing And Establishing
Institutional Performance Indicators

Guiding Principle	Definition
Credibility	The performance indicators should have internal and external credibility among all institutional stakeholders.
Linkage to Mission, Strategic Plan, and Policy Goals	The performance indicators should incorporate and reinforce institutional missions and strategic plans, as well as broad policy goals.
Stakeholder Involvement and Consensus	The performance indicators should be developed through negotiation and consensus among key stakeholders.
Simplicity	The performance indicators should be simple to convey and broadly understood.
Reliant on Valid, Consistent, and Existing Information	The performance indicators should be based on data that are valid and consistent and that can be verified by third parties when necessary. The indicators should also be based on established data sources where possible in order to maximize credibility and minimize additional workload.
Recognizes Range of Error in Measurement	The performance indicators should be established with wide recognition that there are certain unavoidable ranges of error in any performance measurement activity.
Adaptable to Special Situations	The system of performance indicators should accommodate special institutional circumstances where possible.
Minimizes Number of Indicators	The performance indicators chosen should be kept to the smallest number possible in order to minimize conflicting interactions among the indicators and to maximize the importance of each indicator.
Reflects Industry "Standards" and "Best Practices"	The performance indicators chosen should reflect "industry" norms and standards where possible in order to allow for benchmarking and peer comparisons.
Incorporates Input, Process, Output, and Outcomes Measures	The performance indicator system developed should have a balance of measures related to institutional inputs, processes, outputs, and outcomes.
Incorporates Quantitative and Qualitative Measures	The performance indicator system developed should incorporate both quantitative and qualitative measures in order to present the most complete picture of institutional performance possible.

These 11 guiding principles have a number of corollaries that should be considered as well:

- ***The expectations for institutional performance should be clearly understood and stated at the outset.*** Organizations can only "improve" if there is an understanding of the priorities for organizational performance. Clearly, the priorities should grow out of organizational mission and goals, however it is important that these be understood and agreed to by key participants at the beginning of the process.
- ***The starting place for institutional performance measurement and benchmarks for success varies among institutions.*** Because each institution operates within its own context, the beginning point for institutional performance measurement will also vary depending on the specific performance indicator. Using "graduation rate" as an example, one institution may be at 45 percent for a six-year graduation rate while another may be at 85 percent. Because these types of variances can be due to a variety of potentially valid reasons, no value judgment should automatically be attached.
- ***"Continuous improvement" is not infinite.*** A related issue that must be dealt with in establishing performance measurement mechanisms is the fact that the rate of "improvement" in any given area is non-linear. Institutions may be able to make great strides toward improving certain operational or programmatic areas initially, but then come to a standstill. Or, an institution may move forward in another area and then falter for a period of time. In short, it is important to realize that the process of enhancing institutional performance is imprecise at best and that to expect institutions to "continuously improve" is unrealistic.
- ***Performance measures should not be developed only with available data systems in mind.*** Implementing a system of institutional performance measurement requires data to be available. In fact, most institutions develop performance measures with this in mind. This practice has both positive and negative consequences. The ability to work with existing data systems reduces the start-up time and cost to implement a performance indicator system. It also improves the comfort level of those involved, and thus the credibility of the process. On the other hand, limiting an institution's performance measures according to data availability may not result in the most appropriate or meaningful set of measures in the long run. Thus, notwithstanding the benefits of using existing data systems, the development of performance measures should recognize the current availability of data where appropriate, but should be primarily driven by the questions "what are we trying to measure?", and "why?"

Perhaps the greatest challenge in designing a performance indicator system is to achieve some level of balance among all of these competing, and sometimes contradictory, principles. Again, no one of these principles is more important than the others. Rather, it is important that all be considered during the design and implementation of the system.

3.2 Frameworks Used in Developing Performance Indicator and Performance-Based Funding Systems

The development of performance indicator and performance-based funding systems is ultimately based on the desire for accountability. At the state- and system- levels, accountability is implemented by setting goals and objectives for institutions and periodically assessing progress towards those goals and objectives, using accepted indicators. While the setting of goals and objectives is an activity that is unique to every state/system, Ewell and Jones (1994) note four approaches commonly used in measuring progress towards these goals and objectives:

- *The input, process, outcome model* – this is a "production process" model aimed at measuring the value added to departing students, perhaps through pre- and post-assessments.
- *The resource efficiency and effectiveness model* – this approach is designed to measure the efficient usage of key resources such as faculty, space, and equipment, using ratio analyses or similar techniques.
- *The state need and return on investment model* – this approach is built on the assumption that higher education is a strategic investment for states: it is designed to measure the fit between higher education and state needs (e.g., work force preparation and training).
- *The "customer need" and return on investment model* – this approach is built on the notion of "consumerism", and is designed to measure the impact of higher education in meeting the needs of the individual (e.g., retention and graduation rates, employability and earning potential of graduates).

These four approaches are certainly not mutually exclusive, and most systems/states employing performance indicators choose from two or more of these areas. Further, no one approach is "better" than the others. Rather, the important thing is that the approach(es) chosen be relevant and appropriate for the institution, system, and state.

Although performance indicator mechanisms do generally vary by state, there are some similarities in the types of measures that are used for reporting. **Exhibit 3-2** provides a list of commonly used institutional and statewide indicators. Perhaps not surprisingly, these indicators cut across all four approaches described previously. Appendix A lists the accountability measures used by several states as examples of indicators.

Some of the earlier performance funding initiatives adopted in the states were not continued for various reasons, both political and financial. There are some characteristics that are common to successful and stable performance-based funding programs:

1. Involvement and input from state governing or coordinating boards;
2. Accent on both institutional improvement and accountability;
3. Sufficient time allowed for both planning and implementation;
4. Excellent data systems that provide defensible and accurate information;
5. Measures related to institutional missions;

6. Use of a limited number of indicators; and,
7. Recognition and protection of institutional diversity.

These findings are consistent with the set of guiding principles discussed earlier, and therefore reinforce their importance.

EXHIBIT 3-2
Commonly Used Higher Education Performance Indicators

INSTITUTIONAL PERFORMANCE INDICATORS
■ Graduation Rates
■ SAT/ACT Scores
■ High School Averages
■ Transfer Rates - two-year and four-year institutions
■ Tuition and Mandatory Fees
■ Enrollment Trends – level, FTE, full-time, part-time, race, gender
■ Faculty and Staff – race and gender
■ Faculty Workload
■ Administrative Size/Cost
■ Program Accreditation
■ Remediation Activities and Effectiveness
■ Pass Rates on Professional Licensure Exams
■ Alumni Satisfaction Survey
■ Employer Satisfaction Survey
■ Graduate Job Placement
■ Graduate Further Education
■ Sponsored Research Funds
■ An Approved Quality Assurance Process
STATEWIDE PERFORMANCE INDICATORS
■ College Participation Rate of High School Graduates
■ Transfers Between Two- and Four-Year Institutions
■ State Student Financial Aid Funding
■ State Funding per Student for Public Institutions
■ Tuition and Fees as a Percent of State Median Family Income
■ Postsecondary Degree Attainment
■ Degree Attainment in Critical Fields

Source: *Burke (2000, February).*

A variation on performance-based funding is the competitive, or incentive, grant approach. In this model, a pool (or pools) of funding is set aside to be targeted to meet a specific goal or policy initiative. Typically, these funds are controlled by a state coordinating board or system office. Institutions then develop proposals to compete for the funding. Florida, Illinois, Kentucky, and Ohio are all examples of states that have used these types of programs over the years to target dollars to specific purposes such as improving undergraduate education, enhancing research and economic development activities, improving minority student achievement, and meeting specific programmatic shortage needs (e.g., engineering, computer science). It is interesting to note that Kentucky actually transitioned from a performance funding model in the mid-1990s to its incentive grant approach.

3.3 Program Design and Implementation Issues

There are at least four aspects to establishing and implementing performance funding programs that must be addressed:

- ***Success Criteria*** **–** the standards by which institutional performance is measured.
- ***Indicators and Indicator Weights*** **–** the percent of funding to be allocated for each indicator.
- ***Allocation Methods*** **–** the relationship between performance funding and operating budgets.
- ***Funding Levels*** **–** the amounts available for rewarding performance.

These methods are not mutually exclusive and all have their strengths and weaknesses, particularly when considered within the guiding principles described earlier. For example, while benchmarking against one's own past performance may seem to be relatively non-threatening, it can soon bump up against the reality that continuous improvement is not infinite. Likewise, comparisons with external peers add a level of "benchmarking" and independent validation to the process. However, such comparisons invariably introduce data comparability issues that can cloud the validity of the comparisons, if not properly controlled. Finally, comparisons against preset targets can enable stakeholders to assess progress toward desired policy outcomes and goals in relatively specific fashion (e.g., improved retention and graduation rates). However, these preset targets need to be designed with the recognition that each institution operates within its own unique context and is starting from a different place. In short, a combination of all three methods is perhaps most desirable in setting success criteria.

For example, the performance funding model developed by the Oregon University System required that the universities set two separate targets for each of their indicators. The first target represents improvement against the institution's own baseline performance, while the second target takes into consideration the current performance of their external peer institutions. This approach provides both an internal and external context for assessing performance improvement.

3.3.1 Indicators and Indicator Weights

In performance funding systems that have more than one indicator, an often thorny issue is what "weight" to assign each individual indicator in coming up with a composite performance score. The philosophical and political undertones of this issue cannot be understated, in that everyone involved will have at least a somewhat different opinion on the relative importance of each indicator, particularly when the degree to which institutions "excel" varies on each indicator as well. Three approaches to developing indicator weights have emerged:

1. *Equal weighting* – each indicator is given the same weighting.
2. *Preset, differential weighting* – each indicator has a different weighting.
3. *Institutional selection within a preset range of acceptable weights* – each institution is allowed to determine the weight assigned to each of its indicators within a preset range.

The first two approaches certainly have strengths and weaknesses within the context of the guiding principles. Equal weighting is certainly simple, however it does not enable the recognition of institutional diversity nor priority setting. Likewise, differential weighting may enable the recognition of specific priorities in improving performance; however, it works against the concept of simplicity, and may unduly focus institutional attention on those indicators with the greatest weight. The third approach, which was the one used by Kentucky in its now-defunct performance funding program, may strike the greatest balance between all of the guiding principles.

3.3.2 Allocation Methods

Of obvious interest (particularly to recipients of performance funds) is the issue of how the performance funds make their way from the state treasury to institutional budgets. There are two issues related to how the funds get allocated. First, there is the issue of whether performance funds should be kept in a separate pool to be allocated each year over and above institutional base budgets, or whether performance funds should be part of institutional base budgets from the start. Second, there is the issue of whether the use of the dollars received is left up to the discretion of each institution or if there are restrictions on institutional use of the performance funds received.

The first issue is largely a question of control versus stability. Obviously, from the state and/or system office perspective, being able to identify, control, and target a separate pool of funding enables great policy (and political) leverage. At the same time, history has shown that such categorical programs are often the first to suffer in times of budgetary downturn, largely because of their status as a separate and relatively "undedicated" pool of funding. While funding that goes directly into institutional base budgets can also be cut, it is less likely that such cuts would occur. However, state and/or system control over the use and purpose of these funds is greatly minimized once they become part of institutional base budgets.

The second issue is also a question of control versus flexibility, the answer to which depends on the ultimate intent of the program. If the state or system views performance funding as simply a means to reward institutional performance, then there seems to be less of a need to restrict the use of the dollars once they are allocated. However, if the state or system views the program as a way to also improve upon and remediate problem areas at the institutional level, then there would appear to be some logic in restricting at least part of the funds available to institutional improvement activities in those areas.

3.3.3 Funding Levels

The final implementation issue relates to the total dollar amount available for the performance funding initiative. Historically, amounts vary from state to state and year to year, with a range of 0.5 percent to 10 percent of state operating appropriations for higher education. Clearly, the challenge is to have an amount that is large enough to generate institutional interest, within the other competing needs in the state budget. It is also important that the amount available retain a level of stability from year to year to maintain the long-term viability of the initiative. From that standpoint, it is probably better to start out with a relatively small amount and increase it gradually over time as conditions allow, as opposed to starting out large and then have to reduce it in subsequent years. In fact, the effectiveness of the performance funding initiative in Kentucky was ultimately undermined due to the latter approach.

3.4 Performance or Accountability in 2010

As discussed in Chapter 2, states have been using performance or accountability funding since 1979 to incent or reward behavior of higher education institutions. In 2010 every state has some form of accountability or performance measures for higher education. Most do not use these measures as a component of funding.

In addition to state-specific systems of performance or accountability, there are several notable national measures of state higher education performance. One of these is the Measuring Up reports issued in even-numbered years by Patrick Callan's group, the National Center for Public Policy and Higher Education. These reports were issued in 2000, 2002, 2004, 2006, and 2008, and provide for each state its performance on a number of higher education measures, such as affordability and access. Assessments for 2010 were not available as of the time of this paper. These assessments are valuable in the information that is provided to the public, but are not used in state performance funding models.

Exhibit 3-3 displays the performance measures or accountability factors that are included in the performance models of California (the California State University System), Colorado, Florida, Indiana, Louisiana, Ohio, New York, South Carolina, Tennessee, Texas, Washington, and Wisconsin. All of these states link at least a part of funding to performance measures.

The measures included vary from state to state. All of the states include the number of degrees awarded in some way in their performance funding. Indiana awards $5,000 for a baccalaureate degree and $3,500 for an associate's degree, and an additional amount for degrees awarded to adult learners and students classified as "at-risk." Tennessee, Louisiana, Ohio, Texas, and Washington include the number of degrees awarded in the momentum point calculations. Momentum points are specific times in a student's college experience where completion or passage of that point gives the student the "momentum" to move on to achieve greater goals. Examples of momentum points are successful completion of a remedial math or English course. Time to degree also is a concern in many states, as policymakers are asking students to graduate sooner, and at lower cost to the student. Graduation on time is considered in the performance model in Colorado, Florida, Indiana, Ohio, New York, South Carolina, and Wisconsin.

Of special importance in many states, given the need to award more bachelor's degrees, is transfer from a community college to a university campus. California, Indiana, Louisiana, Ohio, New York, South Carolina, Tennessee, and Washington include transfer as a component in their performance models. In Washington, Tennessee, Texas, and Ohio transfers are counted in the momentum point calculation, and funds allocated to institutions based on the number of transfers.

Sponsored research activity also is an important component of the mission of universities, and is included in the performance measures in all the states except California and Colorado. Washington's performance funding is used for the community and technical colleges only, which do not have a research mission.

The newest components of performance funding are the use of momentum points and the counting of enrollment at course completion. Indiana, Louisiana, Ohio, Tennessee, and Texas all are counting enrollment not as course credit hours attempted but rather at successful course completion. Ohio, Tennessee, Texas, and Washington are initiating performance funding that relies on momentum points. These are significant changes in the spectrum of performance measures and performance funding. It is too soon to determine if these changes will incent behavior that leads to more efficient degree completion for more students.

EXHIBIT 3-3
Performance Measures Used In A Sample Of States, 2010

Performance Measure	CA	CO	FL	IN	LA	OH	NY	SC	TN	TX	WA	WI
Retention Rates	X	X										
Enrollment At End Of Course				**X**	**X**	**X**			**X**	**X**		
Achievement Of Core Competencies	X											
Degrees Awarded	X	X	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Degrees Awarded To Adult Learners				**X**	**X**							
Graduation Rates	X	X	X		X		X	X			X	
Time To Degree		X	X	X		X	X	X				x
Transfer Rates	X			X	X	X	X	X	X		X	
Sat/Act Scores Or High School GPA							X	X				X
Faculty Workload		X					X	X		X		X
Remediation	X				X						X	
Pass Rates On Professional Licensure Exams	X	X			X		X					
Student Opinion Surveys							X					
Faculty Opinion Survey							X					
Alumni Satisfaction Survey												X
Employer Satisfaction Survey								X				X
Graduate Job Placement					X			X				
Number Of Licenses Or Patents							X					
Sponsored Research Funds			X	X	X	X	X	X	X	X		X
Workforce Development				X	X	X	X	X			X	
Meeting State Needs						X						
Momentum Points:												
For Community Or Technical Colleges						X			X	X	X	
For Universities						X			X			
Indicators Chosen By The Institution		X	X			X				X		

3.5 Performance Indicators In Select Higher Education Systems

University of Wisconsin

- Student satisfaction surveys
- Alumni satisfaction surveys
- Faculty share of undergraduate instruction
- Faculty educational workload
- Research funding at doctoral institutions
- Sophomore competency test (writing and math)
- Graduation rate
- Post-graduation experience (education or workforce)
- Credits to degree
- State/university funding for instruction-related activities
- Rates of admission and access for Wisconsin high school graduates
- Retention of women and multicultural faculty and staff
- Tenure of women and multicultural faculty and staff
- Hiring and recruitment of women and multicultural faculty and staff
- Multicultural student enrollment and graduation rates
- Reporting and resolution of sexual harassment complaints
- Faculty retention and development
- Facilities maintenance
- Workplace safety
- Employer satisfaction with UW System graduates
- Continuing education/extension enrollment

New York - SUNY

Funding Context:

- Revenue by source
- Tuition rate trends
- State appropriation trends
- State appropriations per students
- NYS Public Higher Education Sector as a percentage of the state budget
- E&G expenditures per students
- Benchmark condition

Access to Undergraduate Education:

- Admissions – applicants, acceptances
- Enrollment – total with breakdowns by race/ethnicity, gender, full-time/part-time, level, age, first-time, race/ethnicity of first-time, and transfer
- Student cost – cost of attendance, tuition and fees, room and board
- Graduation/retention – graduation rate relative to preparation and background, graduation of FTIC by race/ethnicity, transfer rates (by various characteristics), graduation rate of transfers (by various characteristics), total number of graduates, gender, time to degree, freshman to sophomore retention

Undergraduate Quality, Student and Institution:

- Percentage of SUNY campuses with assessment plans in place
- Pass rates on certification exams (e.g., teachers, nurses)
- Student opinion surveys and national/sector norms – facilities, services, classes, environment, student growth/development
- Faculty opinion survey
- Size of classes
- Rank of instructors teaching courses

Competitiveness in Graduate Education and Research:

- Enrollment by level or program
- Graduation – degrees granted by level
- Research – dollar value of sponsored programs, number of faculty grants/dollar volume per FT faculty, number of disclosures and patents
- Recognition – faculty and graduate student awards, faculty professional activities

State Needs:

- Workforce Development - graduates in specific programs, percentage of medical residencies in primary care, percentage of NYS graduates from SUNY in selected fields, non-credit registrations by field
- Sponsored research – dollar volume of sponsored programs, peer comparisons of economic development, number of licenses, sponsored programs per FTE

Management:

- Management - meeting enrollment goals, faculty contact hours, student-faculty and student-staff ratios, staffing trends, facilities evaluation, ethnicity and gender of staff, fundraising, faculty satisfaction, faculty workload by discipline

South Carolina

Mission Focus:

- Expenditure of funds to achieve institutional mission
- Curricula offered to achieve mission
- Approval of a mission statement
- Adoption of a strategic plan to support the mission statement
- Attainment of goals of the strategic plan

Quality of Faculty:

- Academic and other credentials of faculty
- Performance review system for faculty
- Post-tenure review for tenured faculty
- Compensation of faculty
- Availability of faculty to students
- Community and public service activities of faculty

Instructional Quality:

- Class size and student-teacher ratios
- Average number of credit hours taught by full-time faculty
- Ratio of full-time faculty as compared to other full-time employees
- Accreditation of degree-granting programs
- Institutional emphasis on quality of teacher education and reform

Institutional Cooperation and Collaboration:

- Sharing and use of technology, programs, equipment, supplies, and source matter experts within the institution and with the business community
- Cooperation and collaboration with private industry

Administrative Efficiency:

- Percentage of administrative costs as compared to academic costs
- Use of best management practices
- Elimination of unjustified duplication of a waste in administrative and academic programs
- General overhead costs per FTE student

Entrance Requirements:

- SAT scores of student body
- High school class standing, GPA, and activities of student body
- Postsecondary non-academic achievements of student body
- Priority on enrolling in-state students

Graduates; Achievements:

- Graduation rate
- Employment rate for graduates
- Employer feedback on graduates examinations and certification tests
- Number of graduates who continue their education
- Credit hours earned of graduates

User-Friendliness of Institution:

- Transferability of credits to and from the institution
- Continuing education programs for graduates and others
- Accessibility to the institution of all citizens of the State

Research Funding:

- Financial support for reform in teacher education
- Amount of public and private sector grants

Colorado

- Graduation rates and credits for degree (four-year institutions)
- Graduation rates and credits for degree (two-year institutions)
- Faculty instructional productivity
- Freshman persistence
- Achievement rates on licensure, professional, graduate school admission tests
- Lower division class size
- Approved and implemented diversity plan
- Institutional support costs (percentage of E&G expenditures)
- Institutional indicators (two selected by institution and approved by governing board)

California State University

Quality of Baccalaureate Degree Programs:

- Assessment of student learning outcomes and achievement of core competencies (first three years)
- Report of academic program reviews that summarize assessment results and how they have been implemented to improve teaching and learning

Progression to the Degree:

- Percentage of students who progress from year to year
- The number of upper-division units completed by transfer students who are graduated as compared to the number of upper-division united completed by FTIC freshman who are graduated

Graduation:

- Graduation rates by relevant demographic and student characteristics

Areas of Special State Need:

- The number of credentials issued by the California Commission on Teacher Credentialing to candidates completing professional education requirements

Relations with K-12:

- The number of CSU faculty and students, the number of high schools, and the number of high school students involved in outreach efforts
- The percentage of regularly eligible students who are fully prepared in mathematics and English composition

Remediation:

- The percentage of students requiring remediation who complete remediation within one year

Facilities Utilization:

- The percentage of course enrollments occurring during evenings, weekends, summers, and other "off-peak" times

University Advancement:

- Annual Voluntary Support Report with indicators for funds raised via alumni, corporate, and foundation support
- Annual Special Revenues Report with indicators for funds raised via scholarships, bequests and revocable trusts, pledges, contacts, grants, property transfers, and endowment income
- Annual report on alumni participation as measured by formal membership in the alumni association and alumni program activity
- A goal to raise in private funds a sum equal to or great then 10 percent of the university net general fund allocation

Florida - State University System

- Meet SUS enrollment plan
- SUS graduation rates for FTIC
- Sponsored research expenditures
- University endowments and annual giving
- Degrees granted
- University measures (developed by the institution and reviewed by the Chancellor)
- Baccalaureate degree production, graduation, and retention
- Baccalaureate degree per 100 student FTEs
- FTIC Graduation-Retention Index
- Five-year change in graduation rates
- Performance-based incentives (varies by institution)
- Baccalaureate Degrees Granted

Ohio - Two-Year Colleges

Momentum points:

- Completion of 15 credit hours
- Completion of 30 credit hours
- Completion of 45 credit hours
- Completion of an A.A. or certificate
- Apprenticeship
- Transfers to a 4-year institution
- Successful completion of 5 credit hours of college level mathematics
- Successful completion of a remedial mathematics or English course
- Performance-based incentives (varies by institution)

4.0 Introduction

To evaluate the current funding formula, MGT was guided by the following requirements of the engagement to complete the following:

- Analyze the "drivers" for the formula which include (but are not limited to) enrollment (FTE), student to faculty ratios for program costs (allowing for the range of developmental to professional programs) and rural and small college considerations.
- Evaluate and as appropriate identify and recommend formula attributes to consider that would address mission differences. Without limiting the foregoing, this part of the analysis should address funding for research.
- Identify if, and how, performance standards and outcomes could be included in the funding formula.
- Evaluate and as appropriate identify how administrative functions required for institutions with multiple sites may be a component of a funding formula. Differentiate between full campus-level operations and extended centers.
- Include in the analysis specific alternatives for recommended changes, additions, or modifications to the NSHE formula, including best practices from funding models of other states or higher education systems.

This chapter of the report will include the analysis of the funding formula. Recommendations for possible changes, additions, or modifications to the NSHE formula will be included in Chapter 5.

4.1 Guiding Principles for the Formula Evaluation

Over time, a number of researchers in the area of higher education finance have offered their concepts regarding desired characteristics in state higher education funding formulas. Frequently, what is offered as the "desired characteristic" is in direct response to a perceived shortcoming of a particular state's funding formula or guideline. MGT provided the NSHE a sample set of guiding principles to use in evaluation of a funding formula.

For this study, the presidents and Chancellor of the Nevada System of Higher Education identified the characteristics shown in **Exhibit 4-1** to guide the development of a funding model. Any alternative to the current funding model will be evaluated by these criteria.

EXHIBIT 4-1
Guiding Criteria For The Nevada Model

Characteristic	Summary Description of Principles
A. Outcomes-Based	The funding model should incorporate and reinforce the broad goals for the state's system of colleges and universities as expressed through approved missions, quality expectations, and performance standards.
B. Mission-Sensitive	The funding model should be based on the recognition that different institutional missions (including differences in degree levels, program offerings, student readiness for college success and geographic location) require different rates of funding.
C. Size-Sensitive	The funding model should reflect the impact that relative levels of student enrollment have on funding requirements.
D. Adaptable to Economic Conditions	The funding model should have the capacity to be applied under a variety of economic situations, such as when the state appropriations for higher education are increasing, stable, or decreasing.
E. Equitable	The funding model should provide both horizontal equity (equal treatment of equals) and vertical equity (unequal treatment of unequals) based on size, mission, and growth characteristics of the institutions.
F. Reliant on Valid and Reliable Data	The funding model should rely on data that are appropriate for measuring differences in funding requirements and that can be verified by third parties when necessary.

4.2 Evaluation of the Current NSHE Funding "Formula" or Model

The current Nevada funding model or "formula" is multi-faceted and has evolved over the last thirty years into a complex funding model with multiple components related to functional areas of a college or university budget. Overall, the judgment could be made that the formula's many components work together to satisfy most of the criteria determined by the System staff and presidents as the important criteria for a formula, with the exception of "outcomes-based." The current funding model does not have a performance component, or an incentive funding component, and could be improved by additions or changes to incorporate performance. There is no linkage to the goals for the colleges and universities, nor any measure of accomplishment, and no link to performance standards.

Moreover, multiple improvements can be made to the Nevada model to make it more mission-sensitive, size-sensitive, adaptable, and equitable. *Any of these possible options for changes should be examined in Nevada's usual orderly process for changes to the higher education formula funding through the legislative interim study committees, and should include consultation with all appropriate stakeholders.* It is taken as a given that all of the formula components will be based on valid and reliable data. Without valid data that can be verified by outside parties, the funding model cannot function effectively, or be perceived as useful to policy makers.

There are several factors that drive the formula: credit hours, which are converted to full-time equivalent students; student to faculty ratios; numbers of faculty; faculty salaries; and gross square feet. Acreage is a component of the formulas but it is not as important in the formula computations at other drivers.

The credit hour count is combined with the student to faculty ratios to drive the faculty count. In turn, the faculty count drives much of the rest of the formula: numbers of classified employees, number of academic administrators, volumes in the library, equipment replacement, operating and wages, teaching assistants at the community colleges, and institutional support funding (as a percent of the other budgets). Therefore, the translation of credit hours to SFTE to the number of faculty through the student to faculty ratios is the most important computation in the funding model. If the translation algorithm is incorrect, or has been "gamed" by the institutions, or is perceived to benefit one institution over another, or does not correctly model the costs of providing instruction in each discipline, then the entire formula will be perceived as resulting in inequitable allocations of resources.

The computation of the number of full-time faculty at the community colleges is different than that for the universities and NSC. Because of this difference, and its impact on so many other components of the formula, the formula is not as equitable as it could be. This particular component is discussed in detail in the section on Instruction.

In the sections that follow, each of the components of the funding model will be examined from the perspective of the guiding criteria and in the context of the "drivers" of the formula. Options for improvements, additions, or modifications to the formula will be summarized in Chapter 5.

4.2.1 Instruction

This category includes all expenditures for credit courses; for academic, vocational, technical, and remedial (colleges only) instruction; and for regular, special, and extension sessions (most of these special and extension are self-supporting outside of the state budget). Excluded are expenditures for academic administration when the primary assignment is administration (such as deans). 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. For Nevada, this is especially critical since the credit hour distribution drives the number of faculty which drives much of the rest of the formula components, as noted above.

Nevada's current formula for Instruction differentiates between the four-year and two-year campuses. No Instruction component is included in the funding for the Desert Research Institute (DRI); any instruction that DRI staff provide is through contracts with UNR and UNLV.

The Nevada formula uses a legislatively-approved credit hour taxonomy matrix that differentiates between high, medium, and low cost and clinical classes at the lower division, upper division, masters, and doctoral instructional levels. A student/faculty ratio is used to determine the number of instructional faculty required for each institution according to the number of students projected to enroll by level of instruction and by the relative cost of the discipline. Separate components of the matrix are used for the universities, for Nevada State College, and for each of the colleges/community colleges, resulting in a twelve by four matrix. Higher levels of instruction and higher discipline costs are reflected by lower student to faculty ratios. Once GBC and WNC reach a SFTE level of 3,000, lower division funding is to be the same for all colleges/community colleges. **Exhibit 4-2** displays the current taxonomy matrix.

EXHIBIT 4-2
Student-Faculty Ratios

	Lower Division	Upper Division	Masters	Doctoral
All Institutions, Clinical	8	8	8	8
High Cost, UNR & UNLV	18	13	10	8
High Cost, NSC	18	15	12	
High Cost, CSN & TMCC	14	14		
High Cost, GBC & WNC	12	12		
Medium Cost, UNR & UNLV	21	16	13	8
Medium Cost, NSC	21	18	15	
Medium Cost, CSN, GBC, TMCC, & WNC	21	16		
Low Cost, UNR & UNLV	26	22	16	8
Low Cost, NSC	26	24	18	
Low Cost, CSN, TMCC, WNC	26	25		
Low Cost, GBC	23	22		

The institutions report actual student credit hours (SCH) for the previous year by level of instruction and by discipline, which are converted to full-time student equivalents (SFTE) by dividing the number of credit hours by 30 for undergraduates, by 24 for masters level, and by 18 for doctoral. The percentage distribution of SFTE enrollment by levels of instruction and discipline is calculated and the same percentage is applied against projected enrollments. SFTE enrollment projections are based on a weighted three-year average rolling growth rate that is applied to the current actual annual full-time enrollments. The previous three years of actual enrollments are weighted with the most recent year given 50 percent, the second year 30 percent, and the earliest year, 20 percent. For the 2009-2011 biennium, the three-year weighted average was not used in the calculation of the budget.

The number of faculty members as calculated by this formula is then compared to the prior year's budgeted number of faculty. Any change in faculty positions are funded at (or reduced by) established rates that are different for the two universities and NSC and for the community colleges. For the universities and NSC, new faculty positions are funded at the mid-point of Q1 and Q2 of the academic salary schedule for an associate professor, plus associated fringe benefits. For the community colleges, new faculty members are funded at Rank 4, Step 10 of the academic salary schedule, plus fringe benefits.

For the colleges, new instructional positions are distributed at the ratio of 60 percent full-time positions, and 40 percent part-time. New part-time faculty positions are funded at 60 percent of the base salary for full-time faculty, plus associated fringe benefits.

In addition to faculty positions, the Instruction formula provides one additional classified position for every five new instructional faculty members. Classified positions are funded at Grade 27, Step 1 of the State's employer paid compensation schedule, plus associated fringe benefits.

The Instruction formula also provides for operating and wage costs at a predetermined amount which is adjusted at the inflation rate plus 1 percent. Currently, universities are funded at $7,368 per faculty FTE; NSC at $6,141 per faculty FTE; community colleges at $ 5,650 per faculty FTE; classified staff at $2,825 per FTE for all institutions.

The instruction formula also generates equipment funds for each existing full-time faculty and classified position. These funds are used for faculty start-up packages, instructional equipment replacement, and other workstation replacement. For faculty, universities are currently funded at $6,387 annually per faculty position; NSC at $5,527; community colleges at $4,350; and all classified positions at $1,228 per position.

For new positions, equipment is calculated by a separate formula as defined by the State Budget Division guidelines as $6,000 per new FTE faculty position and $4,000 per new classified position.

Graduate assistants at the universities and NSC and college teaching assistants at the four colleges are provided through formula calculations. For the community colleges, $1,000 per full-time faculty member, plus associated fringe benefits is allocated to fund teaching assistants. For UNR, UNLV, and NSC, one graduate assistant is allotted for every eight projected master's level student headcount enrollments, and one for every 3.33 projected doctoral student headcount enrollments. Assistantships are funded at one-half the cost of an instructor position, plus associated fringe benefits.

In addition to all of the above calculations, a separate salary equity pool was designated to eliminate the inequity in faculty salaries between UNLV and UNR. The pool of funds was determined by multiplying 10 percent of the FTE turnover rate by the difference in the all-ranks salary at the two institutions. UNLV drew the equity pool funds for each faculty vacancy filled at a salary higher than the current budget for the position. The equity pool was to be funded for three biennia, and was to result in equal salaries by the 2005-2007 biennia.

There are multiple components of the Instruction formulas that merit attention: the taxonomy matrix, classification of courses within the taxonomy matrix, remedial classes; faculty mix between full-time and part-time, lower division differentiation of costs by sector, doctoral discipline costs, operational cost factors, productivity factors, rolling average FTE, and the complexity of the Instruction formulas. Instructional costs for multi-campus operations are no different than for single campus operations, as the costs of instructional salaries are the same. Therefore, the issue of multi-campus operations will be discussed under other components of the funding model.

Credit Hour Matrix (Taxanomy). The first issue is the credit hour matrix, which collapses all credit hours by discipline and level of instruction into what has been called a four-by-four or 16-cell matrix (four cost categories and four levels of instruction). The matrix is actually a twelve-by-four matrix. The purpose of the matrix is to recognize differences in the cost of instruction that vary by discipline, by size and type of institution, and by level of instruction. Credit hours earned in the Schools of Medicine, Dentistry, and Law are not included in this matrix. **Exhibit 4-3** displays the disciplines that are included in the current matrix. For a particular discipline, Nevada maintains the same cost category across all instructional levels. A four-by-four matrix originally was set up to simplify the varying costs of 50 or more discipline categories, each of which has its own unique cost. Reducing all disciplines down to essentially four does simplify the matrix, but as a result some legitimate cost differences are not adequately included, especially at the doctoral level where all disciplines essentially are given the same cost. The student-faculty ratio at the doctoral level for all four cost categories is 8 to 1.

EXHIBIT 4-3
Disciplines Within Each Of The Current Cost Categories

CIP CODE & SUBJECT AREAS	SUPPORT LEVELS			
	Clinical	High	Medium	Low
01. Agricultural, Agriculture Operations, and Related Sciences				
01.01 - Agricultural Business & Management			X	
01.06 - Applied Horticulture & Horticultural Business Services		X		
01.09 - Animal Sciences		X		
03. Natural Resources & Conservation				
03.01 - Natural Resources Conservation & Research		X		
03.02 - Natural Resources Management and Policy			X	
03.99 - Natural Resources & Conservation, Other			X	
04. Architecture & Related Services		X		
05. Area, Ethnic, Cultural, & Gender Studies				X
09. Communication, Journalism, & Related Programs			X	
11. Computer & Information Sciences & Support Services		X		
12. Personal & Culinary Services		X		
13. Education			X	
14. Engineering		X		
15. Engineering Technologies/Technicians		X		
16. Foreign Languages, Literatures, & Linguistics				X
19. Family & Consumer Sciences/Human Sciences			X	
22. Legal Professions & Studies				X
23. English Language & Literature/Letters				X
24. Liberal Arts & Sciences, General Studies & Humanities				X
25. Library Science				X
26. Biological & Biomedical Sciences		X		
27. Mathematics & Statistics				
27.01 – Mathematics				X
27.03 - Applied Mathematics			X	
27.05 – Statistics			X	
28. Reserve Officer Training Corps (JROTC, ROTC)				X
29. Military Technologies				X
30. Multi/Interdisciplinary Studies				X
30.19 - Nutrition Sciences		X		
31. Parks, Recreation, Leisure, & Fitness Studies				X
32. Basic Skills			X	
38. Philosophy & Religious Studies				X
40. Physical Sciences		X		
42. Psychology				
42.01 - Psychology, General				X
42.06 - Counseling Psychology			X	
42.17 - School Psychology			X	
42.18 - Educational Psychology			X	

EXHIBIT 4-3 *(continued)*
Disciplines Within Each Of The Current Cost Categories

CIP CODE & SUBJECT AREAS	SUPPORT LEVELS			
	Clinical	High	Medium	Low
43. Security & Protective Services				
43.01 - Criminal Justice & Corrections				X
43.02 - Fire Protection		X		
44. Public Administration & Social Service Professions				X
44.07 - Social Work			X	
45. Social Sciences				X
46. Construction Trades		X		
47. Mechanic & Repair Technologies/Technicians		X		
48. Precision Production		X		
49. Transportation & Materials Moving		X		
50. Visual & Performing Arts			X	
50.04 - Design & Applied Arts		X		
50.05 - Drama/Theatre Arts & Stagecraft		X		
50.06 - Film/Video & Photographic Arts		X		
50.07 - Fine & Studio Art		X		
50.09 – Music		X		
51. Health Professions & Related Clinical Sciences				
51.02 - Communication Disorders Sciences & Services	X			
51.06 - Dental Support Services & Allied Professions		X		
51.07 - Health & Medical Administrative Services			X	
51.08 - Allied Health & Medical Assisting Services		X		
51.09 - Allied Health Diagnostic, Intervention, &Treatment Profession	X	X		
51.11 - Health/Medical Preparatory Programs	X	X		
51.15 - Mental & Social Health Services & Allied Professions			X	
51.16 – Nursing	X			
51.18 - Ophthalmic & Optometric Support Services & Allied Profession		X		
51.20 - Pharmacy, Pharmaceutical Sciences, & Administration		X		
51.22 - Public Health			X	
51.23 - Rehabilitation & Therapeutic Professions	X	X		
51.32 - Bioethics/Medical Ethics			X	
52. Business Management, Marketing, and Related Support Services				X
52.04 - Business Operations Support & Assistant Services		X		
52.09 - Hospitality Administration/Management		X		
52.12 - Management Information Systems & Services		X		
54. History				X

Source: *NSHE.*

Cost matrices generally are the result of cost studies, but Nevada does not do a periodic cost study; any changes to the matrix will have to rely on cost studies done by other states. Of particular note are the cost studies done by Texas, Ohio, Florida, and Illinois. For over thirty years, all four of these states used a statewide, consistent methodology to measure the costs of providing courses in the various disciplines. Weights have shifted over time as pedagogical changes have taken place. Any of these cost studies (which differ significantly) could generate weights that can be converted to student to faculty ratios for use in Nevada. Or, the four can be combined for an average of the cost studies. **Exhibit 4-4** displays the weights for the four states.

EXHIBIT 4-4
Matrix Of Student Credit Hour Weights

	Illinois				Ohio				Texas				Florida			
	LD	UD	MS	DOC	LD	UD	MS	DOC	LD	UD	MS	DOC	LD	UD	MS	DOC
Agriculture	1.78	2.22	2.96	2.80	5.53	6.47	11.12	10.13	1.88	2.46	7.01	9.35	1.21	4.47	9.65	9.75
Natural Resources and Conservation	1.93	2.36	3.91	14.00	3.14	4.91	6.58	8.15	1.88	2.46	7.01	9.35	1.85	5.78	11.79	9.41
Architecture and Related	2.22	2.53	3.47	5.20	1.95	4.53	7.18	9.15	1.88	2.46	7.01	9.35	3.21	4.46	6.97	6.82
Area, Ethic, Cultural and Gender Studies	2.00	3.42	5.09	7.84	2.41	3.31	8.19	9.32	1	1.7	4.1	9.26	2.13	4.48	12.64	11.10
Communications and Journalism	1.60	2.33	3.80	5.22	2.23	3.44	10.21	11.34	1	1.7	4.1	9.26	1.92	2.89	8.07	10.71
Computer and Information Sciences	2.11	3.24	4.62	5.07	3.07	4.5	7.63	8.95	1.44	2.4	3.85	4.8	1.91	4.99	7.62	11.90
Personal and Culinary Services	1.38	1.64	3.29	5.60	2.16	2.7	12.68	14.41	1.04	1.68	2.88	6.97	1.04	4.98	10.28	10.35
Education	1.49	1.89	2.82	3.24	3.18	3.28	5.11	8.65	1.41	1.73	2.34	7.58	2.27	1.66	5.10	9.46
Engineering	2.62	3.64	4.67	5.22	4.68	5.3	11.21	11.55	2.41	3.82	7.47	15.81	2.50	2.77	8.10	8.92
Engineering Technology	2.27	2.36	3.51	4.31	4.39	4.78	13.79	12.72	2.41	3.82	7.47	15.81	2.58	4.75	4.11	6.27
Foreign Languages	1.67	2.00	3.60	3.84	2.49	3.4	8.33	11.57	1	1.7	4.1	9.26	2.50	3.46	7.09	6.46
Family and Consumer Sciences					2.16	2.7	12.68	14.41	1.04	1.68	2.88	6.97	1.04	4.98	10.28	10.35
Legal Professions	2.29	1.58	3.07	7.53	2.58	3.01	7.66		1.74	2.95	3.1	3.92	1.86	3.19	5.80	31.23
English Language and Literature	1.76	2.20	4.44	3.89	2.42	3.36	8.23	8.82	1	1.7	4.1	9.26	2.88	2.96	7.92	7.63
Liberal Arts and Sciences	3.62	3.07	3.67	1.78	3.81	5.47	11.3	10.51	1	1.7	4.1	9.26	5.10	2.42	5.57	5.11
Library Science	4.00	5.24	3.07	6.69	1	10.72	4.77		1	1.7	4.1	9.26	3.31	5.67	4.41	6.58
Biological and Biomedical	1.40	2.29	4.51	4.84	3.04	4.25	10.63	9.78	1.74	2.95	8.07	20.3	2.40	2.36	9.79	10.27
Mathematics and Statistics	1.44	2.00	4.33	5.20	2.34	3.19	8.76	12.34	1	1.7	4.1	9.26	1.81	3.53	8.10	10.57
Multi/Interdisciplinary Studies	2.58	1.67	2.98	3.16	3.51	5.17	7.97	10.85	1	1.7	4.1	9.26	3.58	3.72	13.33	17.31
Nursing	1.33	2.62	5.87	11.22	3.46	3.96	10.77	11.15	1.96	2.35	4.45	9.94				
Parks, Recreation and Leisure Studies	1.04	1.36	2.67	2.84	3.12	3.49	7.67	11.25	1	1.7	4.1	9.26	1.45	2.96	4.75	5.13
Basic Skills	1.24	7.76			2.42	3.36			1.35	1.2						
Philosophy and Religious Studies	1.38	2.00	3.73	6.24	2.39	3.19	9.57	11.52	1	1.7	4.1	9.26	1.92	2.06	11.21	11.17
Physical Sciences	1.27	2.44	4.91	4.78	3.28	4.78	12.98	11.25	1.74	2.95	8.07	20.3	2.69	2.78	11.68	10.37
Psychology	1.00	1.67	3.69	4.22	2.11	3.04	7.02	9.07	1	1.7	4.1	9.26	1.00	5.40	7.66	8.26
Security and Protective Services	1.27	1.56	4.71	6.44	2.12	2.68	4.49	6.36	1.9	2.03	2.93	14.4	1.54	2.34	6.66	10.70
Public Administration	1.33	1.69	2.96	4.78	2.75	3.32	4.24	6.61	1.9	2.03	2.93	14.4	2.40	2.10	5.00	13.21
Social Sciences	1.00	1.56	4.44	5.00	2.27	3.03	4.31	6.56	1.9	2.03	2.93	14.4	1.49	3.46	9.60	12.17
Construction and Other Trades	6.76	4.49	13.78	21.33	4.68	5.3	11.21	11.55	1.96	2.42	4.07	2.45				
Visual and Performing Arts	2.22	3.67	4.33	3.89	2.72	4.58	10	9.26	1.4	2.31	5.44	7.07	2.92	2.80	11.22	11.21
Health Professions	1.13	1.73	2.49	6.67	3.46	3.96	10.77	11.15	1.23	1.89	3.23	9.14	2.06	4.54	5.19	10.30
Business, Management, and Related	1.53	2.11	3.80	9.82	2.56	3.43	5.85	21.15	1.09	1.7	3.26	24.41	1.57	3.50	4.85	15.29

The other states costs shown here, while parallel to Nevada's in many cases, do not maintain the same weighting for a discipline across all levels. In other words, a discipline such as Physical Sciences could be considered medium cost at the lower division level but high cost at the masters' and doctoral levels. These differences reflect differences in the size of the classes, in the pedagogy, and the faculty salaries in the disciplines. All of these states differentiate the costs of doctoral courses, which Nevada currently does not.

The costs shown in Exhibit 4-4 could be grouped into three discipline cost categories. **Exhibit 4-5** displays a matrix based on cost studies for Florida, Illinois, Ohio, North Carolina, and Texas, that groups disciplines into three categories across four levels of instruction. Disciplines are not necessarily in the same cost category across all four levels of instruction; doctoral costs are placed into the three cost categories not just one as the current Nevada matrix places disciplines.

Obviously, working from the cost studies from other states, there are a number of classifications into which academic programs may be placed. Nevada also could take an average across all the cost studies and place disciplines into a four-by-four matrix, a three-by-four matrix, or even an eight-by-four matrix, all of which would be simpler than the current matrix. **MGT recommends that NSHE work with appropriate stakeholders to determine an instruction matrix that would more closely approximate the current cost of these courses. Included in the cost matrix would be a differentiation of the costs of doctoral programs. New student-faculty ratios that are consistent with the costs of providing services should be included in the matrix.**

The current matrix does include a provision to recognize differences in the sizes of the institutions, in that there are different ratios for the smaller community colleges. This is an important component of the matrix, and should be continued in some manner to recognize economies of scale. Such a factor could be done by **keeping the student-faculty ratios the same across all institutional sizes and including a base amount for institutions under a certain size.**

Classification of Disciplines within the Matrix. Correct placement of courses in the matrix is critical to the validity and equity of the formula. Currently, all distance education courses are defined as high cost. Distance education historically has meant those courses offered by two-way interactive video, where students are in multiple sites with a proctor and the instructor is at a different site, with or without students at the instructor's site. In 2010, distance education has come to include not only two-way interactive video but also any asynchronous learning such as web based courses that a student may log into in his/her dorm room at 2 a.m., and which do not have an instructor physically present. In addition, some institutions are classifying as distance education any course taught at a center. These are not distance education if the instructor is at the "classroom" location.

Cost studies done by the University System of Georgia demonstrated that asynchronous learning does not cost more to produce and offer than traditional courses. The University of California at Berkeley also completed a cost study of its use of web based or internet courses as compared to traditionally offered courses. Even in the biological sciences, web based or internet courses were no more expensive than traditional courses.

Therefore, the only credit hours that should be placed in the "high cost" category are those that are two-way interactive video. This change would alter the discipline mix that the colleges and universities currently report. Since projected credit hours in the cost matrix are assumed to be distributed in the same manner as past years, this change will necessitate a different methodology as the change is implemented.

EXHIBIT 4-5
Sample States Cost Matrix

	Lower Division					Upper Division					Masters					Doctoral				
Discipline	**NC**	**TX**	**IL**	**FL**	**OH**	**NC**	**TX**	**IL**	**FL**	**OH**	**NC**	**TX**	**IL**	**FL**	**OH**	**NC**	**TX**	**IL**	**FL**	**OH**
Agriculture & Related	2	3	2	1	3	2	2	2	2	3	2	3	1	3	3	2	2	1	2	2
Natural Resources & Conservation	2	3	2	1	2	2	2	1	3	2	2	3	1	3	1	2	2	1	2	1
Architecture & Related	2	3	2	3	1	2	2	2	2	2	2	3	2	2	1	2	2	2	1	1
Area Studies	1	1	2	2	1	1	1	3	2	1	1	2	3	3	2	1	2	3	2	1
Communication	1	1	2	1	1	1	1	2	1	2	1	2	2	2	2	1	2	1	2	2
Communication Technology	1	3				1	2				1	2				1	1			
Computer & Information Sciences	2	3	2	1	2	2	2	3	3	2	2	2	2	2	2	2	1	2	3	1
Personal and Culinary Services	1					1					1					1				
Education	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1
Engineering	3	3	3	2	3	3	3	3	1	2	3	3	3	2	3	3	3	2	1	2
Engineering Tech	2	3	3	2	3	2	2	2	3	2	2	2	1	1	3	2	1	1	1	3
Foreign Languages and Literature	1	1	1	2	1	1	1	1	2	2	1	2	1	2	2	1	2	1	1	2
Family & Consumer Sciences	1		1	1	1	1		1	3	1	1		2	3	3	1		1	2	3
Legal Professions			3	1	2			2	2	1			3	1	2			3	3	
English Language & Literature	1	1	1	2	1	1	1	1	1	1	1	2	2	2	2	1	2	1	1	1
Liberal Arts & General Studies	1	1	3	3	1	1	1	2	1	1	1	2	2	1	2	1	2	1	1	1
Library Science	2	2	3	3	1	2	1	3	3	3	2	1	1	1	1	2	1	3	1	
Biological Sciences	2	3	1	2	2	2	3	2	1	2	2	3	3	3	3	2	3	3	2	2
Mathematics & Statistics	1	1	1	1	1	1	1	1	2	1	1	2	2	2	2	1	2	2	2	3
Multi/Interdisciplinary Studies	1	1	2	3	2	1	1	1	2	2	1	2	1	3	2	1	2	1	3	2
Nursing	3	3	2			3	2	2			3	2	3			3	2	3		
Parks and Leisure Studies	1	3	1	1	2	1	2	1	1	2	1	1	1	1	2	1	3	1	1	2
Philosophy & Religion	1	1	1	1	1	1	1	1	1	1	1	2	2	3	2	1	2	2	2	2
Physical Sciences	2	3	2	2	2	2	3	2	1	2	2	3	3	3	3	2	3	3	2	2
Psychology	1	1	1	1	1	1	1	1	3	1	1	1	2	2	1	1	3	2	1	1
Protective Services	1	1	1	1	1	1	2	1	1	1	1	1	2	2	1	1	2	2	2	1
Public Administration	2	3	1	2	2	2	2	1	1	1	2	1	1	1	1	2	3	2	3	1
Social Sciences	1	1	1	1	1	1	1	1	2	1	1	1	3	3	2	1	2	2	3	2
Construction & Other Trades	2		3			2		3			2		3			2		3		
Visual & Performing Arts	2	2	2	2	2	2	2	3	1	2	2	2	3	3	2	2	1	1	2	1
Health Professions	2	1	1	2	2	2	2	1	2	2	2	2	2	1	3	2	2	3	2	2
Business & Management	1	1	3	1	2	1	1	2	2	2	1	2	2	1	1	1	3	3	3	3
History	1	1	2	1		1	1	1	1		1	1	2	2		1	1	1	1	
Basic Skills/Econ Disadvantage	1		3	5		1					1					1				

Source: *Calculated by MGT from actual cost studies.*

Remedial Courses. Currently courses that are remedial in nature, or not at the college level, are not included in the formula for UNR or UNLV, but are included in the discipline mix for NSC and the four community colleges. During the course of the study, MGT staff was told that approximately 30 percent of recent high school graduates entering the Nevada colleges and universities needed at least one remedial course before the student can successfully complete college-level courses.

Such a large percentage of students requiring remedial coursework creates a significant resource challenge for the colleges. Because these courses are not "college level," typically states do not provide funding for remedial in their instructional matrix, but rather fund outside the matrix to recognize the additional costs of successful remediation. Not only are class sizes in remedial courses lower, but also additional assistance typically is given outside of the traditional classroom setting. Tutoring and special advising to increase the likelihood of a successful post-secondary experience may be offered.

States such as Washington, Indiana, Ohio, Texas, and Louisiana recognize successful completion of remedial classes, especially in mathematics and English language and literature, in their funding models. Each of these states is providing funding at successful completion of a remedial course. Remedial courses may be completed at various times during the academic year, and do not follow the typical semester-basis of course completion. Some students complete the remedial course quickly and are ready to move on to college-level work. Other students may require the entire academic year to complete the course. Because of these differences, the methods used in remedial classes may vary considerably to encourage success of every student.

To incorporate such a mechanism in the Nevada model would require an additional calculation. Course completions are not the same as earned credit hours, because remedial classes do not count toward graduation requirements. Likewise, completion of remedial courses can occur at any point during the year. Therefore, **it is recommended that the NSHE consider allocating an additional instructional faculty person and one-half an FTE staff person at NSC, GBC, WNC, TMCC, and CSN for each 80 successful remedial course completions.** Faculty salary amounts and other allocations could be computed as in the other components of the Instruction formula.

Faculty Mix and Differentiation of Lower Division Courses. For the universities and state college, the faculty numbers generated by the formula are all considered to be full-time positions. At the community colleges, 60 percent of the faculty positions are assumed to be full-time and the remaining 40 percent are part-time. Part-time faculty positions are funded at 60 percent of the full-time faculty salary.

Funding UNR, UNLV, and NSC at a different percentage full-time than that for the community college introduces disparity to the formula. There is no theoretical justification for this difference. In terms of equity from the students' perspective, there should be no difference between the opportunity to have a full-time faculty member teach a lower division course, no matter which of the institutions the student attends. This inequity then extends into the other components of the budgets because the number of full-time faculty is a driver for most of the rest of the budget. There is legitimate differentiation between the salaries of faculty at a research university and a community college or state college. However, there is no objective support for a formula that generates a different number of full-time positions for the same level of course.

It is recommended that NSHE consider in its discussions with appropriate stakeholders that new FTE faculty positions generated by the formula calculation be 100 percent full-time positions. Of course, this change will have an impact on the total funding requirement for the formula since these positions will be funded at 100 percent of the salary cost, instead of the current 84 percent (60% + 60% of 40%). This change will make the formula more equitable, and addresses the criterion "outcomes based."

Operational Factors. The current formula provides different amounts for operating and wage costs at a predetermined amount which is adjusted at the inflation rate plus 1 percent. Currently, universities are funded at $7,368 per faculty FTE; NSC at $6,141 per faculty FTE; community colleges at $5,650 per faculty FTE; and classified staff at $2,825 per FTE for all institutions.

The instruction formula also generates equipment funds for each existing full-time faculty and classified position. These funds are used for faculty start-up packages, instructional equipment replacement, and other workstation replacement. For faculty, universities are currently funded at $6,387 annually per faculty position; NSC at $5,527; community colleges at $4,350; and all classified positions at $1,228 per position.

During the course of this project, it was explained that the operating amounts per FTE for each type of institution was determined to be the average of each like institution's current operating expenditures per FTE at the time the current formula was created. There does not seem to be any good reason for the different amounts per faculty position, with the same amount per classified position. Differences in operating allocations contribute to inequities in the formula; therefore, **it is recommended that NSHE consider that both the operating and wage costs per faculty FTE and the equipment funds per full-time faculty person should be equal for the universities, NSC, and the colleges.**

Performance Factors. The current Instruction formula is based on the number of credit hours for which students are enrolled, rather than the credit hours earned or completed. The use of enrolled credit hours "incents" the institutions to get more students into courses, but not to get the students through the courses successfully. This is an unintended consequence of the formula.

Ohio, Indiana, Texas, Louisiana, and Tennessee are states that have begun to count credit hours completed rather than enrolled credit hours. Ohio and Indiana both report that this change to a performance factor has resulted in increased completions of degrees or certificate programs. Ohio is phasing in the change to counting completions by use of a stop-loss feature in the funding formula. For the first year of changeover to completed credit hours, institutions whose FTE count was less, resulting in a loss of funding, receive 99 percent of the amount under the traditional enrollment count; in the second year, 98 percent of funding is guaranteed; and in the third year, 95 percent. By the fourth year of implementation, all stop-loss features are eliminated.

It is recommended that NSHE consider through its formula revision process with appropriate stakeholders whether the number of credit hours used in the instruction formula should be credit hours completed instead of enrolled credit hours. Nevada easily could incorporate this performance feature into its Instruction formula. Such a change would meet the criterion of "outcomes based." This change likely would be welcomed by legislators and the governors' staff as they are consulted in the revision process.

Rolling Average FTE. The use of the rolling three-year average student count has smoothed changes in funding during those times when college or university enrollments are declining, and allowed institutional managers time to plan for change. One of the criticisms that legislators, legislative staff, and the governor's staff have made about the formula is that the rolling average is not being used when enrollments are increasing but only when some enrollments are declining. Since 2001, the NSHE has not had a time when enrollment system-wide declined.

The rolling average FTE works well in times of consistency in enrollment and in funding, but does not provide sufficient opportunity for planning in other economic times. **It is recommended that consideration be given to evaluating and potentially modifying the method of counting enrollment**.

Complexity of the Formulas. Nevada's instruction "formula" actually is comprised of five or six separate formulas, depending on how the salary schedule is counted. Although Instruction is the most complex of all the functional areas for which formulas exist. Nevada's set of formulas is the most complex of all the states. This may be the result of using formulas for equipment for existing and new positions that are consistent with state government. In addition, the methodology used in the matrix – base factors with position ratios and salary rates – is the most complex of any method used to calculate "need" in a functional area.

Other states collapse all of the costs that are in the additional formulas into the cost matrix, or have a separate cost matrix for the operating costs of disciplines. It would be possible to establish a cost matrix that would incorporate the additional costs. However, it may be that there is Nevada precedents to keep the operating costs separate from the matrix that generates the number of faculty. **It is recommended that NSHE consider reducing the complexity of the Instruction component of the formula by incorporating all cost calculations into one.**

4.2.2 Research

This category includes expenditures for activities designed to produce research outcomes. Nevada does not use a formula for research funding. Rather, funding is determined on an incremental basis. NSC and the community colleges do not have a research mission. However, UNLV, UNR, and DRI all have a critical research mission that was the topic of considerable discussion by business persons, legislators, and economic development specialists. If Nevada is to use the universities as drivers of economic development, then some funding for research likely is necessary. Funding could be used for start-up packages for new researchers, for on-going equipment replacement or purchase of cutting-edge equipment.

The lack of a research component in the current formula does not meet several of the criteria established as guiding principles for any change to the formula. This component currently is not "outcomes-based" or "mission sensitive."

A particular charge of this study is the following:

> Evaluate and as appropriate identify and recommend formula attributes to consider that would address mission differences. Without limiting the foregoing, this part of the analysis should address funding for research.

Other states provide funding for the research mission of the system of higher education. The funding may come in several ways: as a component of the basic funding formula; as performance funding; or as incentive funding. One of the most successful ways of funding research has been the research incentive funds of the Ohio Board of Regents. These funds are awarded to universities for increases in the amounts of externally funded research. The OBOR staff indicates that this incentive funding has resulted in hundreds of millions in increased research funding, much of which is directed to areas of special statewide need.

Two sample research formulas follow. This type of formula would be included in the basic funding formula calculation.

1. *Research amount = 2% of outside funding for research.*
2. *Research amount = 2% of the sum of the formula amounts for instruction and academic support plus 1% of sponsored research*

Another alternative would be to set up a performance funding or incentive funding pool that only UNLV, UNR, and DRI could access. As performance funding, an increase in outside research funding would result in UNLV, UNR, or DRI having access to that part of the performance funding pool, if each reached their annual goal for outside funding. For incentive funding, a separate pool would be set aside and each of the organizations would share in that pool, if they met the objectives for research. Of course, the difficult part would be in determining the size of the pool, what the goals were, and how the organizations would share.

MGT recommends that NSHE consider adding a component of the formula to recognize the research mission of the System. Any of the three alternatives – component of the formula, part of performance funding, incentive funding – would fulfill the mission sensitive criterion. Both the performance funding or incentive funding component would meet both the mission sensitive and the outcomes based criteria.

4.2.3 Public Service

This category includes funds expended for activities that primarily provide non-instructional services to individuals and groups external to the institution. Nevada does not have a formula for the public service components of college and university operations. However, for workstation replacements for non-formula budgets, which include Cooperative Extension, a public service activity of UNR, $1,228 is allocated for each professional and classified FTE position. **No change is recommended for this funding.**

4.2.4 Academic Support

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. However, costs associated with the office of the chief academic officer of the campus are included in the institutional support category. (NOTE: Nevada includes the costs of the chief academic officer in the academic support category.)

A best-practice example of a simple and a more complicated academic support formula is shown below.

1. *Academic support funding = 5% of instruction formula calculation*
2. *Academic support funding = $750,000 + 15% of instruction formula calculation + $10 per undergraduate credit hour over 50,000 credit hours + $20 per masters credit hour + $80 per doctoral credit hour + $5 per continuing education hour*

Nevada's funding formulas for Academic Support include separate calculations for library staffing, operating and equipment, and other areas. For UNLV, UNR, and NSC, for the office of the chief Academic Officer, base funding is provided for two professional positions and one classified position. Additional positions are added based on the size of the faculty: 200 to 499 faculty FTE generate one additional professional position and one additional classified position; more than 500 faculty FTE generates two additional professional positions and two additional classified positions.

For the schools and colleges at UNLV, UNR, and NSC, base funding is provided for one professional position (such as a dean) and one classified position. For 50 to 174 faculty FTE in the school or college an additional professional and one additional classified position are added. More than 175 faculty FTE in a school or college generates two additional professional positions and two additional classified positions.

New professional positions for the Academic Support function are added at Q1 of the academic salary schedule for Professor, Rank 4, on a 12-month contract, plus associated fringe benefits. New classified positions are added at Grade 27, Step 1, of the State's employer paid compensation schedule, plus associated fringe benefits.

For other Academic Support areas such as academic advisement, technology, and testing services, a percentage of the Instruction budget is added, equal to 9.5 percent of the Instruction budget for UNLV and UNR and 6.5 percent of the Instruction budget for NSC.

For the library, for UNLV, UNR, and NSC, staffing is determined by the number of volumes in the library collection, adjusted by an inflation factor; 50 positions are allocated for the first 500,000 volumes. One new position is added for every additional 16,000 volumes above 500,000. New positions generates as a result of the formula are added at a 40:60 professional to classified ration; that is, for every five positions added, two are professional positions and three are classified. New professional positions are added at the mid-point of Q1 and Q2 of the salary schedule for an Assistant Professor, Rank 2, plus associated fringe benefits. Classified positions are added at Grade 27, Step 1, of the State's employer paid compensation schedule, plus associated fringe benefits.

The Academic Support formula also provides for operating costs for the libraries at a predetermined rate, adjusted at the inflation rate plus one percent. Universities are funded at $6,260 per FTE position for all library positions, while NSC is funded at $4,913 per FTE library position.

Equipment funds for each classified and professional FTE is provided for workstation replacement at the rate of $1,025 for each existing professional and classified position. One-time equipment funds for new professional and classified positions are funded at $6,000 or $4,000 per new professional or classified position, respectively.

For the community colleges, the Academic Support formula is based on a fixed percentage of the Instruction budget. For GBC, 30 percent of the first $7.5 million of the Instruction budget, and 25 percent of any Instruction budget over $7.5 million is allotted. Once GBC reaches 3,000 SFTE, the Academic Support funding percentages will be consistent for all the community colleges. For CSN, WNC, and TMCC, 22 percent of the Instruction budget is allocated.

One of the charges for this study is the following:

> "*Evaluate and as appropriate identify how administrative functions required for institutions with multiple sites may be a component of a funding formula. Differentiate between full campus-level operations and extended centers."*

For the community colleges, the Academic Support formula recognizes economies of scale by applying a differential percentage of the Instruction budget for GBC. It might be contended that this differential percentage also recognizes the special circumstances of the large service area and the extended centers that GBC must operate to meet the needs of students. As such, the formula could be perceived as adequate to recognize the additional costs of extended centers and distance education.

On the other hand, there is no recognition of any possible additional costs of full campus-level operations in the Academic Support area at multiple campus sites. In other states where a community college has more than one campus, there is no special or additional formula for Academic Support. Cost studies indicate that the costs of having academic advisors located at multiple sites are covered within the percentage formula allotment and are no different than if all the students were located on one campus.

Additionally, adding a dean or assistant/associate vice president or vice provost to head the instructional component of a "branch" campus is perceived to be an inefficient use of resources.

Under the Clapp-Jordan formula, the universities, NSC, and the community colleges add volumes to improve library collections. For the universities and NSC, the base number of volumes is 85,000, and to that is added 125 volumes per faculty member, 20 volumes per FTE student, 610 volumes per baccalaureate degree program, 10,000 volumes for each Master's program without a doctoral program, 3,750 volumes for each master's program with a doctoral program, and 31,250 volumes for each doctoral program. For the community colleges, using the Learning Resources Center Standards for College Libraries, community colleges are allotted 32,125 volumes for student FTE enrollment under 1,000; a total of 55,250 volumes for student FTE enrolment between 1,000 and 3,000; a total of 79,100 total volumes for student FTE enrollment between 3,001 and 5,000' and 100,100 total volumes for student FTE enrollment between 5,001 and 7,000. For each 1,000 student FTE enrollment over 7,001 an additional 12,890 volumes are allotted.

The universities and NSC are given an annual acquisition rate of 4.3 percent of total collections, while the colleges/community colleges are allotted 5.0 percent of total collections at an average cost per volume of $118.

For the community colleges, the Academic Support formula follows the best practice formula, and does include a consideration for the size of the college. **No change is recommended for the community college formula since it adequately provides resources that are linked to mission, are size-sensitive, and are equitable in the distribution of resources.**

For UNLV, UNR, and NSC, the formulas provide for economies of scale in the staffing and in the libraries. Of concern, however, is the formula that provides support for other Academic Support areas like advising. A higher percentage is provided for UNLV and UNR than for NSC. However, the makeup of the student body at NSC is such that their students have greater needs for academic advising and other academic support services such as tutoring and mentoring. In addition, the Instruction budget for NSC is much smaller than that for UNLV and UNR because they have much larger student bodies. Because of this greater need**, it is recommended that NSHE consider increasing the percentage for NSC to 15 percent.** This is a mission-sensitive adjustment that relates to the special needs of the students attending NSC, many of whom are first-generation students with poor academic backgrounds.

The American Library Association is expected to publish new standards for academic libraries that consider changes in technology and in the ways in which students now use libraries. **When these new standards come out, it is recommended that the Clapp-Jordan formula be replaced by the new standards.**

4.2.5 Student Services

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.

Two sample student services formulas follow, both including consideration of economy of scale.

1. *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.*
2. *Student services funding = Base funding of $2,345,585 up to 4,000 headcount + $282 per student from 4,001 to 8,000 headcount + $255 per student over 8,000.*

Nevada's funding formula for Student Services provides funding based on the combined headcount and SFTE enrollments. The existing combined number of FTE positions are subtracted from the formula-generated positions to determine the number of new positions. New positions are distributed according to a 60:40 ratio of professional to classified positions; that is, for every five new positions, three would be professional and two classified. Professional positions are added at the mid-point of Rank 2 on the administrative salary schedule, plus associated fringe benefits. Classified positions are added at Grade 27, Step 1, of the State's employer-paid salary schedule, plus associated benefits.

New positions are determined by the following:

If the combined headcount and SFTE is equal to or less than 10,000:
Universities divide by 200;
NSC divide by 275
CSN,TMCC, and WNC divide by 350

Plus:

If the combined headcount and SFTE is greater than 10,000:
Universities divide by 350
NSC divide by 375
CSN, TMCC, and WNC divide by 400

For GBC:

If combined headcount and SFTE is equal to or below 4,500, divide by 210
Plus If combined headcount and SFTE is between 4,501 and 10,000, divide by 275
Plus If combined headcount and SFTE is between 10,001 and 25,000, divide by 375
Plus If combined headcount and SFTE is above 25,000, divide by 425.

The formula provides additional positions for Student Services based on one additional position for each 100 students residing in dormitories. **This is a best practice that should be adopted by other states.**

In addition to these calculations, Nevada's Student Services formula has a unique component: funding to cover compliance costs associated with the provisions of the Americans with Disabilities Act (ADA). Institutions receive $1,000 for each student with a documented disability. **This is a "best practice" and should be emulated by other states although the dollar amount should be evaluated periodically based on actual costs.**

In addition to the components listed above, the Student Services formula also provides in a manner consistent with the Instruction and Academic Support formula methodologies, funding for operating and wage costs, workstation replacement, and new equipment for professional and classified employees.
The Nevada formulas for Student Services follow for the most part the "best practices" formulas of other states, by including an economy of scale and fixed/variable cost factors, and by basing the count of students on both headcount and full-time equivalent students. Costs of many student services such as advising or tutoring are related to the number of headcount students; for example, each student receives advising no matter how many credit hours the student is taking. Similarly some student services are related to the number of credit hours, as measured by full-time equivalent students. The Nevada formula considers both of these drivers of cost.

Similarly to Academic Support, the Student Services formula does not include an explicit component for colleges or universities that operate multiple sites, whether those are centers or full-service campuses. However, by including headcount students in the calculation, there is adequate consideration of the costs of counseling, registering, advising, and admitting students. The best operational practices of other institutions include only one admissions office, one registrar, and numbers of counselors/advisors consistent with the number of students needing services.

The Nevada formula also includes two factors or drivers that other states should emulate: costs associated with the provisions of ADA, and the number of students residing in dormitories or residence halls. Students living on campus require additional resources to provide services "24/7" that commuting students do not require.

However, the Nevada formulas do not consider the special needs of students who come under-prepared for the rigors of a post-secondary education. NSC and the community colleges have a special mission in providing services for this under-prepared population. The additional costs of providing extra services so that students can be successful in their college careers is not included in the funding formulas. One method that some states have used to generate resources for the extra costs of providing tutoring, advising, and remedial courses (costs not covered in the Instruction component) is to allot a dollar amount per Pell Grant recipient as a proxy measure of economic disadvantage. **It is recommended that NSHE consider adding an additional dollar amount per Pell-eligible student to recognize the costs of providing additional services.**

4.2.6 Institutional Support

This category includes expenditures for the central executive level management of an institution, fiscal operations, administrative data processing, employee personnel services, and support services. Most institutional support formulas recognized fixed and variable costs by including a base amount and a specified amount per student or percent of base. Examples of "best practices" institutional support formulas are shown below.

1. *Institutional support = base amount + 15% of total E&G budget (excluding institutional support)*
2. *Institutional support = 11% of total E & G formula amount (excluding institutional support) for institutions with more than 8,000 headcount students or 15% of total E & G formula amount (excluding institutional support) for institutions with less than 8,000 headcount students.*

Nevada's formula for Institutional Support follows one of the best practices formulas by multiplying a percentage of each institution's operating budget (less institutional support) including all applicable appropriations such as the School of Medicine, Agriculture Experiment Station, Law School, or Dental School.

For UNR and UNLV, institutional support is equal to 15 percent of the first $25 million plus 10 percent of the second $25 million, and 7.5 percent of any operating budget over $50 million. For NSC, institutional support is equal to 15 percent of the first $20 million in expenditures, plus 10 percent of the second $20 million, and 7.5 percent of any budget over $40 million. For CSN and TMCC, the allocation is equal to 15 percent of the first $17.5 million, while for GBC and WNC, the percentage is equal to 17 percent of the first $17.5 million; for all four colleges, 10 percent of the next $17.5 million is added, and 7.5 percent for those amounts above $35 million. Once GBC and WNC reach 3,000 SFTE, funding percentages will be consistent with those of CSN and TMCC.

The current formula does not include differentiation for those institutions which have multiple sites, whether those sites are centers or full campus-level operations. This is consistent with the formulas of other states which consider economies of scale and provide differential funding based on mission. Cost studies completed by other states indicate that there may be no additional Institutional Support costs to the operation of multiple sites. This may be because the institution has only one president, one provost or vice president for academic affairs, one student affairs vice president, etc. In addition, the additional costs of more accountants, more human resource personnel, etc. are perceived to be covered within the economies of scale allowances.

In addition to these amounts, the Institutional Support formula provides workstation replacement at $1,228 for each existing employee, similar to the other functional areas discussed above.

The Nevada formula for Institutional Support considers the missions of the institutions, and differentiates among the institutions based on their missions. In addition, the formula recognizes differences in the complexity of a land-grant institution and other research universities. Economies of scale are considered in the step-nature of the formulas. **No changes to Institutional Support are recommended.**

4.2.7 Operation and Maintenance of Physical Plant

This category includes 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 (for items such as building construction and major renovation, purchase of lands, etc.), or expenditures for operations and maintenance of the physical plant component of hospitals, auxiliary enterprises, or independent operations. This is the only component of the formula in which the Desert Research Institute participates

Examples of best practice formulas for plant operations follow. Although this set of formulas is more detailed than a simple rate per gross square foot, it recognizes that there are important differences in a campus' physical facilities that impact on cost.

1. Plant funding = the sum of Building Maintenance + Custodial Services +Grounds Maintenance + Utilities

   Where: Building Maintenance = a maintenance cost factor times the replacement cost of the building, and the maintenance cost factor varies by type of construction and whether or not the building is air-conditioned;

Custodial services = square footage divided by the average square footage maintained by one person per year times a salary rate;

Grounds maintenance = rate times the number of acres maintained; and Utilities = actual prior year expenditures, adjusted for inflation and other cost Increases.

2. *Plant funding = $4.17 times the number of category I GSF space + $3.44 times the number of Category II GSF + $5.54 times the number of health care GSF + utilities + $2,267 per acre maintained + lease costs – 25% of indirect cost recovery funding*

Nevada's methodology for funding physical plant operations and maintenance includes both formula components and non-formula components. Allocations for utilities, insurance, and rental or lease costs are not formula driven and are budgeted separately based on consumption, rate changes, contractual agreements, and addition or subtraction of any facilities. The formula components include custodial, building maintenance, supervisory and technical personnel, and grounds maintenance personnel. Funding is provided for professional and classified positions, general operating costs, equipment for new positions, and workstation replacements. Funding level is determined by the gross maintained square feet of space, number of improved acres, an average cost per square foot of space, and the age of the buildings.

The formula generates one new position for every 10,500 gross square feet of maintained space at an institution, with a 10 percent adjustment to building maintenance and services positions to provide additional funding for the increased costs of maintaining older buildings (over 25 years old). New positions are distributed across types of personnel by allocating 42.86 percent of total positions as custodial at Grade 21, step 1, plus fringe benefits; 42.86 percent of total positions as maintenance at Grade 31, step 1, plus fringe benefits; and 14.28 percent of total new positions as professional/technical funded at the midpoint of Rank 2 for UNLV, UNR, and NSC and at Grade 7 (colleges) on the administrative salary schedule, plus fringe benefits. A new grounds position at Grade 22, step 1, plus fringe benefits, is allocated for every 4.5 improved acres.

For general operating costs of the plant, $1.02 per gross square foot of maintained space is allotted, with $1.28 allocated for gross square footage in buildings over 25 years old. For workstation replacement and new equipment for professional and classified employments, funding is provided in a manner consistent with other functional areas.

These formulas recognize the differences in the missions of the institutions by allocating funding based on gross square feet. There are different space requirements for a land-grant institution that result in additional square footage. Similarly, the space requirements for a community college are different from those for a state college or a research university. Allotting funding based on square footage of maintained space and improved acreage considers these differences. In addition, adjustments are made for the age of the building, and are appropriate if major renovations or updates to a building change the "age" as recognized in the formula.

Utilities costs vary by location within Nevada, in part because utilities are provided by different suppliers. Institutions in the southern part of the state need more air conditioning while institutions in the north require more heating. Funding actual utility costs considers these differences although basing costs on past years' costs without adjustments for changes in rates or inflation is not the best method.

Despite institutional concerns about inequities in the Physical Plant formula, MGT did not find that the formula resulted in inequitable distribution of resources. **Therefore, no change is recommended for the Physical Plant formula.**

4.2.8 Scholarships and Fellowships

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. Nevada does not have a formula for scholarships and fellowships. **No change is recommended at this time, although this is certainly an important issue to consider in the context of affordability of higher education and access.** It is unlikely that the State's fiscal condition will permit an increase in funding for the institutions to provide student financial aid.

4.2.9 Revenue Components

There are two sides in the calculation of funding formulas for higher education; the needs of the institution, and the resources to fund those needs. Many of the states that use funding formulas in the resource allocation process calculate the need to be funded only by state revenues. Others calculate a total resource need that is funded by a combination of state and institutional resources. Institutional resources may be tuition and registration fees, tuition and all fees, or tuition/fees and other institutional resources such as investment income. States like Virginia and North Carolina established percentage shares of the total need to be funded by different stakeholders. For example, in North Carolina, for community colleges, it was expected that the state would fund one-third of the needs, the local share would be one-third, and students (as represented by the college) would fund one-third. Nevada's community colleges do not have a local funding component, so that the North Carolina formula calculation as applied to Nevada would have the state funding two-thirds of the "need" and the institution funding one-third.

Where the resources to fund needs include tuition or other institutional revenues, the amount of those institutional resources may be called a "revenue deduction component." The most common calculation of the revenue deduction component is a percentage or all of non-resident tuition and fees.

Nevada's formula calculates an amount of need that is funded by a combination of state and institutional resources. The formula has not ever been "fully funded," meaning that the combination of state and institutional resources has not equaled the total amount of "need" as calculated by the funding formula. **Exhibit 4-6** displays funding as a percent of formula for the last two biennia, and shows a significant decline in funding from 85.5 percent of the formula amounts to 74.1 percent.

EXHIBIT 4-6
Funding As A Percent Of Formula

2007-08	2008-09	2009-10	2010-11
85.50%	85.50%	74.10%	74.12%

The percentage share of the total formula amount supported by the institutions (as opposed to the state) varies among the Nevada colleges and universities. This variance has been some cause for concern by the institutions, who consider this element of the formula to be inequitable. The perception exists that there is no point for the colleges and universities to increase their tuition and registration fees since all the increased revenues would be a deduction from state funds.

Of course, when the State's budget is experiencing as large a shortfall as Nevada's, reductions to state funding of college and university budgets are to be expected. However, the opportunity to ameliorate those reductions by increasing tuition and fees appears to be limited in Nevada.

As mentioned earlier, one method that other states have used successfully to balance the revenues between the state support and institutional or student support is to set a percentage of the formula budget that is to be supported by the state and by the student/institution. Historically, these percentages have been related to the benefits of higher education that accrue to the state and to the students and their families. For example, Virginia set funding for community colleges as one-third, one-third, one-third as did North Carolina. Nevada does not have a local tax to support community colleges, and so the comparable proportions in Nevada would be state two-thirds and college one-third.

For state or regional colleges, Virginia set the percentage of the formula amount to be provided by the state at 70 percent, and for the college/university at 30 percent. For the research universities, the percentage originally was set at 65 percent for state support of the formula amounts, and 35 percent for the university. However, as state budgets eroded, these percentages have eroded, and no longer are used in the computation of institutional support of the budget.

One option would be for Nevada to establish specified percentages of the formula budget to be provided by the State and by students/the institution. From the theoretical perspective, the State and local communities derive 67 percent of the benefits from a student's attendance at a community college. These benefits include increased civic responsibility, lower crime rates, greater civic participation, among other benefits. For NSC, the ratio could be set at 65 percent state and 35 percent student/institution; while for UNR and UNLV the percentages could be set at 60 percent state and 40 percent institution. In light of the State's fiscal crisis, these percentages likely would have to be adjusted until the State's fiscal condition improved.

Another option would be to examine the ability of the institutions to support a portion of the budget. Each of the institutions has a different capacity to raise resources, based in part on the economic condition of their students and in part on the percentage of out-of-state students. Some states like South Carolina subtract from the "resource need" an amount equal to "tuition" of out-of-state students. The "tuition" is equal to the difference between in-state and out-of-state mandatory registration and other fees. Alabama deducted an amount equal to the out-of-state tuition and fees per credit hour for each credit hour that out-of-state students paid. For in-state students, Alabama deducted a percentage of the average state tuition per credit hour times the number of credit hours generated by in-state students. Alabama used the average statewide credit hour charge because institutions had the ability to set their own tuition rates. The percentage deduction varied by type of institution.

A third option would be to set the amounts deducted in the current budget as a base deduction, and adjust that amount based on a percentage of any increase in tuition and fees or changes in the number of students. This would provide that the institutions could retain a portion of any increase in fees while still providing a portion of the increase to the State.

A fourth option is to use some combination of the above. For example, the institution's portion of the resource need could be set equal to a specified percent of the calculated need, less a percentage of the revenue from out-of-state students. In that way, the institution's ability to pay would be considered. **MGT recommends that NSHE consider with the Legislature and other appropriate stakeholders a modified method of calculating the institutions' support of the budget.**

4.2.10 Other Components, Including Performance or Incentive Funding

In the past two years, there has been a national focus on performance, and in increasing the numbers of college "completers" as a means of improving the economy. From the White House to state houses to foundations such as the Bill and Melinda Gates Foundation and the Lumina Foundation, the demand has been made for increased graduation rates, at lower costs for students, and at a lower cost to taxpayers. The economic crisis of the states led to demands for graduation of more students, with higher quality educations, more efficiently, and more quickly.[1]

This shift in focus away from the "needs" of the college or university to allocation methods that are student-centered, or based on measures of "success," is a sea change in college and university formula funding. Measures of success in this case relate to student success and institutional success in meeting the needs of the state or local community. In this time of financial crisis, there appears to be a much greater recognition of the fact that higher education is a major driver of the economy and that the state and local communities need higher education to provide educated citizens with their greater earning power and ability to pay more in taxes, as well as the other benefits of higher education, including the transfer of knowledge. Policymakers appear to believe that higher education budgets are not aligned with state or local priorities, and want institutions to produce "graduates" in high-demand fields like nursing or teaching.

To introduce components into the Nevada funding formula that will address performance as well as incent institutions to produce certain results, **it is recommended that NSHE consider in its process for revising the formula two components to add to the funding formulas: a performance funding component and an incentive funding component.**

4.2.10.1 Performance Funding

To introduce performance funding into the Nevada formulas for higher education, MGT recommends that NSHE consider two components:

1. Count student credit hours completed, not credit hour enrollments.
2. Provide a performance pool equal to a portion of an institution's budget, which shall sit in a separate fund to be distributed to the institutions as earned. These funds shall be one-time funds that are allocated each year, and distributed by the Regents when institutions meet certain performance standards.

Institutions, including DRI, would receive a percent, up to two percent, of their allocation if they achieved certain goals on a set of five performance measures. Two of the performance measures would be the same for all institutions except DRI which has no students, and the other three would be chosen by the institution and reflective of the institution's unique mission and goals. Each institution would be able to assign weights to each measure that are the institution's assignment of priorities. For example, UNR could assign weights of 40 percent to a measure of outside research funding, 10 percent to increases in the graduation rate, 25 percent to increases in second-year retention, 15 percent to increases in the number of faculty publications in refereed journals, and 20 percent to increases in the number of members of national academies. Then UNR would get that part of their incentive pool related only to those measures they achieved or exceeded their goals.

[1] Albright, Brenda. 2010. "Reinventing Higher Education Funding Policies: Performance Funding 2.0 – Funding Degrees" paper for the Making Opportunity Affordable Initiative of the Lumina Foundation.

For all funds left over or not earned after all institutions had drawn their share, the remaining funds would be distributed to the successful institutions based on their proportionate share of budget/formula funding weighted by their performance. The new pool of funding does not do away with the underlying principles of equity, responsiveness, or adequacy, but rather calculates the amount of funding by including some different variables. The performance funding would give institutions flexibility in reaching the goals. A small proportion of the overall budget is allocated based on performance, but measures consider the differences between institutions and their students. This new model would have to be phased in over time, to give institutions time to change and realign their priorities.

Another option for the community colleges is to copy the strategy employed by the Washington State Board for Community and Technical Colleges (WSBCTE). In 2006, WSBCTE adopted a new performance funding system for the community and technical colleges. The system was based on work done by Teachers College Columbia University funded by the Bill and Melinda Gates Foundation that identified "momentum points" which are times in a student's college education that lead to continued success. These points have also been called "tipping points."

These points are key academic benchmarks that students meet that lead to successful completion of degrees and certificates. There are four categories of momentum points: building toward college levels skills, first year retention, completing college level math, and completion. These intermediate points in a college career provide "momentum" toward completion Momentum points directly measure results. These measures have been used by WSBCTE: test score gains on basic skills tests, or earning a GED; passing a remedial math or writing course; earning 15 credit hours; earning 30 credit hours; completing five credit hours of college level math; earning a degree, completing an apprenticeship, or earning a certificate. Colleges are awarded one point for each momentum point earned above the previous year level of performance. Funding is set at a flat dollar amount for each point and if available funding does not cover all rewards, points are banked for the following year. All awards become part of the institution's base, and if the college's enrollment declines, momentum points are pro-rated.[2] The use of momentum points for the four community colleges is an option or alternative to performance funding.

4.2.10.2 Incentive Funding

Another component of funding that is tied directly to state goals is incentive funding. Under incentive funding each institution would be eligible to compete for funds in a pool set aside for achieving certain goals. For example, Ohio has used incentive funding to increase the amount of outside research funding that the institutions receive. Indiana has used incentive funding to encourage institutions to graduate or complete more students.

An incentive pool is a set-aside of funds which are distributed based on successful attainment of certain goals. In Indiana, incentive funding was established as a pool to graduate certain groups of students, including Pell Grant recipients or students in the science, technology, engineering or mathematics (STEM) fields. Each graduate in STEM or each Pell graduate "earned" the institution several thousand dollars. If more students in the qualifying fields graduated than the pool was designed to support, each institution received a pro-rated share of the pool. If less than the expected number completed, then any remaining funds in the pool carried over to the next year.

[2] Washington State Board for Community and Technical Colleges, "Student Achievement Initiative," downloaded from WSBCTC web site, May, 2010.

Ohio set up incentive pools for extramural funding of grants and contracts, for graduation in certain fields, and for completion of certain certificate or training programs that were considered essential to economic development. A pool of funds was established, and each institution "succeeding" shared in the pool in proportion to its percentage share of graduates or grants. North Dakota also has established incentive pools.

Nevada could establish pools that were linked to state needs, such as nursing graduates or teachers or mining engineers or research funding in specific fields. Each institution that "succeeded" in its goal would share in the pool. Likely, such a pool of funds would not be established in the current economic environment, but could be phased in. DRI would be eligible for participation in this pool of funds.

4.2.10.3 Inequity in the Base

The current study was not an equity study; MGT was not engaged to evaluate whether or not institutions were being equitably funded. As MGT interviewed stakeholders across the State, considerable discussion centered around the issue of the equity in the funding base.

Nevada's funding formula is essentially a "base plus (or minus)" formula; that is, funding is determined by comparing resource levels for the budget year to the levels of the prior year, and making adjustments to the funding level based on the change in resource requirements. Consequently, if the base level of funding is not equitable among the institutions, then making changes to the funding from an inequitable base will perpetuate inequity, unless other allocations are made.

MGT understands that the original formulation of the current funding formula or funding model was designed to be equitable. In addition, certain equity adjustments have been made to the base over time, as mentioned in sections above and as recently as the current fiscal year.

MGT has recommended that NSHE consider changes to the formula calculations that will make the formula going forward more equitable than the current calculations. Because MGT did not do an equity study, MGT cannot make valid observations based on reliable data on the equity of the base. We would be pleased to complete an equity study, but that is not a component of this engagement. We will note, however, that "equity studies" that compare funding per FTE student do not adequately measure "equity" in the distribution of resources among the Nevada institutions. There are many legitimate reasons why funding per student varies among the institutions.

Chapter 5
Summary

To evaluate the current funding formula, MGT was guided by the following requirements of the engagement to complete the following:

- Analyze the "drivers" for the formula which include (but are not limited to) enrollment (FTE), student to faculty ratios for program costs (allowing for the range of developmental to professional programs) and rural and small college considerations.
- Evaluate and as appropriate identify and recommend formula attributes to consider that would address mission differences. Without limiting the foregoing, this part of the analysis should address funding for research.
- Identify if, and how, performance standards and outcomes could be included in the funding formula.
- Evaluate and as appropriate identify how administrative functions required for institutions with multiple sites may be a component of a funding formula. Differentiate between full campus-level operations and extended centers.
- Include in the analysis specific alternatives for recommended changes, additions, or modifications to the NSHE formula, including best practices from funding models of other states or higher education systems.

This chapter of the report summarizes the areas that MGT has identified that merit consideration for possible changes, additions, or modifications to the formula components as NSHE engages in its process with appropriate stakeholders, including the institutions, the Legislature, and the Governor's office.

Any alternative to the current funding model was evaluated by the following criteria that the presidents and Chancellor of the Nevada System of Higher Education identified to guide the development of a funding model:

- Outcomes-based;
- Mission-sensitive;
- Size-sensitive;
- Adaptable to economic conditions;
- Equitable; and
- Reliant on valid and reliable data.

The current Nevada funding model or "formula" is multi-faceted and has evolved over the last thirty years into a complex funding model with multiple components related to functional areas of a college or university budget. Overall, the judgment could be made that the formula's many components work together to satisfy most of the criteria determined by the System staff and presidents as the important criteria for a formula, with the exception of "outcomes-based." The current funding model does not have a performance component, or an incentive funding component, and could be improved by additions or changes to incorporate performance. There is no linkage to the goals for the colleges and universities, nor any measure of accomplishment, and no link to performance standards.

Moreover, multiple improvements can be made to the Nevada model to make it more mission-sensitive, size-sensitive, adaptable, and equitable. *Any of these possible options for changes should be examined in Nevada's usual orderly process for changes to the higher education formula funding through the legislative interim study committees, and should include consultation with all appropriate stakeholders.*

5.0 Instruction

There are multiple components of the Instruction formulas that merit attention: the taxonomy matrix, classification of courses within the taxonomy matrix, remedial classes; faculty mix between full-time and part-time, lower division differentiation of costs by sector, doctoral discipline costs, operational cost factors, productivity factors, rolling average FTE, and the complexity of the Instruction formulas. Instructional costs for multi-campus operations are no different than for single campus operations, as the costs of instructional salaries are the same. Therefore, the issue of multi-campus operations will be discussed under other components of the funding model.

Credit Hour Matrix (Taxonomy). The first issue is the credit hour matrix, which collapses all credit hours by discipline and level of instruction into what has been called a four-by-four or 16-cell matrix (four cost categories and four levels of instruction). The matrix is actually a twelve-by-four matrix. The purpose of the matrix is to recognize differences in the cost of instruction that vary by discipline, by size and type of institution, and by level of instruction. Credit hours earned in the Schools of Medicine, Dentistry, and Law are not included in this matrix.

Cost matrices generally are the result of cost studies, but Nevada does not do a periodic cost study; any changes to the matrix will have to rely on cost studies done by other states. In other states, disciplines are not necessarily in the same cost category across all four levels of instruction; doctoral costs are placed into the cost categories not just one as the current Nevada matrix places disciplines.

Using the cost studies from other states, there are a number of classifications into which academic programs may be placed. Nevada also could take an average across all the cost studies and place disciplines into a four-by-four matrix, a three-by-four matrix, or even an eight-by-four matrix, all of which would be simpler than the current matrix. **MGT recommends that NSHE work with appropriate stakeholders to determine an instruction matrix that would more closely approximate the current cost of these courses. Included in the cost matrix would be a differentiation of the costs of doctoral programs. New student-faculty ratios that are consistent with the costs of providing services should be included in the matrix.**

The current matrix does include a provision to recognize differences in the sizes of the institutions, in that there are different ratios for the smaller community colleges. This is an important component of the matrix, and should be continued in some manner to recognize economies of scale. Such a factor could be done by **keeping the student-faculty ratios the same across all institutional sizes and including a base amount for institutions under a certain size.**

Classification of Disciplines within the Taxonomy Matrix. Correct placement of courses in the matrix is critical to the validity and equity of the formula. Currently, all distance education courses are defined as high cost.

MGT recommends that NSHE consider placing only those distance education credit hours that are two-way interactive video in the "high cost" category. All other distance education would be placed in the appropriate discipline category.

Remedial Courses. Currently courses that are remedial in nature, or not at the college level, are not included in the formula for UNR or UNLV, but are included in the discipline mix for NSC and the four community colleges. **MGT recommends that the NSHE consider allocating an additional instructional faculty person and one-half an FTE staff person at NSC, GBC, WNC, TMCC, and CSN for each 80 successful remedial course completions.** Faculty salary amounts and other allocations could be computed as in the other components of the Instruction formula.

Faculty Mix and Differentiation of Lower Division Courses. For the universities and state college, the faculty numbers generated by the formula are all considered to be full-time positions. At the community colleges, 60 percent of the faculty positions are assumed to be full-time and the remaining 40 percent are part-time. Part-time faculty positions are funded at 60 percent of the full-time faculty salary.

It is recommended that NSHE consider in its discussions with appropriate stakeholders that new FTE faculty positions generated by the formula calculation be 100 percent full-time positions. Of course, this change will have an impact on the total funding requirement for the formula since these positions will be funded at 100 percent of the salary cost, instead of the current 84 percent (60% + 60% of 40%). This change will make the formula more equitable, and addresses the criterion "outcomes based."

Operational Factors. The current formula provides different amounts for operating and wage costs at a predetermined amount which is adjusted at the inflation rate plus 1 percent. Currently, universities are funded at $7,368 per faculty FTE; NSC at $6,141 per faculty FTE; community colleges at $5,650 per faculty FTE; and classified staff at $2,825 per FTE for all institutions. Differences in operating allocations contribute to inequities in the formula; therefore, **it is recommended that NSHE consider that both the operating and wage costs per faculty FTE and the equipment funds per full-time faculty person should be equal for the universities, NSC, and the colleges.**

Performance Factors. The current Instruction formula is based on the number of credit hours for which students are enrolled, rather than the credit hours earned or completed. The use of enrolled credit hours "incents" the institutions to get more students into courses, but not to get the students through the courses successfully. This is an unintended consequence of the formula.

It is recommended that NSHE consider through its formula revision process with appropriate stakeholders whether the number of credit hours used in the instruction formula should be credit hours completed instead of enrolled credit hours. Nevada easily could incorporate this performance feature into its Instruction formula. Such a change would meet the criterion of "outcomes based."

Rolling Average FTE. The use of the rolling three-year average student count has smoothed changes in funding during those times when college or university enrollments are declining, and allowed institutional managers time to plan for change. One of the criticisms that legislators, legislative staff, and the governor's staff have made about the formula is that the rolling average is not being used when enrollments are increasing but only when some enrollments are declining. Since 2001, the NSHE has not had a time when enrollment system-wide declined. The rolling average FTE works well in times of consistency in enrollment and in funding, but does not provide sufficient opportunity for planning in other economic times. **It is recommended that consideration be given to evaluating and potentially modifying the method of counting enrollment**.

Complexity of the Formulas. Nevada's instruction "formula" actually is comprised of five or six separate formulas, depending on how the salary schedule is counted. Although Instruction is the most complex of all the functional areas for which formulas exist. Nevada's set of formulas is the most complex of all the states.

It is recommended that NSHE consider reducing the complexity of the Instruction component of the formula by incorporating all cost calculations into one.

5.1 Research

Nevada currently does not use a formula for research funding. Rather, funding is determined on an incremental basis. The lack of a research component in the current formula does not meet several of the criteria established as guiding principles for any change to the formula. This component currently is not "outcomes-based" or "mission sensitive."

MGT recommends that NSHE consider adding a component of the formula to recognize the research mission of the System. Any of three alternatives – component of the formula, part of performance funding, or incentive funding – would fulfill the mission sensitive criterion. Either the performance funding or incentive funding component would meet both the mission sensitive and the outcomes based criteria.

5.2 Public Service

No change is recommended for this funding.

5.3 Academic Support

Nevada's funding formulas for Academic Support include separate calculations for library staffing, operating and equipment, and other areas. For the community colleges, the Academic Support formula recognizes economies of scale by applying a differential percentage of the Instruction budget for GBC and could be perceived as adequate to recognize the additional costs of extended centers and distance education.

On the other hand, there is no recognition of any possible additional costs of full campus-level operations in the Academic Support area at multiple campus sites. In other states where a community college has more than one campus, there is no special or additional formula for Academic Support. For the community colleges, the Academic Support formula follows the best practice formula, and does include a consideration for the size of the college. **No change is recommended for the community college formula since it adequately provides resources that are linked to mission, are size-sensitive, and are equitable in the distribution of resources.**

For UNLV, UNR, and NSC, the formulas provide for economies of scale in the staffing and in the libraries. I**t is recommended that NSHE consider increasing the percentage for NSC to 15 percent.** This is a mission-sensitive adjustment that relates to the special needs of the students attending NSC, many of whom are first-generation students with poor academic backgrounds.

The American Library Association is expected to publish new standards for academic libraries that consider changes in technology and in the ways in which students now use libraries. **When these new standards come out, it is recommended that the Clapp-Jordan formula be replaced by the new standards.**

5.4 Student Services

Nevada's funding formula for Student Services provides funding based on the combined headcount and SFTE enrollments. The formula provides additional positions for Student Services based on one additional position for each 100 students residing in dormitories. **This is a best practice that should be adopted by other states.** In addition to these calculations, Nevada's Student Services formula has a unique component: funding to cover compliance costs associated with the provisions of the Americans with Disabilities Act (ADA). Institutions receive $1,000 for each student with a documented disability. **This is a "best practice" and should be emulated by other states although the dollar amount should be periodically evaluated based on actual costs.**

The Nevada formulas for Student Services follow for the most part the "best practices" formulas of other states, by including an economy of scale and fixed/variable cost factors, and by basing the count of students on both headcount and full-time equivalent students. Similarly to Academic Support, the Student Services formula does not include an explicit component for colleges or universities that operate multiple sites, whether those are centers or full-service campuses. However, by including headcount students in the calculation, there is adequate consideration of the costs of counseling, registering, advising, and admitting students. The best operational practices of other institutions include only one admissions office, one registrar, and numbers of counselors/advisors consistent with the number of students needing services.

However, the Nevada formulas do not consider the special needs of students who come under-prepared for the rigors of a post-secondary education. **It is recommended that NSHE consider adding an additional dollar amount per Pell-eligible student to recognize the costs of providing additional services.**

5.5 Institutional Support

Nevada's formula for Institutional Support follows one of the best practices formulas by multiplying a percentage of each institution's operating budget (less institutional support) including all applicable appropriations such as the School of Medicine, Agriculture Experiment Station, Law School, or Dental School. The current formula does not include differentiation for those institutions which have multiple sites, whether those sites are centers or full campus-level operations. This is consistent with the formulas of other states which consider economies of scale and provide differential funding based on mission.
No changes to Institutional Support are recommended.

5.6 Operation and Maintenance of Physical Plant

Nevada's methodology for funding physical plant operations and maintenance includes both formula components and non-formula components. These formulas recognize the differences in the missions of the institutions by allocating funding based on gross square feet. It should be noted that this is the only function of the formula in which the Desert Research Institute participates. **No change is recommended for the Physical Plant formula.**

5.7 Scholarships and Fellowships

Nevada does not have a formula for scholarships and fellowships. **No change is recommended at this time, although this is certainly an important issue to consider in the context of affordability of higher education and access.**

5.8 Revenue Components

There are two sides in the calculation of funding formulas for higher education; the needs of the institution, and the resources to fund those needs. Many of the states that use funding formulas in the resource allocation process calculate the need to be funded only by state revenues. Others calculate a total resource need that is funded by a combination of state and institutional resources (for example, student fees and tuition). Nevada's formula calculates an amount of need that is funded by a combination of state and institutional resources. The formula has not ever been "fully funded," meaning that the combination of state and institutional resources has not equaled the total amount of "need" as calculated by the funding formula.

MGT recommends that NSHE consider with the Legislature and other appropriate stakeholders a modified method of calculating the institutions' support of the budget.

5.9 Other Components, Including Performance or Incentive Funding

To introduce components into the Nevada funding formula that will address performance as well as incent institutions to produce certain results, **it is recommended that NSHE consider in its process for revising the formula two components to add to the funding formulas: a performance funding component and an incentive funding component.**

5.9.1 Performance Funding

To introduce performance funding into the Nevada formulas for higher education, **MGT recommends that NSHE consider two components:**

1. **Count student credit hours completed, not credit hour enrollments.**
2. **Provide a performance pool equal to a portion of an institution's budget, which shall sit in a separate fund to be distributed to the institutions as earned. These funds shall be one-time funds that are allocated each year, and distributed by the Regents when institutions meet certain performance standards.**

Another option for the community colleges is to copy the strategy employed by the Washington State Board for Community and Technical Colleges (WSBCTE) using "momentum points" which are times in a student's college education that lead to continued success.

5.9.2 Incentive Funding

Another component of funding that is tied directly to state goal is incentive funding. Under incentive funding each institution would be eligible to compete for funds in a pool set aside for achieving certain goals. Nevada could establish pools that were linked to state needs, such as nursing graduates or teachers or mining engineers or research funding in specific fields. Each institution that "succeeded" in its goal would share in the pool. Likely, such a pool of funds would not be established in the current economic environment, but could be phased in. DRI would be eligible for participation in this pool of funds.

5.10 Summary Of Options

MGT has identified a number of areas within the Nevada funding methodology that merit consideration for changes to or improvement on the formula(s) during the NSHE/legislative formula revision process. The following is a summary by functional area.

Instruction:

There are two main options for the Instruction functional area:

1. Modify the taxonomy matrix, keeping all the separate calculations (with optional changes to the separate calculations); or
2. Modify the matrix, including all calculations in one formula to simplify the methodology.

Within those two main options, there are many "sub-options" related to the matrix:

- the size of the matrix; i.e., 4 by 4, or 8 by 4, or 3 by 4, or 12 by 4.
- use of credit hour costs or student-faculty ratios.
- placement of disciplines within the matrix, including across levels of instruction.
- placement of distance education courses.
- student-faculty ratios/credit hour costs for lower division courses.
- base funding for small institutions.
- funding for remedial education.
- calculation of credit hour costs/weights or student-faculty ratios
- use of the rolling average FTE or credit hours.
- use of a performance factor such as completed credit hours.

In addition, if the decision is made to stay with multiple components, an option for equating the formula for operating and wage costs should be considered.

Research:

Three options are provided for adding a research component to the formula for UNR, UNLV, and DRI: part of the formula, a performance funding, or incentive funding component.

Public Service, Scholarships and Fellowships, Institutional Support, Physical Plant:

No changes.

Academic Support:

Replace the Clapp-Jordan formula with the recommendations of the American Library Association when those recommendations are issued.

Increase the percentage of the instruction budget allocated to NSC for other academic support.

Student Services:

Include for the universities, community colleges, and NSC a factor that provides funds based on the number of Pell Grant recipients or some other measure of "need"

Revenue Components:

Consider with the Legislature and other appropriate stakeholders a modified method of calculating the institutions' support of the budget. Four options were identified for consideration:

1. Establish specific percentages of the formula budget to be funded by state funds.
2. Deduct out-of-state student tuition, or a portion of out-of-state student revenues.
3. Use the current percentages, as updated for changes in the number of students and fees.
4. Use some combination of 1-3.

Performance Funding:

Establish a pool of a portion of appropriations to be used to "reward" institutions for performance on a set of five performance indicators, two of which are established state-wide (except for DRI) and three of which are institution-specific (all five would be specific for DRI), with weights for each indicator determined by the Chancellor in consultation with the institution's president. OR

For the community colleges, use momentum points.

Incentive Funding:

Establish an incentive pool of state funds to "incent" college, university, and DRI performance in meeting state needs.

Appendix A
Individuals Interviewed

Name	Title	Organization
Abba, Crystal	Assoc. Vice Chancellor for Academic& Student Affairs	NSHE
Aguero, Jeremy	Principal	Applied Analysis
Alvey, Chuck	President	Economic Development Authority of Western Nevada
Bomotti, Gerry	Vice President Finance and Business	University of Nevada Las Vegas
Bostdorff, Richard	Consultant	
Burke, Brian		Legislative Counsel Bureau
Burton, Chet	Controller	Western Nevada College
Calder, Curtis	City Manager	City of Elko
Carreon, Jesus "Jess"	Vice President Academic Affairs and Student Services	Truckee Meadows Community College
Charlton, Patty	Vice President	College of Southern Nevada
Conklin, Marcus	Assemblyman	Nevada Legislature
Cooper, Jeff	Owner	Casino
Crowley, Joe	President Emeritus	University of Nevada Reno
Denis, Mo	Assemblyman	Nevada Legislature
Diekhans, Carl	President	Great Basin College
DiMare, Lesley	Interim President	Nevada State College
Dwyer, Katie	Budget Analyst	Truckee Meadows Community College
Eardley, Larry	Assistant Vice Chancellor	NSHE
Edwards, Laura	Assistant Professor	Desert Research Institute
Gallagher, Dorothy	Regent	NSHE
Gansert, Heidi	Assemblywoman	Nevada Legislature
Geddes, Jason	Regent	NSHE
Glick, Milton	President	University of Nevada Reno
Haartz, Alex		Legislative Counsel Bureau
Hardy, Joe	Assemblyman	Nevada Legislature
Harter, Carol	President Emeritus	University of Nevada Las Vegas
Herzik, Eric	Faculty Senate Chair	University of Nevada Reno
Horsford, Steven	Senator	Nevada Legislature
Huber, Scott	Faculty Senate Chair	Truckee Meadows Community College
Hurlins, Robin	Faculty Senate Chair	Nevada State College
Jessup, Don	Former Vice Chancellor for Finance	NSHE
Johnson, Marc	Executive Vice President and Provost	University of Nevada Reno
Klaich, Daniel	Chancellor	NSHE
Krmpotic, Mark		Legislative Counsel Bureau

Name	Title	Organization
Lange, Carol	Interim Vice President Academic and Student Affairs	Western Nevada College
Leavitt, James Dean	Regent	NSHE
Lucey, Carol	President	Western Nevada College
Mahlberg, Lynn	Vice President Student Services	Great Basin College
Maryanski, Fred	President	Nevada State College
McDaniel, Cleve	Senior Vice President for Finance	Desert Research Institute
McFarlane, Michael	Vice President for Academic Affairs	Great Basin College
Neal, Harry "Buster"	Vice President for Business	Nevada State College
Negrete, Sarah	Faculty Senate President	Great Basin College
Neverett, Dan	Vice President Finance and Administrative Services	Western Nevada College
Nichols, Jane	Vice Chancellor, Academic & Student Affairs	NSHE
Perkins, Richard	President	The Perkins Company
Quirk, Ted	Counsel	Greenberg Traurig
Raggio, William	Senator	Nevada Legislature
Rauls, Mark	Faculty Senate Chair	College of Southern Nevada
Rawson, Ray	Regent	NSHE
Raxter, Tracy		Legislative Counsel Bureau
Redding, Victor	Senior Fiscal Operations Officer	NSHE
Reedy, Robin	Chief of Staff	Governor's Office
Reilly, Thom	Former City Manager	Clark County
Rice, John Patrick	Director of Institutional Advancement	Great Basin College
Richards, Michael	President	College of Southern Nevada
Richardson, James	Professor	University of Nevada Reno
Rogers, Jim	Former Chancellor	NSHE
Rowe, Russell	Principal	The Capitol Company
Salaber, Stephen	Interim Assistant Vice President and Controller	Desert Research Institute
Saltman, Michael	President	The Vista Group
Sanford, Delores	Vice President, Finance and Administration	Truckee Meadows Community College
Schack, Louis	Director of Communications	Barrick Gold
Schneider, Michael	Senator	Nevada Legislature
Scott, Craig	Senior Budget Analyst	Truckee Meadows Community College

Name	Title	Organization
Sheehan, Maria	President	Truckee Meadows Community College
Shively, Bruce	Associate Vice President	University of Nevada Reno
Sibert, Sonia	Budget & Human Resources Officer	Great Basin College
Smatresk, Neal	President	University of Nevada Las Vegas
Smith, Debbie	Assemblywoman	Nevada Legislature
Smith, Mark	Vice President	Nevada State Bank
Stevens, Mark	Vice Chancellor Finance	NSHE
Stewart, Lynn	Assemblyman	Nevada Legislature
Stuart, Spencer	Director of Communications	Nevada State College
Warwick, John	Executive Director	Desert Research Institute
Wells, Stephen	President	Desert Research Institute
Wixom, Mike	Regent	NSHE
Woodbury, Stacy	Deputy Chief of Staff	Governor's Office
Young, Lee	Vice President for Enrollment Management	Nevada State College
Zurek, Ronald	Vice President Administration and Finance	University of Nevada Reno

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