

## TOPICAL BRIEF: **ACADEMIC AND RESEARCH SPACE NEEDS**

University of Nevada, Reno – Comprehensive Master Plan

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### **PURPOSE**

The academic and research space needs for the University of Nevada, Reno (UNR) were analyzed as part of the overall master planning effort. The space needs analysis was performed to provide UNR with information on the amount of space UNR will require for current and projected enrollment, staffing, and research levels in relationship to national guidelines and recognized space standards.

A draft of this topical brief dated January 12 was reviewed with the UNR community in meetings held on January 22 and 23. Several changes have been made to address issues raised during these meetings.

### **MAJOR CONCLUSIONS AND RECOMMENDATIONS**

The campus wide space needs analysis identified space needed on campus at current and projected enrollment, staffing, and research levels and compared the calculated space needs to existing facilities.

The space needs analysis found that UNR requires 2,678,600 ASF of space to accommodate current levels of activity compared to the 2,369,890 ASF of existing space on campus. In the projected Horizon 1 and Horizon 2 levels of activity the amount of overall space needed on campus will increase to 3,710,100 ASF and 5,259,300 ASF respectively. These numbers and the space needs by categories are outlined in the table on the following page.

The consultants found the categories of space with the greatest need for additional space as the campus grows include:

- Classrooms
- Academic Offices
- Research Laboratories
- Residence Life

These categories of space will need to increase by over 200,000 ASF in order to serve the anticipated 24,000 students at Horizon 2. In addition to the categories of spaces mentioned above following categories will need to increase over 150,000 ASF to accommodate growth at Horizon 2:

- Teaching Laboratories
- Student Union
- Athletics

Several of the colleges will need to significantly increase their space to accommodate the projected growth. These colleges and units with the greatest need for additional space in the future include:

- College of Liberal Arts
- College of Science
- School of Medicine
- College of Human and Community Sciences
- College of Agriculture, Biotechnology, and Natural Resources

The following table shows the results of the campus-wide space needs analysis.

Campuswide		Actual	Projections			
			Current	Horizon 1	Horizon 2	ASF Rounded to the nearest hundred
	Student FTE	11,600	11,600	16,000	24,000	
	Student HC	15,597 <sup>1</sup>	15,597 <sup>1</sup>	21,500 <sup>1</sup>	30,000 <sup>2</sup>	
	Non-Student FTE <sup>3</sup>	2,820 <sup>4</sup>	2,820 <sup>4</sup>	3,470 <sup>5</sup>	4,640 <sup>5</sup>	
	Non-Student HC <sup>3</sup>	4,765 <sup>4</sup>	4,800 <sup>4</sup>	6,000 <sup>5</sup>	8,400 <sup>5</sup>	
	ASF/FTE (Academic, Research, Athletic, PE, Recreation, and Auxiliary)	176	201	201	191	
			Delta	Delta	Delta	
<b>Academic Space</b>						
	Classroom and Service	ASF 122,611	175,900	240,500	361,900	
	Teaching Laboratories and Service	ASF 103,273	145,300	192,700	288,600	
	Open Laboratories and Service	ASF 55,960	63,700	88,000	132,000	
	Academic Offices and Service	ASF 440,192	502,100	632,300	873,800	
	Other Academic Department Space	ASF 195,180	195,900	238,400	310,000	
<b>Academic Support Space</b>						
	Administrative Offices and Service	ASF 152,898	135,000	154,400	200,200	
	Other Administrative Department Space	ASF 53,806	57,900	80,000	119,900	
	Library	ASF 166,279	179,400	225,200	296,600	
	Assembly and Exhibit	ASF 59,002	67,200	93,400	141,500	
	Physical Plant	ASF 51,466	64,100	86,000	117,700	
	<b>Total Academic</b>	<b>ASF 1,400,667</b>	<b>1,586,500</b>	<b>2,030,900</b>	<b>2,842,200</b>	
	ASF/FTE <sup>6</sup>	121	137	127	118	
<b>Research</b>						
	Research Laboratories and Service - Main	ASF 255,879	300,600	605,700	904,700	
	Research S/ASF	346				
	Total Research Dollars <sup>7</sup>	\$88,636,660	not utilized	not utilized	not utilized	
	<b>Total Research</b>	<b>ASF 255,879</b>	<b>300,600</b>	<b>605,700</b>	<b>904,700</b>	
	ASF/FTE <sup>6</sup>	22	26	38	38	
<b>Athletics, PE, Recreation - Facilities</b>						
	Athletics	ASF 189,814	200,000	250,000	350,000	
	Physical Education and Recreation	ASF 68,240	73,000	95,000	135,000	
	<b>Total Athletic Facilities</b>	<b>ASF 258,054</b>	<b>273,000</b>	<b>345,000</b>	<b>485,000</b>	
	ASF/FTE <sup>6</sup>	22	24	22	20	
<b>Athletics, PE, Recreation - Fields</b>						
	SF/FTE		140	140	140	
	SF		1,624,000	2,240,000	3,360,000	
	<b>Total Fields</b>	<b>Total Acres 24</b>	<b>13</b>	<b>14</b>	<b>26</b>	<b>77</b>
			<b>37</b>	<b>51</b>	<b>77</b>	
<b>Residential</b>						
	Residence Life	ASF 327,625	350,000	490,000	690,000	
	<b>Total Residential</b>	<b>Total Beds 1,750</b>	<b>1,750</b>	<b>2,450</b>	<b>3,450</b>	
	ASF/Bed	190	200	200	200	
<b>Auxiliary</b>						
	Student Union	ASF 95,128	135,000	193,500	270,000	
	Student Health Facilities	ASF 5,353	5,800	8,000	12,000	
	Health Care Clinics	ASF 32,537	33,500	45,000	67,400	
	<b>Total Auxiliary</b>	<b>ASF 129,194</b>	<b>170,100</b>	<b>240,500</b>	<b>340,400</b>	
	ASF/FTE <sup>6</sup>	11	15	15	14	
<b>Overall Totals</b>		<b>Total ASF 2,369,890</b>	<b>2,678,600</b>	<b>3,710,100</b>	<b>5,259,300</b>	

SOURCE: Paulien & Associates 2004  
NOTES:  
1 Assumes FTE: Headcount of 0.74  
2 Assumes FTE: Headcount of 0.80  
3 Includes faculty and staff  
4 Based on data provided by UNR  
5 Projections for Non-Student HC in Horizons 1 & 2 include no growth for the President, Deans, Vice Presidents, Directors, and Chairs; growth of faculty at same rate of enrollment growth; and growth of non-faculty at half the rate of enrollment growth.  
6 Includes support space for the use category  
7 Research dollars exclude Coop Extension outside of the Reno area and Medicine programs in Las Vegas

## **METHODOLOGY AND ASSUMPTIONS**

The analysis was performed using a facilities inventory that included room-by-room information on the buildings that currently exist on the campus. The facility inventory was assembled by UNR and forwarded to the consultant in the Fall 2003. The consultant was provided with a course file which included the courses offered on campus in the Fall 2003 with the enrollment for each course. The consultant was also given a staffing file which included faculty and staff identified by job title and unit assignment.

Calculations for horizon year space needs assumed the campus, which currently serves 11,600 full-time equivalent (FTE) students, will grow to 16,000 FTE students in Horizon 1 and to 24,000 FTE students in Horizon 2. The overall campus enrollment growth assumptions were applied at different levels for each of the schools and colleges. It was assumed that the College of Business Administration, College of Liberal Arts, College of Science, College of Human and Community Sciences, and the Reynolds School of Journalism will grow faster than the overall campus rate. It was assumed that the Mackay School part of the College of Science, the College of Education, and the College of Engineering will grow slower than the overall campus rate. The model for the growth assumptions was reviewed by the Executive Vice President and Provost before being used to calculate space needed for the future Horizon 1 and Horizon 2.

The space analysis classified existing space on campus into the following space categories:

- Classrooms;
- Teaching and Open Laboratories;
- Academic and Administrative Offices;
- Library;
- Research Laboratories;
- Athletics, Physical Education, and Recreation;
- Assembly and Exhibit;
- Physical Plant Space;
- Residence Life;
- Student Union; and
- Health Care Facilities.

The categories were combined into the major groupings of Academic, Research, Athletic, Residential, and Auxiliary space. Details about the guidelines applied to these types of spaces can be found starting on page 27 after the discussion of findings for each college and major administrative unit.

The planning methods used to calculate space needed on campus have been tested by the consultant using a national perspective and the best judgment from many years of experience. The calculations took into account the unique needs of the University of Nevada, Reno. It should be noted that the consultant's use of normative guidelines to determine space needs does not directly correspond to the space standards defined by the University and Community College System of Nevada (UCCSN). The outcome of this process was to produce a set of needs projections that meet the needs for the Comprehensive Master Plan. These calculations were respectful of the UCCSN standards for space utilization, but did not apply those standards in a rote or formulaic manner.

In addition to the current guidelines set by UCCSN, Paulien & Associates considered the guidelines outlined by the Council of Educational Facilities Planners, International (CEFPI), a professional society for educational planners and incorporated the information and knowledge from years of experience providing space needs analysis to many campuses around the nation.

Research growth for Horizon 2 could be substantially higher than the approximate doubling based on discussions with the administration and Deans. The consultant included additional research space under the Vice President for Research and Graduate School to include facilities for research growth for both Horizons beyond what full productivity of the colleges at those levels might generate. These would result from the development of new centers and institutes plus possible research park development including spin-off companies resulting from UNR research and the location of high-tech companies that benefit from close ties to the campus.

Residential facilities may increase beyond those indicated for Horizon 2. This analysis reflects current commuter enrollment patterns and projected housing facilities growth by the Student Services administration.

## DISCUSSION OF FINDINGS

Paulien & Associates held on-campus meetings with representatives of the schools, colleges, and major administrative units in order to incorporate unique needs and goals as presented by the units.

The findings by college are discussed on the following pages and summarized below.

<b>Projections of Program Need</b>				
University of Nevada, Reno				
	<b>Actual</b>	<b>Projections</b>		<b>All numbers in ASF</b>
		<b>Current</b>	<b>Horizon 1</b>	<b>Horizon 2</b>
<b>College of Agriculture, Biotechnology, and Natural Resources</b>	151,163	172,900	217,300	301,900
<b>College of Business Administration</b>	27,597	28,600	40,100	57,300
<b>College of Education</b>	56,591	66,400	77,300	95,700
<b>College of Engineering</b>	153,452	153,600	172,200	201,800
<b>College of Human and Community Sciences</b>	126,856	158,000	222,700	318,200
<b>College of Liberal Arts</b>	167,088	212,800	293,800	445,800
<b>College of Science</b>	225,090	279,500	363,100	517,300
<b>Reynolds School of Journalism</b>	18,750	18,500	24,000	36,300
<b>School of Medicine</b>	167,262	203,600	273,300	379,200
<b>Extended Studies</b>	25,841	26,000	32,400	45,500
<b>Cooperative Extension</b>	2,313	3,900	4,700	6,300
<b>Intercollegiate Athletics</b>	98,422	104,700	159,900	270,000
<b>Executive Vice President and Provost</b>	121,534	176,600	243,000	368,100
<b>Vice President for Information Technologies and Libraries</b>	169,804	190,200	236,700	311,400
<b>Vice President for Research and Graduate School</b>	62,233	24,600	229,100	388,900
<b>Vice President for Administration and Finance</b>	272,160	285,600	334,100	419,200
<b>Vice President for Student Services</b>	490,244	541,800	750,100	1,048,800
<b>Vice President for University Development and Alumni Relations</b>	10,034	11,100	12,800	15,900
<b>Vice President for University Relations</b>	3,752	3,700	4,800	7,000
<b>Vice Provost for Instruction and Undergraduate Programs</b>	14,902	12,300	14,400	19,600
<b>President</b>	4,802	4,200	4,300	5,100
<b>Overall Totals</b>	<b>Total ASF</b>	<b>2,369,890</b>	<b>2,678,600</b>	<b>3,710,100</b>
				<b>5,259,300</b>

## College of Agriculture, Biotechnology, and Natural Resources

The quality of space is an issue for the College. Most of the space assigned to the College was built in the 1950s, 1960s, and 1970s.

College of Agriculture, Biotechnology, and Natural Resources		Actual	Projections			
			Current	Horizon 1	Horizon 2	Delta
			Delta	Delta	Delta	
<b>Academic Space</b>						
Teaching Laboratories and Service	ASF	5,168	2,600	3,400	5,300	
Open Laboratories and Service	ASF	5,031	5,700	7,900	11,900	
Academic Offices and Service	ASF	33,491	38,300	47,400	67,000	
Other Academic Department Space	ASF	83,372	83,700	101,800	132,400	
<b>Academic Support Space</b>						
Assembly and Exhibit	ASF	1,453	1,700	2,300	3,500	
	ASF	<b>128,515</b>	<b>132,000</b>	<b>162,800</b>	<b>220,100</b>	
			3,485	30,800	57,300	
<b>Research</b>						
Research Laboratories and Service - Main	ASF	22,648	40,900	54,500	81,800	
	ASF/\$100,000	220				
Total Research Dollars		\$10,186,235				
	ASF	<b>22,648</b>	<b>40,900</b>	<b>54,500</b>	<b>81,800</b>	
			18,252	13,600	27,300	
<b>Overall Totals</b>		<b>Total ASF</b>	<b>151,163</b>	<b>172,900</b>	<b>217,300</b>	<b>301,900</b>

SOURCE: Paulien & Associates 2004

The activities of the College of Agriculture, Biotechnology, and Natural Resources are focused on research. The planned Biotechnology building will provide research space for the College of Agriculture, Biotechnology, and Natural Resources. Research expenditures in the College are around \$11 million per year and are projected to increase by 50% by the Horizon 1 timeframe and double by the Horizon 2 timeframe. The number of research faculty is expected to grow with the number of grants and contracts.

The College of Agriculture, Biotechnology, and Natural Resources has facilities just off campus the main campus on Valley Road. The facilities at Valley Road are involved in activities for the College including research. The Valley Road facilities are serving the College but are hindered by their distance from the rest of the campus and the College.

## College of Business Administration

The College of Business Administration expects to grow faster than UNR as a whole. The College anticipates being 12% to 15% of the overall campus enrollment.

College of Business Administration		Actual	Projections			
			Current	Horizon 1	Horizon 2	Delta
<b>Academic Space</b>						
Open Laboratories and Service	ASF	2,489	2,800	3,900	5,900	
Academic Offices and Service	ASF	21,470	22,000	31,500	45,200	
Other Academic Department Space	ASF	3,240	3,300	4,000	5,100	
	ASF	<b>27,199</b>	<b>28,100</b>	<b>39,400</b>	<b>56,200</b>	
			901	11,300	16,800	
<b>Research</b>						
Research Laboratories and Service - Main	ASF	398	500	700	1,100	
	ASF/\$100,000	20				
Total Research Dollars		\$2,173,147				
	ASF	<b>398</b>	<b>500</b>	<b>700</b>	<b>1,100</b>	
			102	200	400	
<b>Overall Totals</b>	Total ASF	<b>27,597</b>	<b>28,600</b>	<b>40,100</b>	<b>57,300</b>	

SOURCE: Paulien & Associates 2004

The Nevada Small Business Development Center is currently located in the Ansari Business Building. If this were located off-campus more space would be available for expansion within the building. The Nevada Small Business Development Center currently occupies slightly more than 3,000 ASF.

The consultant was told during on-campus work sessions that there is a need for graduate student space and for an MBA lounge. The need for faculty office space, lecture rooms, breakout rooms, and conference rooms was also expressed. Calculations of office space guidelines included additional space for faculty, 50 ASF per graduate student, and additional conference room space. The College currently has 21,470 ASF of office space. At the Horizon 2 level of activity the College will need 45,200 ASF of office space. The consultant included additional Academic Office and Service space to accommodate the future needs for three new centers, the Center of Entrepreneurship and New Ventures, the Center for Corporate Governance and Ethics, and the Center for Regional Studies. Additional space for lecture and breakout rooms was included in the calculations of classroom space needs for the campus as a whole.

Separate courses are scheduled on Friday to utilize classroom space that is not used by courses normally scheduled for two days on Monday-Wednesday or Tuesday-Thursday. One third of the courses in the College are offered in the evenings.

The College does not currently have an Executive Education program. This program could work well either off-campus or using space on the campus. The calculations of space needed for this program are not included in this analysis, as space for Executive Education is driven by entrepreneurial factors and a business plan rather than increased enrollment.

When UNR grows to a student enrollment level of 24,000 students, the College will have more opportunity to serve a larger geographic area. There is currently a cohort in Elko, the Redfield campus could be an active delivery site, and there is also a demand for courses to be offered in Carson City.

## College of Education

The College of Education supplies teachers for a regional market; eighty percent of the graduates find employment in Northern Nevada.

College of Education		Actual	Projections			
			Current	Horizon 1	Horizon 2	
			Delta	Delta	Delta	
<b>Academic Space</b>						
Teaching Laboratories and Service	ASF	6,604		6,400	6,900	7,900
Open Laboratories and Service	ASF	4,366		5,000	6,900	10,300
Academic Offices and Service	ASF	26,542		33,100	35,800	39,900
Other Academic Department Space	ASF	10,300		10,300	12,600	16,400
<b>Academic Support Space</b>						
Assembly and Exhibit	ASF	7,015		8,000	11,100	16,800
	ASF	<b>54,827</b>	7,973	<b>62,800</b>	10,500	<b>73,300</b>
					18,000 #	<b>91,300</b>
<b>Research</b>						
Research Laboratories and Service - Main	ASF	1,764		3,600	4,000	4,400
	ASF/\$100,000	60				
	Total Research Dollars	\$2,789,439				
	ASF	<b>1,764</b>	1,836	<b>3,600</b>	400	<b>4,400</b>
<b>Overall Totals</b>	<b>Total ASF</b>	<b>56,591</b>		<b>66,400</b>	<b>77,300</b>	<b>95,700</b>

SOURCE: Paulien & Associates 2004

Student headcount in the College of Education is fairly stable. Enrollment levels have not grown significantly in the last six or seven years. The College will have a flatter growth curve than UNR as a whole.

Research in the College of Education includes \$2 to \$4 million in instruction and training grants. Grant funding will need to double to support graduate programs.

## College of Engineering

The College of Engineering has been growing at the same rate as UNR as a whole. Engineering enrollment has been shrinking nationally, and the enrollment growth in the College may slow to below the university-wide rate. The College currently makes up roughly ten percent of the UNR undergraduate headcount and expects to continue to be around ten percent in the future.

College of Engineering		Actual	Projections			
			Current	Horizon 1	Horizon 2	Delta
<b>Academic Space</b>						
Teaching Laboratories and Service	ASF	16,823	19,200	20,500	23,400	
Open Laboratories and Service	ASF	16,081	18,300	25,300	37,900	
Academic Offices and Service	ASF	45,871	34,700	37,100	41,000	
Other Academic Department Space	ASF	5,592	5,600	6,800	8,900	
	ASF	<b>84,367</b>	<b>77,800</b>	<b>89,700</b>	<b>111,200</b>	<b>Delta</b>
			-6,567	11,900	21,500	
<b>Research</b>						
Research Laboratories and Service - Main	ASF	69,085	75,800	82,500	90,600	
	ASF/\$100,000	920				
Total Research Dollars		\$7,487,860				
	ASF	<b>69,085</b>	<b>75,800</b>	<b>82,500</b>	<b>90,600</b>	<b>Delta</b>
			6,715	6,700	8,100	
<b>Overall Totals</b>		Total ASF	<b>153,452</b>	<b>153,600</b>	<b>172,200</b>	<b>201,800</b>

SOURCE: Paulien & Associates 2004

The College of Engineering is hampered by some spaces that are outdated and difficult to adapt for reuse.

The College recently was unable to accept a large grant for equipment from the NSF because there was no appropriate space for the equipment.

The College has discussed an addition to Reid Engineering Laboratory to provide more high bay space for earthquake and large structures research. Ideally this addition would include a modern auditorium with video and sound connection to the high bay space so that the large demonstrations and experiments in the laboratory can be viewed safely. Additional space was allocated to the Research Laboratories and Service guideline to account for the large structures laboratory.

Chemical Engineering would be enhanced by increased research activity. Metallurgical and Materials Science Engineering has the potential to increase its level of research funding. Both of these units were just transferred to the expanded College of Engineering from the Mackey School. Research levels in the expanded College are currently \$8 million annually with the potential to be at \$15 million in 10 years. Research activities in Civil Engineering, Mechanical Engineering, and Metallurgical and Materials Science Engineering have the most current research expenditures.

## College of Human and Community Sciences

The College of Human and Community Sciences is located in nine buildings on campus with many of the programs near the Quadrangle. The College would prefer to be located closer to the Lombardi Recreation Center although Lombardi will need to be bigger to accommodate growth in the campus enrollment.

College of Human and Community Sciences		Actual	Projections			
			Current	Horizon 1	Horizon 2	
			Delta	Delta	Delta	
<b>Academic Space</b>						
Teaching Laboratories and Service	ASF	3,490		1,800	2,500	4,000
Open Laboratories and Service	ASF	1,801		2,100	2,800	4,200
Academic Offices and Service	ASF	33,178		57,200	79,000	114,400
Other Academic Department Space	ASF	13,517		13,600	16,500	21,500
	ASF	<b>51,986</b>	22,714	<b>74,700</b>	26,100	<b>100,800</b>
					43,300	<b>144,100</b>
<b>Research</b>						
Research Laboratories and Service - Main	ASF	6,630		10,300	26,900	39,100
ASF/\$100,000		80				
Total Research Dollars		\$8,284,204				
	ASF	<b>6,630</b>	3,670	<b>10,300</b>	16,600	<b>26,900</b>
					12,200	<b>39,100</b>
<b>Athletic, PE, Recreation - Facilities</b>						
Physical Education and Recreation	ASF	68,240		73,000	95,000	135,000
	ASF	<b>68,240</b>	4,760	<b>73,000</b>	22,000	<b>95,000</b>
					40,000	<b>135,000</b>
<b>Auxiliary</b>						
Student Health Facilities	ASF	1,529		1,600	2,000	3,000
	ASF	<b>1,529</b>	71	<b>1,600</b>	400	<b>2,000</b>
					1,000	<b>3,000</b>
<b>Overall Totals</b>		Total ASF	<b>126,856</b>	<b>158,000</b>	<b>222,700</b>	<b>318,200</b>

SOURCE: Paulien & Associates 2004

The College strategic plan calls for the Health Ecology Department growing into the School of Public Health. If the College and the planned School of Public Health move farther north, the new School of Public Health could be closer to the School of Medicine or actually be located in the health science area of the campus. The Academic Office and Research Laboratory space guidelines include estimates of space needed for the new School of Public Health.

The College anticipates growth by about 50% while UNR as a whole grows by around 35% to Horizon 1. Part of this growth will be fueled by the Nursing Program, which is expected to double in size. The College is looking at the Redfield campus as a delivery site.

Research expenditures in the College are around \$8 million per year. The College could reach \$15 million at the Horizon 1.

## College of Liberal Arts

Enrollment in the College of Liberal Arts is slightly over 35% of the total enrollment at the University of Nevada, Reno.

College of Liberal Arts		Actual	Projections			
			Current	Horizon 1	Horizon 2	Delta
			Delta	Delta	Delta	
<b>Academic Space</b>						
Classroom and Service	ASF	957		1,000	1,000	1,000
Teaching Laboratories and Service	ASF	33,189		55,800	79,200	124,500
Open Laboratories and Service	ASF	8,898		10,100	14,000	21,000
Academic Offices and Service	ASF	66,776		81,300	110,700	166,300
Other Academic Department Space	ASF	8,542		8,600	10,400	13,600
<b>Academic Support Space</b>						
Assembly and Exhibit	ASF	37,527		42,700	59,400	90,000
	ASF	155,889	43,611	199,500	274,700	416,400
<b>Research</b>						
Research Laboratories and Service - Main	ASF	7,112		9,200	13,400	20,900
	ASF/\$100,000	330				
	Total Research Dollars	\$2,152,804				
	ASF	7,112	2,088	9,200	13,400	20,900
<b>Auxiliary</b>						
Health Care Clinics	ASF	4,087		4,100	5,700	8,500
	ASF	4,087	13	4,100	5,700	8,500
<b>Overall Totals</b>		Total ASF	167,088	212,800	293,800	445,300

SOURCE: Paulien & Associates 2004

The Church Fine Arts Building is inadequate. The Arts would like to expand into the Virginia Street Gym site. Space is needed for smart classrooms and Music practice rooms. The Art Gallery, located in the main lobby of the building, has limited security and needs a more secure location to be able display the art collection.

The Social Sciences space issues include a need for an improved laboratory/museum for Anthropology and additional clinical and research space for Psychology. Patient parking is also an issue for the Psychology Department. The unresolved issue regarding Psychology in the future is whether the Department will focus on science or on clinical practice. Psychology research productivity is around \$600,000.

The Humanities space is in several locations. The Foreign Language Department and the Philosophy Department are located in Cain Hall. There are plans to relocate Foreign Languages into Getchell Library once the new Knowledge Center is constructed. This will provide Foreign Languages with more adequate space. Generally the units located in Cain Hall do not like the building.

The Foreign Language Department has a classroom assigned to it in Cain Hall. Most classrooms on campus are centralized and, for that reason growth in classrooms needed has been shown as centralized under the Executive Vice President and Provost. Since this one classroom was identified separately with the Foreign Language Department, the consultant assumed the department will continue to need an assigned classroom. The amount of space in this classroom has been carried forward in the space needs analysis for the Horizon 1 and Horizon 2 and removed from the projection of classroom needed for centralized classrooms.

The College of Liberal Arts expects enrollment growth to be greater than that of UNR as a whole.

## College of Science

The research activities in the College of Science and Mackay School of Earth Sciences and Engineering are on a straight line growth curve. The College would like to see the research growth in a logarithmic function curve. The Seismology laboratory could double its research budget in the next five years. This level of research growth would need more laboratories and more space.

The planned Science and Mathematics instructional facility will provide the College with increased instructional space and space for research activities, but the anticipated location of the new Science and Mathematics building will impact the existing greenhouses.

The Physics Department has classroom service space assigned to it near the Schulich Lecture Hall. The consultant assumed this service space will continue to be needed and carried this amount of space forward in the College of Science space needs analysis for the Horizon 1 and Horizon 2 and removed it from the projection of classroom and service space needed for centralized classrooms.

<b>Projections of Program Need</b>					
University of Nevada, Reno					
College of Science		Actual	Projections		
			Current	Horizon 1	Horizon 2
			Delta	Delta	Delta
<b>Academic Space</b>					
	Classroom and Service	ASF 2,046		2,000	2,000
	Teaching Laboratories and Service	ASF 30,422		53,200	71,900
	Open Laboratories and Service	ASF 8,143		9,300	12,800
	Academic Offices and Service	ASF 65,180		73,000	91,800
	Other Academic Department Space	ASF 26,096		26,200	31,900
	<b>Academic Support Space</b>				
	Assembly and Exhibit	ASF 5,677		6,500	9,000
		ASF 137,564	32,636	170,200	219,400
				49,200	94,600
				219,400	314,000
<b>Research</b>					
	Research Laboratories and Service - Main	ASF 87,526		109,300	143,700
	ASF/\$100,000	500			
	Total Research Dollars	\$17,463,033			
		ASF 87,526	21,774	109,300	143,700
				34,400	59,600
				143,700	203,300
<b>Overall Totals</b>		Total ASF 225,090		279,500	363,100
				59,600	517,300

SOURCE: Paulien & Associates 2004

The reputation of the Sciences at UNR is growing. Enrollment in the College of Science is anticipated to be greater than that of UNR overall. Growth in the Mackay School of Earth Sciences and Engineering disciplines is anticipated to be less than UNR as a whole.

## Reynolds School of Journalism

The School of Journalism Building was opened in the early 1990s. Class sizes were not anticipated to exceed 18 to 20 students. The building has a classroom that seats 25 and a lecture hall that seats 76 but no midsized classrooms.

There is currently sufficient space in the Reynolds School of Journalism Building. The graduate student area has sufficient space. The broadcast area in the building is oversized. This space might provide an opportunity on the first floor to renovate space for alternative uses.

<b>Projections of Program Need</b>						
University of Nevada, Reno						
Reynolds School of Journalism		Actual	Projections			
			Current	Horizon 1	Horizon 2	
			<i>Delta</i>	<i>Delta</i>	<i>Delta</i>	
<b>Academic Space</b>						
Teaching Laboratories and Service	ASF	6,600		5,700	7,600	12,300
Open Laboratories and Service	ASF	2,994		3,400	4,700	7,100
Academic Offices and Service	ASF	4,889		5,100	6,500	10,100
Other Academic Department Space	ASF	4,267		4,300	5,200	6,800
	ASF	<b>18,750</b>	-250	<b>18,500</b>	<b>24,000</b>	<b>36,300</b>
<b>Overall Totals</b>	Total ASF	<b>18,750</b>		<b>18,500</b>	<b>24,000</b>	<b>36,300</b>

SOURCE: Paulien & Associates 2004

Growth in the School of Journalism is anticipated to be higher than that of UNR as a whole. Last year the School grew around six percent while UNR grew around three percent. The School has approval for two additional faculty lines.

## School of Medicine

The planned Biotechnology Building is one of three or four buildings planned on the north end of campus that will serve the School of Medicine. Other buildings include a clinical services building, a clinical research building, and a parking structure.

School of Medicine		Actual	Projections			
			Current	Horizon 1	Horizon 2	Delta
			Delta	Delta	Delta	
<b>Academic Space</b>						
Classroom and Service	ASF	3,696		3,700	3,700	3,700
Teaching Laboratories and Service	ASF	977		600	700	1,100
Open Laboratories and Service	ASF	4,502		5,100	7,100	10,600
Academic Offices and Service	ASF	63,497		83,800	106,000	145,500
Other Academic Department Space	ASF	16,165		16,200	19,700	25,700
<b>Academic Support Space</b>						
Library	ASF	20,390		22,000	27,600	36,500
	ASF	<b>109,227</b>	22,173	<b>131,400</b>	33,400	<b>164,800</b>
						58,300
						<b>223,100</b>
<b>Research</b>						
Research Laboratories and Service - Main	ASF	37,453		51,000	80,000	113,500
	ASF/\$100,000	120				
Total Research Dollars		\$29,967,620				
	ASF	<b>37,453</b>	13,547	<b>51,000</b>	29,000	<b>80,000</b>
						33,500
						<b>113,500</b>
<b>Auxiliary</b>						
Student Health Facilities	ASF	3,824		4,200	6,000	9,000
Health Care Clinics	ASF	20,582		21,200	28,500	42,600
	ASF	<b>20,582</b>	618	<b>21,200</b>	7,300	<b>28,500</b>
						14,100
						<b>42,600</b>
<b>Overall Totals</b>	Total ASF	<b>167,262</b>		<b>203,600</b>	<b>273,300</b>	<b>379,200</b>

SOURCE: Pavlien & Associates 2004

The School anticipates an increase in its class size from the current level of 52 to around 70 to 75 by the year 2005. Future projections beyond 2005 indicate class size may go up to 100.

The School of Medicine uses a problem-based approach to instruction. The classrooms in Pennington were built with breakout rooms surrounding the lecture halls. While this works well, the facility has been outgrown. With expanded enrollment, thought will need to be given to accommodating additional classrooms space needs. If the School of Medicine grows to 70 or 75 students per class, the teaching laboratories will either need increased space or additional faculty to teach more sessions.

The School of Medicine has classrooms assigned to it. Most classrooms on campus are centralized and, for that reason growth in classrooms needed has been shown as centralized under the Executive Vice President and Provost. Since the School of Medicine classrooms were identified separately with the School, the consultant assumed the department will continue to need assigned classrooms. The amount of classroom space in the School of Medicine has been carried forward in the space needs analysis for the Horizon 1 and Horizon 2 and removed from the projection of classroom needed for centralized classrooms.

Research expenditures in the School of Medicine are around \$15 million annually. An optimistic projection would be for the research expenditures to grow to \$40 million in about 10 years. Research is growing about 10% per year and expected to continue at this level for the next three to four years. After that research will probably grow around five to seven percent per year. It is possible that growth could be around 10% growth per year. An increase in research at that level

would necessitate additional laboratory space not currently available. If the additional research space is constructed the School of Medicine has the potential to go from 30% to 50% of UNR's research expenditures.

Graduate Assistants and Medical Residents are not currently provided with office space. Both could use some space. A bullpen or hotel-office arrangement would be sufficient.

The School of Medicine has the potential in the future to develop institutes. Each institute may result in a need for a building to house its functions. These could include a smooth muscle physiology institute, an institute for cardiovascular disease and function, an institute for emerging infectious diseases, a bone marrow or stem cell institute, and a cancer biology institute.

The planned creation of the School of Pharmacy will impact the spaces used for basic science instruction and research. The School could be housed in the planned Biotechnology building or the planned Science and Mathematics facility. The special requirements of a separate School of Pharmacy have been identified. Estimated Academic Office and Research Laboratory space needed for the new School of Pharmacy have been included for this analysis.

## Extended Studies

Extended Studies has grown faster than the overall rate of the campus. Forty percent of the extended studies offerings are delivered at off-campus settings. The administrative offices for these programs are housed on campus. The main administrative offices are in the Continuing Education Building, and some of the offices are located in a converted apartment house adjacent to the Continuing Education Building.

The hotel-style conference rooms in the Continuing Education Building have foldable dividing walls and are used by Extended Studies as teaching spaces. While the consultant was told the walls in these rooms have very poor sound separation, no additional need for teaching space was identified to the consultant.

Extended Studies		Actual	Projections			
			Current	Horizon 1	Horizon 2	Delta
			Delta	Delta	Delta	
<b>Academic Space</b>						
Academic Offices and Service	ASF	17,521		17,100	20,600	28,600
Other Academic Department Space	ASF	3,813		3,800	4,700	6,100
<b>Academic Support Space</b>						
Assembly and Exhibit	ASF	4,507		5,100	7,100	10,800
	ASF	<b>25,841</b>	159	<b>26,000</b>	6,400	<b>32,400</b>
						13,100
						<b>45,500</b>
<b>Research</b>						
Research Laboratories and Service - Main	ASF	0		0	0	0
	ASF/\$100,000	0				
Total Research Dollars		\$445,276				
	ASF	0	0	0	0	0
<b>Overall Totals</b>	Total ASF	<b>25,841</b>		<b>26,000</b>	<b>32,400</b>	<b>45,500</b>

SOURCE: Paulien & Associates 2004

## Cooperative Extension

Cooperative Extension has two main space issues. The amount of space on campus is too little and the Mill Street offices would be better served to be closer to campus. The Mill Street offices have not been included in this analysis. Growth in the Cooperative Extension office is tied to the growth in the population of Nevada rather than the growth of the campus.

Cooperative Extension		Actual		Projections			
				Current	Horizon 1	Horizon 2	
			Delta		Delta		Delta
<b>Academic Space</b>							
	Academic Offices and Service	ASF	2,313	3,900	4,700	6,300	
		ASF	<b>2,313</b>	<b>3,900</b>	<b>4,700</b>	<b>6,300</b>	
				800	1,600		
<b>Research</b>							
	Research Laboratories and Service - Main	ASF	0	0	0	0	
		ASF/\$100,000	0				
	Total Research Dollars		\$466,339				
		ASF	0	0	0	0	
			0	0	0	0	
<b>Overall Totals</b>		Total ASF	<b>2,313</b>	<b>3,900</b>	<b>4,700</b>	<b>6,300</b>	

SOURCE: Paulien & Associates 2004

## Intercollegiate Athletics

The newly acquired Bishop Manogue High School property will provide additional space for women's sports. When the Virginia Street Gym is renovated for purposes other than athletics use, the athletics academic center will need to be relocated, preferably near the other athletics facilities on campus. There is a need for a 50 meter pool and an indoor tennis facility.

<b>Projections of Program Need</b>								
University of Nevada, Reno								
Intercollegiate Athletics	Actual	Projections						
		Current		Horizon 1		Horizon 2		
		<i>Delta</i>		<i>Delta</i>		<i>Delta</i>		
<b>Academic Space</b>								
<i>Academic Support Space</i>								
Administrative Offices and Service	ASF	19,355		15,100		17,700		22,300
	ASF	<b>19,355</b>	-4,255	<b>15,100</b>	2,600	<b>17,700</b>	4,600	<b>22,300</b>
<b>Athletics, PE, Recreation - Facilities</b>								
Athletics	ASF	71,199		81,400		131,400		231,400
	ASF	<b>71,199</b>	10,201	<b>81,400</b>	50,000	<b>131,400</b>	100,000	<b>231,400</b>
<b>Athletics, PE, Recreation - Fields</b>								
	SF/FTE			140		140		140
	SF			1,624,000		2,240,000		3,360,000
	Total Acres	<b>24</b>		<b>37</b>	14	<b>51</b>	26	<b>77</b>
<b>Auxiliary</b>								
Health Care Clinics	ASF	7,868		8,200		10,800		16,300
	ASF	<b>7,868</b>	332	<b>8,200</b>	2,600	<b>10,800</b>	5,500	<b>16,300</b>
<b>Overall Totals</b>		<b>Total ASF</b>	<b>98,422</b>	<b>104,700</b>		<b>159,900</b>		<b>270,000</b>

SOURCE: Paulien & Associates 2004

## Executive Vice President and Provost

The units that report to the Executive Vice President and Provost primarily have office space needs. The classrooms and some of the assembly and exhibit on campus are centralized under the Executive Vice President and Provost and are shown here for this analysis.

Executive Vice President and Provost		Actual	Projections			
			Current	Horizon 1	Horizon 2	Delta
			Delta	Delta	Delta	Delta
<b>Academic Space</b>						
Classroom and Service	ASF	114,981		169,200	233,800	355,200
Academic Offices and Service	ASF	2,694		3,200	3,400	4,500
Other Academic Department Space	ASF	1,036		1,000	1,300	1,600
<b>Academic Support Space</b>						
Assembly and Exhibit	ASF	2,823		3,200	4,500	6,800
	ASF	121,534	55,066	176,600	243,000	368,100
<b>Research</b>						
Research Laboratories and Service - Main	ASF	0		0	0	0
	ASF/\$100,000	0				
Total Research Dollars		\$218,647				
	ASF	0	0	0	0	0
<b>Overall Totals</b>		Total ASF	121,534	176,600	243,000	368,100

SOURCE: Paulien & Associates 2004

### Vice President for Information Technologies and Libraries

The new Knowledge Center has been planned to serve the future needs of the UNR Library. It will be located in the heart of the campus and will include state-of-the-art collaborative spaces, technology, and automated retrieval system.

The UNR information technology units support campus network, information systems, and academic research needs. Twenty-four hour services are being centralized and redundancies for critical systems are being implemented.

<b>Projections of Program Need</b>							
University of Nevada, Reno							
Information Technologies and Libraries	Actual	Projections			Horizon 1	Horizon 2	
		Current	Delta	Delta			
<b>Academic Space</b>							
Classroom and Service	ASF 931						
Open Laboratories and Service	ASF 846	1,000		1,300		2,000	
Academic Offices and Service	ASF 13,327	23,000		27,000		35,300	
Other Academic Department Space	ASF 8,811	8,800		10,800		14,000	
<b>Academic Support Space</b>							
Library	ASF 145,889	157,400		197,600		260,100	
	ASF 169,804	20,396		190,200	46,500	236,700	74,700
<b>Research</b>							
Research Laboratories and Service - Main	ASF 0	0		0		0	
	ASF/\$100,000 0						
Total Research Dollars	\$65,904						
	ASF 0	0		0		0	
<b>Overall Totals</b>	Total ASF 169,804	190,200		236,700		311,400	

SOURCE: Paulien & Associates 2004

## Vice President for Research and Graduate School

The University of Nevada has strengths in research that include the basic biomedical sciences, agricultural biochemistry, and high-energy density fusion. Space needs for units reporting directly to the Vice President for Research are as follows:

<b>Projections of Program Need</b>							
University of Nevada, Reno							
Research and Graduate School		Actual	Projections				
			Current	Horizon 1	Horizon 2	Delta	Delta
Academic Space			Delta	Delta	Delta	Delta	Delta
	Academic Offices and Service	ASF	30,441	16,000	18,700	25,400	
	Other Academic Department Space	ASF	8,529	8,600	10,400	13,500	
		ASF	<b>38,970</b>	<b>24,600</b>	<b>29,100</b>	<b>38,900</b>	
			-14,370	4,500	9,800		
Research							
	Research Laboratories and Service - Main	ASF	23,263	Guideline space generated in colleges by faculty.	200,000	350,000	
		ASF/\$100,000	2,650				
	Total Research Dollars		\$878,698				
		ASF	<b>23,263</b>	<b>0</b>	<b>200,000</b>	<b>150,000</b>	<b>350,000</b>
			-23,263	200,000	150,000		
Overall Totals		Total ASF	62,233	24,600	229,100	388,900	

SOURCE: Paulien & Associates 2004

About two-thirds of the space the campus inventory shows assigned to the Vice President is in the Applied Research Facility complex. The rest is primarily office space in a half dozen campus buildings. Research guidelines were generated based on faculty and so that space is shown with the Colleges. A review of the campus inventory space assignments for the Vice President for Research is recommended.

Discussions with the Vice President regarding research included issues and prospects for the schools and colleges. The discussions concluded that there will be a future need for additional research space. Because the school or college allocation of the additional research is speculative, additional research space has been included under the Vice President for Research to accommodate this growth.

Research productivity may double in the next ten years. If it does not reach this optimistic expectation it will realistically increase by 50%. Research levels could reach \$150 million in the next five to seven years and could reach \$200 million in ten years.

The School of Medicine has a shortage of research space. Discussions are being held to explore ways to increase the building space for biological and biomedical research space. Plans for expanded research facilities include the proposed Biotechnology Building. This building will not be assigned to a particular college or school and is intended to be for interdisciplinary research.

The College of Engineering research space is not optimal. Some of the spaces are aging and need refurbishment and renovation. There is a need for expanded Civil Engineering research and instructional space. This includes classrooms for virtual experiments in earthquake study and additional space for the large structures laboratory.

The reorganization of the colleges gives the new College of Science a new focus. The integration of Science faculty will provide opportunities to work collaboratively and carry out more interdisciplinary science research.

There is a need for additional research space in the Biological Sciences. Notably there is a need for a better Biosafety Level 3 (BSL-3) laboratory.

Dry laboratory research space on campus is fairly efficient, but much research space is high-end wet laboratory space.

Animal quarters have a space deficiency. Modular units were purchased to help alleviate the shortage.

In the long term, the increase in enrollment on the UNR campus will be likely to result in a new School of Pharmacy, a School of Public Health, and the School of Nursing as a separate entity. All of this growth will create pressure for the campus to develop more land.

As UNR creates more research momentum, it may develop successful centers and institutes which begin to increase research productivity exponentially. There may also be opportunities for a research park incorporating incubator space for spin-off start-up companies developing out of University research and attracting outside high-tech entities which see a benefit in having close proximity to the UNR campus and its amenities and resources.

What is included in this report for the colleges assumes full productivity of proportionally increased faculty in the laboratory-based research disciplines at both horizons, comparable increases in non-tenured research faculty who may be principal investigators, plus similar increases in post-doctoral fellows and graduate research assistants. This generated research laboratory space of about 400,000 ASF of Horizon 1 and about 550,000 ASF at Horizon 2.

If UNR succeeds in developing new centers and institutes, additional space beyond that generated by these assumptions will probably be needed. Based on the success of other universities, it would be reasonable for UNR to potentially require an additional 200,000 ASF at a built-out Horizon 1 level (not necessarily by the 2010 year when the governing board currently shows those enrollments being reached) and an additional 350,000 ASF by Horizon 2 which is planned for an enrollment greater than the University projects through the year 2020. Because the mix and disciplines of these centers can not be projected with confidence, these two numbers are shown as a lump sum with the Vice President for Research and should be viewed as reflecting a mix of UNR research units, possible cooperative units with federal agencies and private research entities housed in UNR sanctioned development on the expanded UNR campus.

In benchmarking done by the consultant, there are universities which have between \$150,000,000 and \$200,000,000 total R&D expenditures as cataloged by NSF and have between 500,000 ASF to 600,000 ASF of total research laboratory space. This suggests that the Horizon 1 figures for UNR are not unreasonable even with the addition of the 200,000 ASF lump sum of potential additional research expansion producing a UNR total of 600,000 ASF. Similarly, there are universities with between \$250,000,000 and \$300,000,000 of total R&D expenditures which have between 800,000 ASF and 1,100,000 ASF of research laboratory space. Therefore, the Horizon 2 assumption with the additional 350,000 ASF to define the additional opportunities discussed above makes the UNR total of about 900,000 ASF for Horizon 2 still seem a reasonable figure.

## Vice President for Administration and Finance

The units that report to the Vice President for Administration and Finance would benefit from increased adjacencies to each other. The units within the Controller's Office would benefit from being located together. Similarly the units within Facility Services; Human Resources; Planning, Budget, and Analysis; and Purchasing would benefit from being located together. Police Services and Facility Services do not necessarily need to be located on the campus and could be located on the periphery or near the campus.

Projections of Program Need								
University of Nevada, Reno								
Administration and Finance		Actual	Projections					
			Current		Horizon 1		Horizon 2	
			Delta		Delta		Delta	
<b>Academic Space</b>								
<i>Academic Support Space</i>								
	Administrative Offices and Service	ASF	58,262		55,700		64,400	85,200
	Other Administrative Department Space	ASF	43,817		47,200		65,100	97,700
	Physical Plant	ASF	51,466		64,100		86,000	117,700
		ASF	<b>153,545</b>	13,455	<b>167,000</b>	48,500	<b>215,500</b>	<b>300,600</b>
<b>Research</b>								
	Research Laboratories and Service - Main	ASF	0		0		0	0
	ASF/\$100,000		0					
	Total Research Dollars		\$108,477					
		ASF	0	0	0	0	0	0
<b>Athletic, PE, Recreation - Facilities</b>								
	Athletics	ASF	118,615		118,600		118,600	118,600
		ASF	<b>118,615</b>	-15	<b>118,600</b>	0	<b>118,600</b>	<b>118,600</b>
<b>Overall Totals</b>		Total ASF	<b>272,160</b>		<b>285,600</b>		<b>334,100</b>	<b>419,200</b>

SOURCE: Paulien & Associates 2004

Because the Vice President for Administration and Finance is involved in overall land use for UNR, discussions between the consultant and the Vice President for Administration and Finance included information on overall campus site issues and land use. Some of these discussions are noted here.

UNR is purchasing homes south of the campus toward I-80. The fill dirt from the new parking structure is being used to create an additional 15 acres in the north medical precinct of the campus. If Washoe County School District moves to a different location downtown then the campus could expand to the east in the current Washoe County School District location. These options will expand three sides of the campus.

UNR acquired the Stead Campus when the Air Force base closed thirty years ago. The property is being remediated and sections of it may be sold to help fund development on the main campus. The Stead Campus provides research space for the Nevada Terrawatt Facility and storage space for the campus.

The Redfield Campus site may become an important satellite facility for the main campus. Its location midway between Carson City and Reno is a strategic asset as an alternative instructional delivery site and a keystone in the development of the Redfield area.

## Vice President for Student Services

The goal of the units providing student services is to develop more of a community atmosphere, both for residential and for commuting students. A large percentage of students commute to campus, and many students work off-campus in the gaming industry which impacts their time for campus activities.

Projections of Program Need								
University of Nevada, Reno								
Student Services		Actual	Projections					
			Current	Horizon 1	Horizon 2	Delta		
<b>Academic Space</b>								
	Open Laboratories and Service	ASF	809	900	1,300	1,900		
	<b>Academic Support Space</b>							
	Administrative Offices and Service	ASF	60,630	49,400	56,300	73,400		
	Other Administrative Department Space	ASF	6,052	6,500	9,000	13,500		
		ASF	<b>67,491</b>	<b>56,800</b>	<b>66,600</b>	<b>88,800</b>	<b>-10,691</b>	<b>22,200</b>
<b>Research</b>								
	Research Laboratories and Service - Main	ASF	0	0	0	0		
	ASF/\$100,000		0					
	Total Research Dollars		\$5,948,977					
		ASF	0	0	0	0	0	0
<b>Residential</b>								
	Residence Life	ASF	327,625	350,000	490,000	690,000		
	Total Beds		1,750	1,750	2,450	3,450	0	700
	ASF/Bed		190	200	200	200		
		ASF	<b>327,625</b>	<b>350,000</b>	<b>490,000</b>	<b>690,000</b>	<b>22,375</b>	<b>140,000</b>
<b>Auxiliary</b>								
	Student Union	ASF	95,128	135,000	193,500	270,000		
		ASF	<b>95,128</b>	<b>135,000</b>	<b>193,500</b>	<b>270,000</b>	<b>39,872</b>	<b>58,500</b>
<b>Overall Totals</b>		Total ASF	<b>490,244</b>	<b>541,800</b>	<b>750,100</b>	<b>1,048,800</b>		

SOURCE: Paulien & Associates 2004

The planned new Student Union is an opportunity to create a center of campus combined with the central location of the planned Knowledge Center and the existing Lombardi Recreation Center.

The Lombardi Recreation Center can only handle UNR growth for the next few years, then additional recreational facilities will be needed for the campus.

Residence hall space is available for new students. The New Residence Hall provides a shared bedroom and bathroom for every two students. Future planning for freshman housing will be similar to the facilities in New Residence Hall. There is no desire to provide freshmen with apartment-style housing. Strategic planning for residence life includes the addition of undergraduate housing between Virginia and Sierra Streets and privatized graduate housing east of Evans Avenue near Enterprise Road.

There is a plan to return Thompson Building to an academic building that would require relocation of the student services currently in the building. Some of the services that were in the Thompson building have already moved to the Student Services Building. The facilities inventory provided to the consultant was not updated to reflect the new occupants of the Thompson Building. Both old and new space may be counted for some of the units, which may account for the difference between the existing space and the office space guidelines generated at the current level of activity.

### Vice President for University Development and Alumni Relations

The units that report to the Vice President for University Development and Alumni Relations primarily have office and conference space needs. These units are housed in the Mackay Science Building and in Morrill Hall. As the campus grows to the Horizon 2 levels, the units under the Vice President for University Development and Alumni Relations will require fifty percent more space than they currently occupy.

<b>Projections of Program Need</b>					
University of Nevada, Reno					
University Development and Alumni Relations	Actual	Projections			
		Current	Horizon 1	Horizon 2	
		Delta	Delta	Delta	
<b>Academic Space</b>					
<i>Academic Support Space</i>					
Administrative Offices and Service	ASF 8,085		9,000	9,900	11,600
Other Administrative Department Space	ASF 1,949		2,100	2,900	4,300
	ASF 10,034	1,066	11,100	12,800	15,900
<b>Overall Totals</b>	<b>Total ASF 10,034</b>		<b>11,100</b>	<b>12,800</b>	<b>15,900</b>

SOURCE: Paulien & Associates 2004

### Vice President for University Relations

The Vice President for University Relations offices are located in Jones Visitor Center building. This unit is primarily office-based. When the campus grows to the Horizon 2 level, the space for the Vice President for University Relations will need to nearly double.

<b>Projections of Program Need</b>					
University of Nevada, Reno					
University Relations	Actual	Projections			
		Current	Horizon 1	Horizon 2	
		Delta	Delta	Delta	
<b>Academic Space</b>					
<i>Academic Support Space</i>					
Administrative Offices and Service	ASF 1,764		1,600	1,800	2,600
Other Administrative Department Space	ASF 1,988		2,100	3,000	4,400
	ASF 3,752	-52	3,700	4,800	7,000
<b>Overall Totals</b>	<b>Total ASF 3,752</b>		<b>3,700</b>	<b>4,800</b>	<b>7,000</b>

SOURCE: Paulien & Associates 2004

## Vice Provost for Instruction and Undergraduate Programs

The units that report to the Vice President for Instruction and Undergraduate Programs include the Honors Program, Academic Advising Center, Assessment Office, and the University Study Abroad Consortium. These units are primarily office-based.

<b>Projections of Program Need</b>							
University of Nevada, Reno							
Instruction and Undergraduate Programs	Actual	Projections			Delta	Delta	Delta
		Current	Horizon 1	Horizon 2			
<b>Academic Space</b>							
Academic Offices and Service	ASF	13,002		10,400		12,100	16,600
Other Academic Department Space	ASF	1,900		1,900		2,300	3,000
	ASF	14,902	-2,602	12,300	2,100	14,400	19,600
<b>Overall Totals</b>	Total ASF	14,902		12,300		14,400	19,600

SOURCE: Paulien & Associates 2004

## President

The units that report to or are provided space by the Office of the President are located in Clark Administration Building and in Mackay Science building. These include the Faculty Senate, Diversity, and Government Relations Offices. The Office of the President and the office spaces assigned to the office are fairly stable and will not be greatly affected by the overall growth of the campus.

<b>Projections of Program Need</b>							
University of Nevada, Reno							
President	Actual	Projections			Delta	Delta	Delta
		Current	Horizon 1	Horizon 2			
<b>Academic Space</b>							
<i>Academic Support Space</i>							
Administrative Offices and Service	ASF	4,802		4,200		4,300	5,100
	ASF	4,802	-602	4,200	100	4,300	5,100
<b>Overall Totals</b>	Total ASF	4,802		4,200		4,300	5,100

SOURCE: Paulien & Associates 2004

## **GUIDELINE APPLICATIONS**

Paulien & Associates applied space guidelines to calculate space needed on the main campus of the University of Nevada, Reno. The planning methods used to calculate space needed on campus have been tested by the consultant using a national perspective and the best judgment from many years of experience. The calculations took into account the unique needs of the University of Nevada, Reno. It should be noted that the consultant's use of normative guidelines to determine space needs does not directly correspond to the space standards defined by the University and Community College System of Nevada (UCCSN). The outcome of this process was to produce a set of needs projections that meet the needs for the Comprehensive Master Plan. These calculations were respectful of the UCCSN standards for space utilization, but did not apply those standards in a rote or formulaic manner.

In addition to the current guidelines set by UCCSN, Paulien & Associates considered the guidelines outlined by the Council of Educational Facilities Planners, International (CEFPI), a professional society for educational planners and incorporated the information and knowledge from years of experience providing space needs analysis to many campuses around the nation.

## **ACADEMIC SPACE**

### ***Classroom and Classroom Service***

The space and utilization guidelines for classroom facilities were used to project the current and horizon space needed in this category. The UCCSN standard for this category is 43.3 hours per week of use which includes 30 daytime hours and 13.3 evening hours of use. The utilization standard for the percentage of station fill is 60% student station occupancy. The interpretation of fire regulations for UNR has imposed a minimum classroom student station size of 20 ASF per student station.

The formula for determining classroom space needs takes the utilization standard of 43.3 hours per week, multiplies it by the student station occupancy standard of 60%, and divides this result into the square feet of space per student station. The consultant used 20 ASF per student station for lecture classes and 25 ASF per station for seminars. This calculation results in 0.77 ASF per weekly student contact hour (WSCH) of lecture instruction used to generate the ASF per weekly contact hour. Similarly, this calculation results in 0.96 ASF/WSCH used to generate the ASF for seminar instruction.

The classroom space analysis showed that the University of Nevada, Reno currently has 122,611 ASF of Classroom and Service space and will need to nearly triple that amount of classroom space to serve 24,000 FTE students in the future.

While the scope of this analysis is to determine the ASF of classrooms needed on campus for current levels of instruction and for increased enrollment in the future, this analysis did not review classroom utilization nor evaluate the available size and mix of classrooms available on campus. Because the campus has a number of older buildings, and the size of classrooms around campus was determined at the time the older buildings were constructed, in some instances classroom sizes no longer reflect the optimal sizes for sections or the number of faculty available to teach.

The University of Nevada, Reno 2003 Databook Instructional Space Utilization shows the daytime use of classroom spaces at a higher level than the UCCSN requirement, but the evening classroom use less than the UCCSN utilization standards. The UCCSN requirements were assumed to be acceptable for the calculations of classroom space needs for this analysis.

### ***Teaching Laboratory and Service***

Teaching Laboratory and Service space is defined as rooms used primarily for regularly scheduled classes that require special purpose equipment to serve the needs of particular disciplines for group instruction, participation, observation, experimentation, or practice. The station sizes in Teaching Laboratory and Service space vary by discipline. Space requirements are calculated with a formula which is similar to that used to determine classroom space requirements except that the ASF per station varies by discipline.

The University of Nevada, Reno 2003 Databook Instructional Space Utilization shows the use of Teaching Laboratory to be less than the UCCSN utilization standards. The UCCSN standard for Teaching Laboratory utilization is 29 hours per week of use which includes 20 daytime hours and nine evening hours of use. The utilization standard for the percentage of station fill is 80% student

station occupancy. The UCCSN requirements were assumed to be acceptable for the calculations of Teaching Laboratory space needs for this analysis.

Teaching Laboratory analysis showed UNR to have 103,273 ASF of space in the Teaching Laboratory and Service category. At the Horizon 2, the amount of space that will be required to met the needs of 24,000 FTE students is estimated to be 288,600 ASF.

### ***Open Laboratory and Service***

The category of Open Laboratory space consists of rooms that are open for student use and are not used on a regularly scheduled basis. These rooms provide equipment to serve the needs of particular disciplines for group instruction in informally or irregularly scheduled classes. Also these rooms are used for student experimentation, observation, or practice in a particular field of study. The size of these laboratories is based on equipment size and/or on the station size or student count desired and should be determined on an individual basis. Types of rooms included in this category are computer laboratories, language laboratories, music practice rooms, and tutoring and testing facilities.

Open Laboratories are not specifically addressed by most standards and guidelines. In recent consulting and benchmarking work with several statewide systems, the consultant found between five and ten ASF per student FTE allocated for space in this category. The amount of space in this category at the University of Nevada, Reno is less than five ASF per student FTE, lower than the expected range for Open Laboratory space.

The consultant believes that a reasonable guideline for UNR is five and a half ASF per student FTE. This is a number that is greater than the current amount per student FTE currently on campus and responds to the comments heard by the consultants regarding the need for more practice spaces and student experimentation spaces.

Calculations of Open Laboratory space requirements showed that UNR has 55,960 ASF of Open Laboratory space and needs over 63,000 ASF to meet the current requirements of the campus. UNR will need 132,000 ASF of Open Laboratory space when the campus reaches the Horizon 2 enrollment of 24,000 FTE students.

### ***Academic Office and Service***

Office Space guidelines used to determine office space needs are based on major categories of staff and application of space amounts for office service and conference space needs. The University of Nevada, Reno provided staffing information for major categories of staff by School, College, and major administrative unit. The amount of office space allotted to each position is based on the status and duties of the employee.

When applying the guidelines for office space, it is important to note that many older buildings on campus have offices that are larger than would be specified by standards. Some of these larger offices are due to older building practices which created more spacious offices. Other older office sizes were determined by existing wall placement in renovation projects. The average office size on the campus is just under 160 ASF. The office sizes used for this analysis are illustrated in the following table.

**Office Guidelines**

University of Nevada, Reno

Employee Category	Office ASF	Conference ASF	Service ASF
President	300	800	1,600
Dean	250	30	30
Vice President	250	30	30
Executive/Administrative	200	30	30
Director/Chair	150	30	30
Faculty	140	15	30
Temp Faculty	120	15	10
Temp Faculty Research	120	15	10
Research Faculty	140	15	10
Adjunct Faculty	70	15	10
Post Doc	120	15	10
Professional Non-Faculty	120	15	30
Research Professional Non-Faculty	120	15	10
Temp Professional Non-Faculty	120	15	30
Temp Research Professional Non-Faculty	120	15	10
Technical/Paraprofessional	120	10	10
Temp Technical/Paraprofessional	120	10	10
Clerical/Secretarial	100	10	20
Temp Clerical/Secretarial	100	10	20
Temp Classified	100	10	20
Research Assoc/Asst	50	0	0
Grad Assistant	50	0	0
Student Worker	40	0	0

Office Space guideline calculations compare the existing Academic Office and Service space of 440,192 ASF to future needs at Horizon 1 of 632,300 ASF and Horizon 2 of 873,800 ASF.

**Other Academic Department Space**

The space classified as Other Academic Department space includes all other space assigned to an academic unit that has not been included in the other classifications of Classroom, Teaching Laboratory, Open Laboratory, Research, or Office. This space category consists of a variety of space types. Due to the diversity of these spaces and the different ways various campuses might classify these spaces, these spaces are not specifically addressed by normative space standards. In recent benchmarking studies the consultant conducted, this space category showed a wide range between one and 18 ASF per student FTE.

The types of space included in this category at the University of Nevada, Reno include:

- Departmental study rooms or libraries
- Media production space
- Demonstration areas
- Animal quarters
- Greenhouses
- Daycare centers
- Lounges
- Meeting rooms
- Shops
- Storage areas
- Field buildings
- Hazardous materials storage

At the University of Nevada, Reno the Other Academic Space category averaged nearly 17 ASF per student FTE. The consultant believes that a reasonable guideline to apply in this category at current levels of activity is 17 ASF per student FTE. This factor reflects the current campuswide use of space in this category, and while it is on the high end, is within the benchmark range of space at other universities. For the Horizon 1 the consultant has used 15 ASF per student FTE and for Horizon 2 has used 13 ASF per student FTE. The variation in the guideline at the Horizons reflects both an economy of scale and acknowledgment that some of the spaces will not increase with increased enrollment or research levels. Examples of major spaces that may not be influenced by campus growth include the Equestrian Center and the outbuildings at the Valley Road site.

The Other Academic Department space on campus will need to increase from the existing space of 195,180 ASF to 310,000 ASF at the projected Horizon 2.

***Administrative Office and Service***

Offices used to conduct administrative activities in support of the academic functions are categorized as Administrative Office space. Calculation of Administrative Office space needed is done in the same manner as the Academic Office space analysis.

The Administrative Office and Service space category showed a requirement of 200,200 ASF when the campus grows to the Horizon 2 level.

***Other Administrative Department Space***

As with the space classified as Other Academic Department space, the Other Administrative space category includes all other space assigned to an administrative unit that has not been included in the other classifications. This space category also consists of a variety of space types. Due to the variety of these spaces and the different ways campuses might classify these spaces, these spaces are not usually addressed by space standards. In recent benchmarking studies the consultant conducted, this space category showed a wide range between less than one and as great as 46 ASF per student FTE.

The types of space included in this category at the University of Nevada, Reno include:

- Media production space
- Lounges
- Meeting rooms
- Storage
- Lockers

The Other Administrative Space category is less than five ASF per student FTE. The consultant believes that a reasonable guideline to apply in this category is five ASF per student FTE. This factor reflects the current campuswide use of space in this category and is within the benchmark range of space at other universities.

The Other Administrative Department Space category, which now has 53,806 ASF will require about 120,000 ASF of space when the campus grows to the projected Horizon 2.

### **Library**

Most of the guideline systems for Library space utilize one set of factors for collections, another for readers, and a third for service space. This approach was used by the consultants.

The Library analysis is based on collections data from the University of Nevada, Reno Common Data Set 2002-2003. Guidelines based on this data set indicate that nearly 300,000 ASF of Library space will be needed in Horizon 2.

In discussion with the Vice President for Information Technologies and Libraries, it was noted that planning for the new Knowledge Center has already evaluated space needs for the collections in the Knowledge Center. Space needed for the collections includes an automated retrieval system facility.

### **Assembly and Exhibit**

Assembly and Exhibit space is defined as any room designed and equipped for the assembly of large numbers of people. This includes theaters, auditoria, concert halls, and arenas. Exhibit spaces are used for exhibition of materials, works of art, or artifacts intended for general use by students and the public. The CEFPI guidelines have a core allowance of 22,450 ASF for institutions with a minimum of 5,000 student FTE and an active fine arts program. It then allows for an additional six ASF per student FTE over the 5,000 minimum. CEFPI also adds 5,000 ASF for institutions with an active music program. For the University of Nevada, Reno the consultant applied all three allowances, the core, six ASF per student FTE over 5,000, and the 5,000 ASF for the music program.

The Assembly and Exhibit Space category currently has 59,002 ASF and will require about 93,400 ASF at Horizon 1 and 141,500 ASF of space when the campus grows to the projected Horizon 2.

### **Physical Plant**

Most guidelines suggest seven to eight percent of all square footage on campus, minus existing Physical Plant and residence life space, be used to drive master plan needs in this category. In most cases, these percentages generate a space need that is greater than the amount of Physical Plant space typically found at an institution. From previous studies the consultants have found that the average percentage of Physical Plant space needed on a campus is less than that suggested by the

guidelines. One of the reasons a lower percentage is adequate for master planning purposes is the fact that many physical plant departments are increasing the outsourcing of many typical shop functions and using just-in-time purchasing methods to decrease warehousing needs.

For this analysis the consultant applied three percent of all square footage on campus with the exception of Physical Plant, parking, and residence life space, to drive the space needs in this category. The current 51,466 ASF of space for Physical Plant activities will need to grow to about 117,700 ASF to serve the campus in Horizon 2.

## **RESEARCH SPACE**

### **Research**

Because determining Research Space needs is a complex issue, the consultant calculated the need for research space using three different methods. One method used was based on a square feet calculation for the number of headcount faculty, research professionals, and research assistants. The second method is based upon sponsored research expenditures. The third method was developed by the consultant and uses a square feet calculation for a research team based on discipline specific needs for research laboratory space. The three methods of calculating research space guidelines often result in different findings.

The consultant chose to apply the method of calculating research space using a square feet calculation for a research team based on discipline-specific needs for research laboratory space and applied to faculty considered to be primary investigators.

These guidelines assume that research teams ranging from four to seven people would exist in most cases. The guidelines ranged from over 1,400 square feet for engineering disciplines involving large equipment to 10 square feet for some non-laboratory disciplines where there is a need for minimal group activity or analytical space. The guidelines were applied at a department-level so they could take into account the different requirements of a specific program within a college. As an example, Applied Economics and Statistics needs minimal research space while most of the other agricultural programs need biological sciences based laboratory space. Computer Science in Engineering and Mathematics in Science were other low research space units. For those disciplines which are not laboratory-based and do not currently have any research laboratory space, a zero factor was used. Among these are English, History, Educational Leadership, Nursing, Social Work, Journalism, and Family and Community Medicine.

The faculty team factors were applied to all full-time faculty and all full-time research faculty. No temporary faculty or temporary research faculty lines were utilized in applying these factors. The amounts per team include space for non-faculty research professionals, post-doctoral fellows, and graduate research assistants involved with the sponsored research. For planning purposes, it was assumed that all faculty were research productive and the relevant departmental factor was applied for all current and projected faculty.

## Faculty Team Factors

University of Nevada, Reno

	High	Low
College of Agriculture, Biotechnology, and Natural Resources	1,160	100
College of Business Administration	10	10
College of Education	400	0
College of Engineering	1,410	100
College of Human and Community Sciences	1,160	0
College of Liberal Arts	400	0
College of Science	1,410	10
Reynolds School of Journalism	0	0
School of Medicine	1,160	0

Because the consultant looked at a number of different ways to calculate research needs, the findings shown in this brief represent one alternate. Other alternatives were not deemed as appropriate and are not included here.

During on-campus work sessions, the consultant was told that there is definitely a push to increase research levels and that the campus is hindered in attracting grants by its lack of facilities. Without additional research laboratory space UNR will reach a plateau with its ability to increase research funding. The calculations of research space show 900,000 ASF of research space will be needed when the campus reaches its projected research productivity levels in Horizon 2. This is more than triple the current main campus research laboratory space.

Research growth for Horizon 2 could be substantially higher than the approximate doubling based on discussions with the administration and Deans. In order to reflect that potential, additional research space has been included under the Vice President for Research to accommodate this possible growth through centers and institutes, plus research park development. This is discussed in more detail on Page 22.

Interdisciplinary research is encouraged on campus. The campus' planned Biotechnology building is anticipated to promote interdisciplinary activity. It will house interdisciplinary projects for the College of Agriculture, Biotechnology, and Natural Resources; the College of Science; and the School of Medicine.

## **ATHLETICS, PHYSICAL EDUCATION, AND RECREATION**

### ***Athletics Facilities***

Due to the varied space requirements for indoor athletics programs, there is not one guideline that addresses this space category. The most useful analysis is usually based on peer institution comparisons and the number of sports programs offered.

The consultant reviewed the amounts of space at flagship institutions for which data was readily available. From this information and from meeting with the Athletic Director to discuss specific needs, projections of athletic space needed were determined.

The projections of space needed for Athletics will increase to 350,000 ASF at Horizon 2. This projection includes enough space to accommodate the proposed indoor tennis facility and new natatorium. An indoor football practice field is not requested because of the new all-weather outdoor field and the Reno climate.

### ***Physical Education and Recreation Facilities***

The consultant used the CEFPI guidelines to generate Physical Education and Recreation space. The CEFPI formula for Physical Education and Recreation space uses a core of 20,000 ASF for the first 1,000 student FTE. An additional five ASF per student FTE is added to the base 20,000 ASF for the students over the first 1,000 FTE.

Space needs analysis for Physical Education and Recreation space shows a need for Physical Education and Recreation to grow to 135,000 ASF, roughly twice the existing 68,240 ASF of Physical Education and Recreation space.

### ***Athletics, PE, and Recreation Fields***

While the scope of this analysis is defined as the projection of indoor space needs for the campus as it grows to the Horizon 1 and Horizon 2 enrollment levels, the consultant was asked to calculate the amount of space that will be needed for playing fields on campus.

Applying a guideline of 140 ASF per FTE student shows the campus will need to provide 77 acres of playing fields when it grows to the projected level of Horizon 2. This applies the high end of a 120 – 140 square feet range.

## **RESIDENTIAL**

### ***Residence Life Facilities***

Guidelines for residential spaces are based on a calculation of an assigned square footage per bed. UNR currently has 1,750 beds and anticipates adding around one hundred beds per year in the future. Current space per bed is around 190 ASF. The amount of space per bed is determined by the type of housing provided to students. A campus that primarily has double occupancy residence hall rooms will need fewer square feet per bed than a campus housing its students in suites or apartment units. Across the nation there are changes in student demands for housing. These changes result in more housing space per student in most recently constructed facilities. A guideline widely used in higher education residence life planning is 275 ASF per bed. The 275 ASF per bed guideline provides sufficient space for a variety of housing types including suite and apartment style housing. This analysis uses 200 ASF per bed as the guideline to address current housing needs. This is an appropriate factor since UNR primarily focuses on meeting the housing needs of lower division students. For future housing needs the guideline space per bed used remains at 200 ASF. This continues to provide guideline space for lower division students since apartment style housing to meet the needs of upper division and graduate students is being provided by a private developer off campus.

Residential facilities may increase beyond those indicated for Horizon 2. This analysis reflects current commuter enrollment patterns and projected housing facilities growth by the Student Services administration.

## **AUXILIARY**

### ***Student Union Facilities***

Both CEFPI and the Association of College Unions International (ACUI) recommend a formula of nine or ten ASF per student headcount for generating student union space requirements. This guideline space application provides space for the various functions and the room uses that are typically found in a comprehensive student union including food service, lounge, meeting space, student government space, student organization space, and other student activity space. This formula has been applied using nine ASF per student for the University of Nevada, Reno.

### ***Student Health Facilities***

Student Health Facilities are not specifically addressed by most national guidelines. In recent benchmarking and consulting work with several statewide systems, the consultant found amounts in this category to vary widely. For the Student Health Services and the student clinic spaces in the Wellness Center the consultant applied 0.5 ASF per student FTE. This reflects the current use of space and accommodates growth in student health services as campus enrollment increases.

### ***Health Care Clinics***

Clinical space which is generated by guidelines is dependent on the level and complexity of clinical programs. The consultant has found amounts in this category to vary widely. Clinics at UNR are operated by the School of Medicine and the Psychological Service Center within the College of Liberal Arts. For the Health Care Clinics the consultant increased the existing clinic space by the same percentage as enrollment growth for Horizon 1 and Horizon 2.

## **FIGURES ATTACHED**

None

## **REFERENCES**

- John Frederick - Executive Vice President and Provost, Interview
- Dee Henderson - Associate Dean, Extended Studies, Interview
- Chris Ault - Director, Intercollegiate Athletics, Interview
- Karen Hinton - Dean, Cooperative Extension, Interview
- Steve McFarlane - Dean, School of Medicine, Interview
- Dave Lupan - Assistant Dean, School of Medicine, Interview
- Bill Sparkman - Dean, College of Education, Interview
- Ron Zurek - Interim Vice President, Finance and Administration, Interview
- Linda Brinkley - Vice President, Research and Graduate School, Interview
- Eric Herzik - Interim Dean, College of Liberal Arts, Interview
- Mike Reed - Dean, College of Business Administration, Interview
- Jannet Vreeland - Interim Dean, Reynolds School of Journalism, Interview
- Jennifer Greer - Interim Associate Dean, Reynolds School of Journalism, Interview
- Steve Zink - Vice President, Information Technologies and Dean, Libraries, Interview
- Carol Parkhurst - Director, Network Communications, Information Technologies, Interview
- Ted Batchman - Dean, College of Engineering, Interview
- Dean Adams - Associate Dean, College of Engineering, Interview
- Shannon Ellis - Vice President, Student Services, Interview (unit leaders participated)
- Dave Thawley - Dean College of Agriculture, Biotechnology, and Natural Resources, Interview (chairs participated)
- Jean Perry - Dean, College of Human and Community Sciences, Interview
- Jim Taranik - Director, Mackay School of Earth Sciences, Interview
- Dave Westfall – Interim Dean, College of Science, Interview

***End of Topical Brief***