FOCUS 50-100
RESEARCH AND GRADUATE EDUCATION IMPLEMENTATION TEAM
Progress on Action Plan Items
October 2010

The following report details progress that has been made to date on action plan items that resulted from the campus-wide dialogue that produced UNLV's Focus 50-100 Strategic Plan in 2008. Following approval of that plan by the Board of Regents, three implementation teams were formed: Students, Infrastructure, and Research/Graduate Education.

The Research & Graduate Education Implementation Team began meeting in Fall 2008 and issued its first progress report in November 2008. An update to that report was subsequently prepared in February 2010. This report represents a comprehensive appraisal of the progress that has been made between 2008 and 2010 on five action priorities and 35 action statements:

- Strive to increase quality and quantity of graduate student stipends
- Continue to define our research programs as defined by Focus 50-100
- Develop mechanisms to promote research collaboration
- Create a culture of research excellence
- Improve research infrastructure

In addition to the narrative provided in this report, a summary chart indicating relative progress toward to these goals is provided in Appendix 2.

STATE OF UNIVERSITY RESEARCH IN FALL 2010

To set the context for progress toward Focus 50-100 goals, it may be useful to assess the current state of university research activities as of Fall 2010.

UNLV is designated as a Carnegie Doctoral-Granting Research University: High Research Activity. This ranking, the second highest ranking among American higher education institutions, is the most prevalent ranking for public universities in the western mountain states region. Only the largest universities with dedicated medical and/or agriculture schools (e.g., University of Arizona, University of Utah) have achieved the ranking of Carnegie: Very High Research Activity. UNLV has experienced remarkable growth in its student population, graduate degree programs, and research support over the past two decades. Nationally, financial support of research experienced strong gains since 2000 but, starting in 2008, support for university research programs has remained static or declined due to reductions in state and industry support plus declines in federal appropriations.

Total sponsored programs support to UNLV has exceeded $70 million over the past four years, with a peak in the 2007 and 2010 fiscal years (see Table 1 on next page). Direct research support has averaged approximately 50% of total sponsored programs activity, with the last three years averaging about $40 million. Research Expenditures — the "gold standard" in national research rankings because it directly measures research activity – have exhibited very similar results with less year-to-year variability. However, as shown in Table 2 on the next page, this key parameter shows a slight decline in research-intensive funding at UNLV in the last two fiscal years (2009 and 2010).

TABLE 1

UNLV Sponsored Program Awards

Awards						
	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10
All Sponsored Programs Awards	$ 73.2	$ 67.4	$ 106.7	$ 73.7	$ 76.5	$ 96.0
Research Awards Only	$ 48.2	$ 42.1	$ 74.7	$ 39.8	$ 40.0	$ 38.4

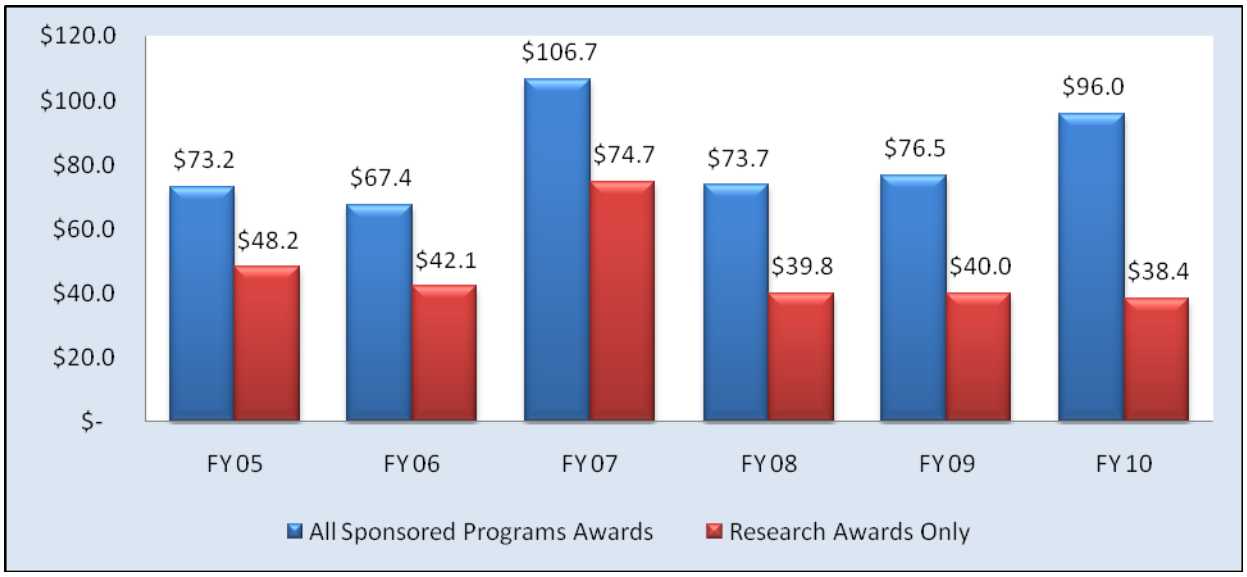
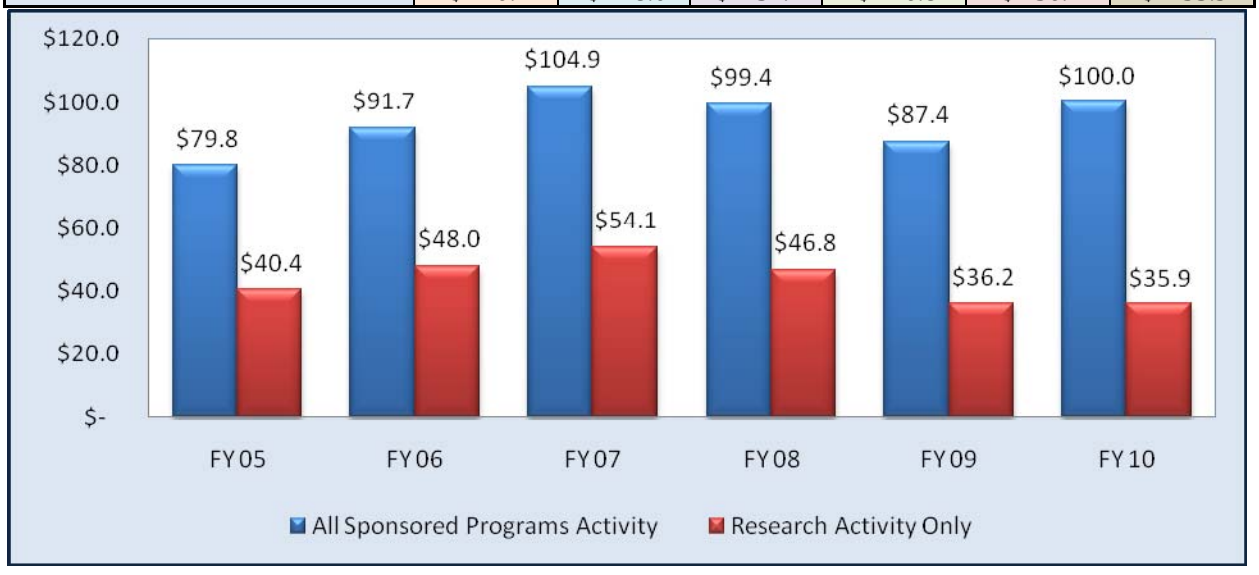


TABLE 2

UNLV Research Expenditures

Expenditures						
	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10
All Sponsored Programs Activity	$ 79.8	$ 91.7	$ 104.9	$ 99.4	$ 87.4	$ 100.0
Research Activity Only	$ 40.4	$ 48.0	$ 54.1	$ 46.8	$ 36.2	$ 35.9



It is within this context of these data (and still deeper data provided in Appendix 1) that the Research & Graduate Implementation Team offers the following progress report. The report is organized using the "Research Priorities" identified through the strategic planning process. It is important to note that many of these priorities represent large, multi-year efforts; however, the status of each item is addressed herein. New or revised priorities as recommended by the implementation team are added at the end of each section.

ACTION PRIORITY 1:
Strive to Increase Quality and Quantity of Graduate Student Stipends

1. Use access funds to expand recruiting of highly qualified students.

With input from GPSA President Jessica Lucero and assistance from Norm Bedford and Craig Organek, the implementation team proposed a series of Graduate Access scholarship programs funded by graduate access monies, including a childcare scholarship, a scholarship for graduate students with the highest financial need and the highest GPAs, a scholarship for international students with the highest GPAs, and a scholarship to support GAs who have federally determined (i.e., FAFSA) financial need. These scholarships began in 2008-2009 and were directed to address both recruitment and retention of graduate students.

2. Increase graduate student scholarship support.

With assistance from GPSA President Jessica Lucero and representatives of the UNLV Foundation, in 2008 the Graduate College began to expand outreach efforts to increase graduate scholarship and fellowship support on campus. The Hermsen Fellowship in the School of Life Sciences was the first new fellowship born of this type of collaboration; it was awarded for 2009-2010. Next steps involved reaching out to college development officers to propose closer collaboration in the area of graduate scholarship and fellowship fund development during the 2009-2010 academic year. The Graduate College helped prepare high-quality print materials that fund-raisers could provide to potential donors. These efforts have already seen some limited success in just two years.

The College of Sciences added additional fellowships with funding from the Ross and Wyman scholarship programs. The Lincy Institute, established in 2009 by a substantial private gift, is supporting three new graduate assistantships. The Urban Sustainability Initiative is supporting seven graduate assistantships through federal grant funding, and Nevada NSF EPSCoR is supporting approximately 10 additional GAs. There is a new Renewable Energy Scholarship for 2010-2011, as well as the Sterling Award, which is funded through the Alumni Association. However, the current economic downturn has resulted in the loss of several graduate fellowships/scholarships, including a Presidential Fellowship, a Barrick Fellowship, the Rogers Fellowship, and summer session GAs, and there is some uncertainty about the future of several others. The goal to increase graduate scholarship support will require vigilance and long-term effort.

Because state funding for GAs has remained static since at least 2003-2004, it has been difficult for the university to address the issue of increasing the stipends per graduate assistantship. While a minimum base stipend of $13,000 per 12-month master's GA and $16,000 per doctoral GA is standard across the university, individual departments and colleges may elect to increase the stipend to more competitive levels. Unfortunately, this decreases the total number of GAs they may award, but it does provide an

interim solution – particularly in the sciences and engineering – for allowing UNLV to remain somewhat competitive with the stipends offered by peer institutions. It should be noted that the current option for stipend flexibility does not allow departments to outbid the competition but merely to keep pace.

3. Change the state's formula funding.

UNLV pursued changes to formula funding by the state during the 2009 legislative session with assistance from the GPSA, but it was met with limited success largely due to the budget crisis. The Nevada System of Higher Education has pledged to pursue changes to the formula during the 2011 legislative session, and this goal will continue to have full faculty and student support.

4. Establish graduate student housing as a recruitment mechanism.

During academic year 2008-2009, implementation team members and representatives from Student Life, Student Housing, and the Midtown UNLV project met to discuss needs and plans for graduate student and family housing. Due to the economy and recent budget cuts, there has been no progress on creating additional graduate student housing, and action on this goal will necessarily be a multi-year initiative. However, the dialogue with developers in the area is continuing, and existing housing options for graduate students are now more readily accessible on the Student Life website and the Graduate College website. If an assessment of graduate housing needs is deemed necessary, the Graduate College will conduct a study, and it continues to work with the GPSA on this, as it is an issue of some concern to this group.

TEAM-ADDED PRIORITIES NOT INCLUDED IN THE ORIGINAL 50-100 ACTION PLAN

1. Reorganize and revitalize the Graduate Assistant program.

In collaboration with the Provost's Office, in academic year 2009-2010 the Division of Research and Graduate Studies developed a plan to reorganize the state funded GA program. This included efforts to assess minimum GA stipend amounts, to better monitor the use of GAs, and to reallocate GA funds to college deans in order to create incentives for FTE generation and achievement of critical graduate and research goals, including graduating more doctoral students. Following extensive discussion with the college deans, the plan was finalized in winter 2009 and implemented in Spring 2010.

The new GA funding allocation model is in place for 2010-2013. Fifty state GA lines have been allocated on a competitive basis to support collaborative faculty/graduate student research and scholarly activity; this plan supports recommendations identified through UNLV's 50-100 Strategic Planning process. An annual workload assessment is in place to monitor GA assignments and to ensure that at least 80% of state-funded GAs are teaching 6 credits, or the equivalent, per semester. The PTI-GA lines have been eliminated, and those funds were rolled into the state GA allocations.

Currently, the Graduate College is examining, and hopes to implement within a year, electronic processes for GA applications, GA hiring documents, and signatures on GA paperwork in order to make contract signing and employee orientation more efficient and less cumbersome for students and faculty.

2. Better use externally funded research awards as a means to support graduate student research and training.

The Graduate College continues to work to promote the inclusion of graduate assistant lines in faculty grants whenever feasible, but this will entail a multi-year effort. University-wide, the number of GAs currently funded by grants is 227 (out of 1,019 total GAs), representing $3.3 million in additional funding. Examples of grant-funded GAs include NSF EPSCoR (10), Urban Sustainability Initiative (7), the Lincy Institute (3), and numerous others through the National Science Foundation and Department of Energy. Another important component of this effort will be educating faculty about including higher stipends for GAs in their external proposals.

A multi-pronged approach has been employed to assist faculty and graduate students with improving their proposal-writing skills. The Graduate College Professional Development Committee will initiate a Research Certificate program in Fall 2010, including a proposal-writing component, to encourage graduate student research activity and funding. Proposal-writing workshops for faculty and graduate students are available through the GPSA, and training on the Responsible Conduct of Research is now offered each semester, including summer. The Graduate College has also created a new webpage to provide information and easy step-by-step calculation of the cost associated with hiring a GA using grant or contract funds. All of these efforts will continue.

3. Examine how state-funded GA lines are used currently.

The implementation team collected and analyzed new data on state-funded GAs, and the Graduate College conducted a workload study in Fall 2009 to assess how state GA lines were being used by graduate programs. The data generated from this study were used to inform the new GA funding model that was implemented in Spring 2010. As the new model completes its first full academic year of implementation, the Graduate College plans to assess the success of the program annually.

ACTION PRIORITY #2:
Continue to Define our Research Programs As Defined by Focus 50 to 100

1. Continue discussions with faculty stakeholders to create an inclusive research environment.

Initial faculty stakeholder discussions commenced through the 50-100 planning process. One of the suggestions emanating from that process was to purchase and implement a Digital Measures software application. This project will create a comprehensive faculty expertise database that is intended to improve faculty communication about their research interests and to better assist faculty in collaborating with colleagues across departments and colleges. The project has been delayed at several points due to limited funding and staff resources as well as a change in project leadership. However, professor Jerry Chang was recently appointed faculty lead for the project, vendor selection has been completed, and an updated implementation schedule is being developed.

The Urban Sustainability Initiative, the Lincy Institute, and Brookings Mountain West are encouraging collaborative, multi-disciplinary faculty and student research in a number of areas relevant to the university's mission. In Fall 2010, the Lincy Institute will award 6 competitive faculty fellowships of up to $20,000 each to support faculty scholarship in education, health care, and social services. Visiting Brookings Scholars from Washington, D.C. are paired with UNLV faculty and students during their on-

campus residency, and several collaborative research projects have already resulted from these interactions. As noted with more detail later in this report, the Urban Sustainability Initiative is supporting several interdisciplinary teams of faculty researchers as well as GAs in a variety of academic departments.

The Science and Engineering Building is hosting a seminar series to foster interdisciplinary interaction and research, and the Office of the Vice President for Research will continue to work with the Deans Council to promote interdisciplinary research in all of the colleges.

2. Publicize research activities more broadly and brand those efforts.

This ongoing effort is currently being addressed through a variety of internally produced media, including *UNLV Innovation*, the "Voices of Research" video, a redesigned research website, *UNLV Magazine*, and numerous publications produced by the academic colleges. Several colleges (e.g., Sciences) have active campaigns to publicize their research efforts and activities. A few departments publicize faculty research activities in their departmental newsletters (e.g., ECE Newsletter, 2008). The UNLV Foundation also promotes news of private gifts used to support faculty research in its "Inspiring Achievements" online newsletter.

Extensive promotional materials were developed to launch the Brookings Mountain West Initiative and The Lincy Institute in Fall 2009. Media coverage of the Brookings Scholars' presentations is ongoing. A new website for the Science and Engineering Building has been launched, and the formal dedication of the building in Spring 2011 will provide still more opportunities to publicize faculty research. Plans are also being developed for "science on display" activities in the facility, which, depending on adequate funding and staffing, may include viewing research through windows in the labs, video monitors in the lobby featuring program videos and video feeds from laboratories, glass case exhibits, a faculty seminar series, and the like.

Additionally, media coverage of UNLV researchers and their projects in the local and regional press has been more abundant and more positive in recent years. Greater numbers of research-oriented feature stories representing a variety of disciplines are being pitched successfully to the media. However, cost-cutting measures are negatively affecting the university's ability to produce printed publications and other collateral materials. The Division of Research and Graduate Studies continues to encourage faculty to include provisions for communication materials in their grant proposals. Websites and electronic publications are increasingly being used to publicize research. Recently, an institutional electronic repository/archive was established by the Lied Libraries, and it holds great promise for promotion of UNLV scholarly activity both nationally and internationally.

3. Focus faculty hires in areas directly relevant to UNLV's strategic goals.

Focused faculty hiring has been under way in units such as Chemistry (e.g., materials chemistry and radiochemistry) in the last few years, and it remains a high priority of the Executive Vice President and Provost. However, budget constraints may delay pursuit of this goal, as very few faculty hires are anticipated in the next biennia and possibly beyond. It should be noted that the delay in addressing this goal makes it increasingly important for the university to place emphasis on high quality programs in research focal areas. Increasingly, the university must work to acquire and use external funding to build faculty in key areas. This is already occurring in certain units. For example, as part of the NSF EPSCoR project, there will be three targeted faculty hires starting in Fall 2011 in Urban Affairs, Science, and

Engineering related to climate change. Additionally, there have been two hires in the biomedical area (one from Harvard Medical School) through the NIH-INBRE program, and a third hire is planned for Fall 2011. A proposal to the Department of Energy to create a Solar Solutions Center includes funding for numerous high quality faculty hires.

All of these targeted efforts must emphasize hiring faculty who bring with them substantial competitive funding in order to build the university's overall research program.

A new visiting and adjunct faculty program has been established with NSTec, the primary contractor for research and operations at the Nevada National Security Site (formerly the Nevada Test Site). This effort will bring NSTec nuclear physicists and radiochemists into UNLV's colleges of Science and Engineering.

A similar program, with an expectation for multiple joint faculty appointments, is being created with the Nevada Cancer Institute.

Statewide, research officers within the Nevada System of Higher Education are defining common high needs areas to boost Nevada's overall economic diversification. The 2009 Nevada Science and Technology Plan identifies nine key areas where NSHE institutions already have research strengths that benefit state needs and/or goals. The Nevada Vision Stakeholder Group recently issued its report with strategies and goals for advancing quality of life in the state. NSHE officers and other constituent groups will be lobbying the 2011 Legislature to implement a plan to emulate the Utah USTARS initiative, which is intended as a comprehensive state initiative to fund research and technology development, as well as workforce development, at NSHE institutions.

4. Increase the quality of existing graduate programs.

Assessment of quality of graduate programs is a continuing process. Program review protocols have been recently updated and improved. Resources are being dedicated to support graduate student professional development and their research endeavors through programs in the Graduate College and Graduate and Professional Student Association (GPSA). Ongoing efforts to improve the recruiting and retention of top-quality students through financial assistance were addressed earlier in this report.

The Graduate College and the Graduate Council continually seek to improve internal processes to enable graduate coordinators and students to focus on the quality of the academic experience rather than administrative/business practices. A variety of electronic initiatives have been launched in the last two years that have streamlined processes immensely, including electronic storage of records, creation of a portal for graduate students to track their progress, enhancements to the online application process, and electronic submission of theses and dissertations. Currently, the Graduate College is examining electronic methods for completing GA contracts as well.

A new electronic graduation survey will be implemented in 2010 to better assess graduate student outcomes and experiences. Finally, using the Council of Graduate Schools Ph.D. Completion Project as a model, the Graduate College plans to investigate the extent to which various factors impact progression through and completion of the doctoral degree at UNLV.

TEAM-ADDED PRIORITIES NOT INCLUDED IN THE ORIGINAL 50-100 PLAN

1. Encourage faculty to develop innovative and transformative research.

External competitive funding agencies such as the National Science Foundation and the National Institutes of Health are now evaluating research ideas on a relatively new criterion: the ability of an idea to transform the discipline. "Transformative research" is generally defined as research that has the potential for a major paradigm shift in a field of study. NSF defines this as a research idea that "has the potential to change the way we address challenges in science, engineering, and innovation." NIH defines this as research that is "innovative, original, or unconventional research that encourages researchers to seize unexpected opportunities and cultivate bold ideas regardless of the anticipated risk."

Given the relative recent commitment to this criterion, UNLV faculty must be made aware of it and encouraged to use it as a guide for developing and conducting their research. Two NSF proposal development workshops were held in June and July 2009 to help faculty develop high quality, competitive proposals and address NSF requirements regarding intellectual merit and broader impacts. The Urban Sustainability Initiative has implemented two seed grant programs to encourage interdisciplinary/transformative research. Twelve faculty teams are now being funded by these grants.

In 2010 UNLV initiated a new collaborative program in translational medicine with its sister institutions in the Mountain West region, including the University of New Mexico, UNR, and the University of Wyoming. The program will create an environment where regional research universities can collaborate on major research programs and share core facilities, faculty, and graduate students, while creating local "centers of excellence" that can be used by the consortium as a whole.

ACTION PRIORITY #3:
Develop Mechanisms to Promote Research Collaboration

1. Use the Digital Measures project to create a research expertise database.

One of the uses of the Digital Measures software application is as a faculty expertise database. Faculty will be able to enter information on their own expertise areas and search for other faculty members who share those interests. As previously noted, a new faculty project lead has been appointed, negotiations with the vendor are underway, and the implementation timeline is being revised.

2. Encourage collaborative research.

The university has seen a number of strides toward this goal in the past two years, with several new initiatives on the horizon, as well. In recent years, the President's Research Awards Program (PRA), Research Infrastructure Award Program (RIAP), and the EPSCOR programs have required collaborative research with faculty from multiple units. Unfortunately, the PRA and RIAP have been suspended due to lack of funding.

As previously noted, two rounds of the Urban Sustainability Initiative Urban 21 Seed Grant Program are now supporting 12 interdisciplinary research teams involving 14 separate departments. The awards are funded by a federal grant to the Urban Sustainability Initiative, with focal areas of research that align with community needs such as those identified in the Brookings Institution's "Mountain Megas" report.

In the 2010 internal call for federal appropriations proposals, out of 44 received, 23 (52%) included PIs from multiple colleges, and nine included PIs from multiple departments within the same college or unit; only 12 (28%) included co-PIs from the same department. These numbers suggest dramatic progress is being made in getting UNLV faculty to collaborate on proposal development. Similar success was observed in ARRA proposals submitted in 2009, with most having interdisciplinary PI teams.

As noted earlier, the Urban Sustainability Initiative, The Lincy Institute, and Brookings Mountain West are heavily invested in cross-disciplinary projects to benefit the local community. Six Lincy faculty fellowships will be awarded in Fall 2010 to support multi-disciplinary scholarship in education, health care, and social services.

New initiatives on the horizon include pursuit of an International Hydro Research Park in partnership with the Southern Nevada Water Authority, local developers, and Desert Research Institute; development of a Biosciences Road Map for the state, in partnership with the Cleveland Clinic and other NSHE institutions; faculty involvement in projects supporting the repurposing of the former Nevada Test Site, now called the Nevada National Security Site, in close collaboration with NSTec; growing the Nevada Renewable Energy Consortium; and establishing the Solar Solutions Center.

3. Embed collaborative research into promotion and tenure and/or annual review and merit.

Definitions of what constitutes collaborative research have yet to be established to date, including appropriate rewards for such activity. Discussions about these variables must include the Provost, deans, chairs, and the Faculty Senate and should approach such a potential transition from a thorough cost-benefit analysis.

4. Facilitate graduate students working across department boundaries.

UNLV is now offering five dual graduate degree programs, and two additional proposals for new dual degree programs are in the review process this semester. Additionally, two joint UNLV and UNR doctoral programs are offered in Nursing and Public Health, which encourages inter-university study and research. In addition, a new interdisciplinary graduate certificate program in Solar and Renewable Energy is in development and could potentially start in Spring 2011. The Water Resources Management Program currently offers a M.S. for students with diverse backgrounds.

Despite these efforts, no formal discussions have occurred on how existing graduate programs can promote more interaction across department boundaries. The Graduate College, graduate coordinators, the Faculty Senate, deans, and chairs will need to participate in these discussions. A first step is to compile the requirements from all the graduate programs to see how many limit the ability of students to take classes outside of their disciplines. The appropriate units should then be involved in discussing how to overcome these barriers. Another step would be to develop and offer more interdisciplinary master's and Ph.D. programs across units. Several of these already exist (e.g., Water Resources Management), and several more are in the planning stage.

5. Use the Science and Engineering Building (SEB) to encourage collaborative research.

The Science and Engineering Building is now approximately 90% occupied and operational.

Already, the majority of the SEB core labs (e.g., Environmental Soil Analysis Laboratory, GIS & Remote Sensing Laboratory, Genomics Core Facility, National Supercomputer Center for Energy and the Environment, and Applied Geophysics lab) are led by interdisciplinary researchers.

In 2009, an interdisciplinary seminar series was started, with faculty research team leaders discussing the work of their teams. This seminar series serves as a forum for developing collaborations and funding proposals across disciplines; non-SEB occupants are encouraged to attend. The SEB Steering Committee, composed of the Science and Engineering Deans plus five resident faculty, will handle this task. An active program of interdisciplinary seminars and other interactive programs have been initiated to help faculty from different academic units stay in contact with each other in order to promote collaborative efforts.

6. Encourage research that brings practice and basic research closer together (transformative research).

The implementation team recommends that Priority #6 be replaced by the following two priorities. Also, it should be noted that transformative research is addressed on page 5 of this report. Given that it is not necessarily considered collaborative in nature, transformative research is not addressed in this section.

6A. Develop interdisciplinary research teams that address the needs of the community.

New initiatives (like those involving The Lincy Foundation and the Brookings Institution) are establishing greater links between community needs and the research of UNLV faculty/staff/students. Additionally, the request for proposals for FY10 and FY 11 appropriations was aligned with UNLV research priorities and reflected the needs of the community. Faculty were asked to identify how their proposed projects fit into hard infrastructure (energy, water, transportation, built environment), soft infrastructure (health, education, immigration, land use policies), and innovation (commercialization, economic diversity/growth). Finally, these interdisciplinary research teams are also being encouraged to write competitive research proposals in response to new, innovative initiatives from agencies such as NSF and NIH.

The current EPSCOR project on climate change addresses the potential impacts in Nevada. This is a $15 million statewide project where faculty and students are working in areas of climate modeling, water resources, ecology, cyber-infrastructure, policy, and education. The overall goal is to establish Nevada as a leader in climate change research, education, and outreach.

The Division of Research and Graduate Studies has led several efforts to bring together interdisciplinary research teams related to healthy communities, regional transportation, and climate change education. The Urban 21 seed grants previously mentioned were specifically designed to bring together new research teams across and within colleges.

Despite the successes to date, work on this goal will be ongoing.

6B. Encourage collaboration with outside partners.

The Office of the Vice President for Research actively meets with outside entities to identify ways that additional partnerships with UNLV faculty can be facilitated. Many efforts are already

underway. The partners are from the private- and public- sectors, such as the Regional Transportation Commission, Clark County School District, Clark County Health District, Southern Nevada Water Authority, MGM Mirage, the Las Vegas Metropolitan Police Department, Nevada National Security Site, NSTec, Sandia National Lab, Nevada Cancer Institute, NV Energy, Pulte Homes, Nevada Economic Development Commission, Varian Medical Systems, various municipalities, and a number of solar energy companies. These efforts are in addition to a variety of partnerships with other research institutions and federal agency sponsors of research. Additionally, IRB collaboration agreements are in place with the University of Nevada-Reno and Sunrise Hospital. IRB reliance agreements are currently used with other local and nation-wide collaborators. A memorandum of understanding is being developed to permit access to UNLV libraries and computers for outside partners.

A joint research symposium with the Nevada Cancer Institute is planned for early spring semester 2011, with follow-up discussions to continue between the two organizations. In a broader sense, the anticipated Nevada Biosciences Roadmap is designed to establish working relationships with many Nevada business entities that operate in the broad areas of bioscience, bioengineering, etc. These working relationships will focus on research areas of mutual interest that have significant opportunity for future economic development.

In addition, the mission of the Harry Reid Center for Environmental Studies was refocused in 2008, and the activities are now better aligned with projects by faculty in academic departments. Developing an exchange seminar series with local research-oriented agencies and institutions, such as the Environmental Protection Agency and the Desert Research Institute, may also foster new collaborations. Additionally, new relationships with nonprofit agencies in the community are already occurring through the Lincy Institute.

Collaborations between UNLV and the Desert Research Institute (DRI) have occurred for many years in the Colleges of Engineering and Sciences. These have included DRI faculty teaching classes and participating on graduate student committees. To date, the most notable collaboration between UNLV, DRI, and other NSHE institutions is on the NSF EPSCoR climate change project noted previously.

ACTION PRIORITY #4:
Create a Culture of Research Excellence

1. Create additional methods of promotion for senior faculty to encourage life-long research.

No discussions on strategies to achieve this specific priority have occurred; however, an increased emphasis on the value of research should be incorporated into the faculty reward system in general (annual evaluation, merit, promotion and tenure, research reassignment, sabbaticals, and allocation of laboratory space). The system needs to consistently reward high quality research and creative activity. In addition, cross-disciplinary research should be encouraged, acknowledged, and rewarded. Annual evaluation and merit formulae for such faculty should then place more weight on research productivity, collaboration, and community impact.

As a step in this direction, the implementation team began collecting existing policies on rewards in Spring 2009. From the data collected on the merit, tenure, and promotion criteria from various colleges,

it appears that all colleges do place high value on scholarly activities and reward faculty through high merit increases, work load reassignment, and promotion and tenure. The implementation team recommends the colleges and schools form ad hoc committees to determine what constitutes high quality research and creative activity; while based on objective criteria, such a determination must begin with faculty within each discipline. Individual colleges should determine what high quality scholarly activity is, and some colleges have done so. The implementation team recommends this topic be further discussed in the Deans Council.

Although faculty teaching loads have increased over the past two years as a result of state budget cuts, a steady number of proposals have been submitted over the same time period, an indication that faculty continue to pursue extramural support for their research programs despite increased workloads. The total number of proposals submitted increased 9.2% (696/760) from FY08 to FY10, while the total dollar amount of the proposals increased 41.6% ($228.4M/$323.3M) over the same period. Total award funding increased 30% from FY08 to FY10 ($73.7M/$96M).

To substantively make progress toward this goal, the university should have a faculty development program that guarantees both that new faculty members have mentors and all faculty members have opportunities for professional development.

2. Raise funds for endowed chairs and nationally competitive graduate scholarships.

The Division of Research and Graduate Studies has identified graduate fellowships as a priority for private fund raising and has partnered with the UNLV Foundation on a number of promotional pieces to educate prospective donors about the need for fellowships. The effort has already produced a new graduate fellowship in the life sciences, the Hermsen Fellowship, and additional support of graduate students with Alumni Association scholarship funds. Additional discussions with the UNLV Foundation (and prospective donors) will be pursued regarding support for endowed chairs. The university should also seek internships with private employers for graduate students in selected fields, where appropriate.

3. Change department cultures through clustered research hires.

Clustered hires are designed to build critical mass in specific areas of research strength. Discussions on this subject have not yet occurred at the campus level. The Deans Council will need to consider a new hiring paradigm that allows cross-disciplinary hires in key focus areas, in addition to FTE-based hiring to meet teaching needs within departments. Clustered research hires within departments may also be used to refocus a group or department on research. At least two of these types of hires have already been made and have worked well, including: (ARE THERE ADDITIONAL RECENT EXAMPLES?)

- Professors Laurel Raftery and Martin Schiller were tenured hires in the School of Life Sciences to provide leadership and help build UNLV's critical mass in biomedical sciences.
- Professor Stephen Brown was hired as the new director for the Center for Business and Economic Research. His background is in energy economics.
- The School of Environmental and Public Affairs is currently searching for a tenure-track position in Energy Policy.

4. Maintain low teaching loads for research-active faculty.

Given recent and anticipated budget cuts, the implementation team recommends this goal be changed to "Maintain moderate teaching loads for research-active faculty," but the reality is that if UNLV is to meet its goal to increase its standing as a research university, its teaching loads must be competitive with its aspirational peers. To maintain moderate teaching loads in a climate of negative public perception about the number of classes taught by professors, the university will need to better document the positive outcomes resulting from reduced loads.

A workload policy for reducing course loads for research active faculty is already in place in the College of Sciences and College of Business. The implementation team recommends that other colleges (especially the Howard R. Hughes College of Engineering) should be encouraged to adopt a similar policy.

5. Create incentives for competitive grant writing.

This goal was addressed for a limited time through the now-suspended President's Research Award program, which supported faculty acquisition of competitive awards. Meanwhile, new expectations have been established for faculty receiving federal appropriations; awardees are now expected to use the appropriation as a springboard to competitive funding, rather than merely seeking sequential federal appropriations. In addition, requirements for writing competitive proposals are included in research awards through the URBAN21 program.

The implementation team recommends that faculty who are successful at writing competitive proposals should be rewarded with merit, workload reduction, and tenure and promotion. It further recommends establishing a consistent method of conducting analyses of proposals that barely missed funding.

While three proposal-writing workshops (ARRA, NSF) were conducted in Spring and Summer 2009 to help faculty improve their writing skills, the current budget situation limits progress that may be made on this goal because of the lack of dedicated staff support.

ACTION PRIORITY #5:
Improve Research Infrastructure

1. Use Hobson's Index to improve graduate student tracking, admissions and progress toward degree.

The Graduate College has expanded use of the Hobson's Enrollment Management Technology Solutions system to enhance the ability of the Graduate College and graduate coordinators to track graduate student progress. For the past two years, the students have had a portal through which they can personally track progress through their degree program. These features are now migrating into MyUNLV, the user-friendly portal behind which the new Peoplesoft student information system operates.

The Division of Research and Graduate Studies has also developed a system for online reporting for admissions/enrollment reports. In January/February 2009, the next phase of the Hobson's system will be implemented with the introduction of an enhanced online application process, called "EMT Apply Yourself." This new product will provide students with greater convenience and ease in applying to graduate school, as well as provide the Graduate College with a much more effective means of communicating with prospects and applicants. Finally, this system offers tremendous support for

graduate coordinators and graduate programs by shifting some of the application processing from their offices to the Apply Yourself (AY) portal managed by the Graduate College. Each of these electronic initiatives has been successfully and fully implemented. Ongoing training sessions are held for those required to navigate these systems.

As the culture changes and students rely upon their VIP page (soon to be their forms checklist and other functionality in MyUNLV) from initial enrollment through graduation, this technology will become even more valuable to them. With graduate coordinators becoming more adept at using AY, the turnover time will decrease further, enabling UNLV to deliver admissions decisions in a more timely fashion and be more competitive for those students who are being recruited elsewhere. These electronic initiatives have improved communication for the Graduate College both internally and externally and have made the admissions and matriculation process more efficient and reliable.

2. Improve proposal-writing support.

This goal is being partly addressed through more focused and unit-specific pre-award support through the Office of Sponsored Programs. In addition, in an effort to improve the overall quality of proposals being submitted by faculty, the Division of Research and Graduate Studies has been providing funding for faculty members to use contracted, off-campus, experienced readers/editors/writers to assist with polishing proposals. To date, the Division of Research and Graduate Studies has provided $70,656 to assist nearly 20 departments.

3. Adjust the campus F&A recovery rate to a level that effectively supports current campus costs.

The on-campus Organized Research rate was established at 48% effective 7/1/2007 and then dropped to the current rate of 44% effective 7/1/2009. Plans to achieve the goal of adjusting the rate have been factored into the next round of F&A (facilities and administrative) negotiations with the federal government. UNLV has negotiated a timetable for submitting its next F&A proposal in late 2011, which will allow sufficient time for two new buildings (SEB and Greenspun Hall) to be fully occupied and for sufficient operations data to be produced to elevate the F&A rate to a level comparable to the pre-2007 rate, and more in line with current campus support costs.

TEAM-ADDED PRIORITIES NOT INCLUDED IN THE ORIGINAL 50-100 LIST

1. Fast-track technology commercialization and establish an Intellectual Property (IP) committee on campus.

Although the Division of Research and Graduate Studies lost its one-person technology transfer office to budget cuts, it is nevertheless aggressively moving to protect IP through filing of patents and provisional protection with the assistance of off-campus counsel. In addition, the Division is working to secure licenses for UNLV intellectual property, including licenses for two patents that will issue in 2010 and various other pending patent applications. As part of this effort, the Division retained UNLV's outside patent attorney as a technology transfer consultant. The consultant's role includes providing education and training to faculty and staff regarding invention disclosures, reporting requirements, prior art searches, the patent application process, and commercialization efforts. This structure is building relationships with faculty and staff and encouraging confidence in the technology transfer office to ensure compliance with UNLV/NSHE intellectual property and technology transfer policies.

In addition to these efforts, the implementation team recommends the establishment of an IP Committee with the express purpose of reviewing and evaluating research disclosures, making decisions regarding proceeding with patent applications, and analyzing licensing and other technology transfer opportunities. This committee will be jointly led by the Associate Vice President for Research and deans of the colleges of Science and Engineering, and will include UNLV faculty, staff, patent counsel, and external constituents well versed in intellectual property protection and commercialization. The mission of the committee will be to streamline the patent application process and aid commercialization efforts by linking faculty-based IP with regional companies as early as possible. Additionally, the IP committee will develop policy and procedures for disclosures, patenting of IP, IP conflict of interest, licensing of IP, new company start-ups based on UNLV IP, relations with capital investments, new statewide IP entities for commercialization, and equity holdings.

Efforts are underway this fall to assemble the committee and convene its first meeting in Spring Semester 2011.

2. Improve compliance communication.

The campus has initiated Conflict of Interest (COI) training for all academic units, as well as an official campus-wide reporting structure to meet nationally recognized standards in this area. Similar structures are currently being established for export control guidelines. Responsible Conduct of Research (RCR) training has also been developed and is being offered each semester as an eight-hour course for research faculty, staff, and students. UNLV research-active faculty members are heavily involved in this outreach activity. Communication among review boards, staff, and researchers has also been improved through targeted education and outreach activities.

3. Implement electronic protocol service for IRBs, grant routing for sponsored programs, and other electronic initiatives.

A significant effort has been undertaken over the past year to implement a fully electronic (paperless) system for Institutional Review Board protocol submission and processing through the Office of Research Integrity. All protocols are now submitted through CyberIRB or via email. A similar effort is underway for internal grant routing and agency proposal submission through the Office of Sponsored Programs, which is anticipated to be fully electronic by the end of 2010. The Office of Sponsored Programs is also rolling out a quarterly (rather than monthly) "time and effort" reporting system to significantly reduce the clerical burden on researchers. The division is also moving forward on having research-active emeritus faculty assist in campus IRBs.

Due to recent budget cuts, the division recently halted the search for a director of data resources. This limits the division's ability to develop a number of software application projects that would greatly enhance research services to the faculty. The division is exploring other options to address these projects, either using existing university services or hiring consultants. Automation of business processes will be increasingly important as the university deals with staff shortages produced by recent budget cuts.

4. Improve research safety protocols.

This goal has been addressed through the formation of committees on Biosafety and Chemical Safety. The Biosafety Committee meets quarterly to review research that uses recombinant DNA, pathogenic organisms, etc. The Chemical Safety Committee meets regularly to review chemical safety concerns at UNLV. The Research Division also participates directly in a campus-wide Radiation Safety Advisory Committee.

5. Increase research staff support.

In 2007, the Division of Research and Graduate Studies made a concerted effort to increase research staff support in several key areas based on feedback from the campus: sponsored projects, technology transfer, Graduate College admissions, and data management. Approximately 13 new staff were hired on soft-money, but by 2010 only 2 of those positions remain (both in sponsored programs); all of the others were lost to budget cuts.

Since that time, two replacement positions were authorized due to resignations: the Executive Director for the Office of Sponsored Programs and the Animal Care Lab Manager. And with the opening of the Science and Engineering Building, the division was permitted to hire a full-time operations manager and a machine-shop operator, the latter supported by F&A generated from SEB grants and recharge from the facility.

Ideally, if UNLV is to attain its goal of reaching the highest Carnegie Foundation research ranking, the number of research staff should be restored to at least the levels attained in 2007. Additional, dedicated technical support in key core facilities and in IT support will also be needed if this goal is to be reached. Finally, this goal cannot fully be met solely through centralized research support staff; it must also include increasing the quantity and quality of departmental support positions to significantly reduce the administrative burdens currently placed on researchers so they can perform more research and submit more and higher quality proposals. These additional staff also are an asset when promoting a culture of compliance.

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APPENDIX 1

STATE OF UNIVERSITY RESEARCH AT UNLV

Support From Appropriations Requests

A key reason for the decline in research support at UNLV since the peak year of FY '07 is a significant decline in support from direct federal appropriation (earmark) requests. The percentage of total research funding designated as appropriations declined from 59% in FY 2007 to 28% in FY 2008, rose to 40% in FY 2009, and then declined to 23% in FY 2010. This indicates an increase in competitive grant awards in FY 2010, since total research funding was very similar between FY 2009 and FY 2010.

FY 2007			
	Total Research Award Funding	**Congressional Earmarks for Research**	**Earmarks as % of Total Federal Research Funding**
Federal	$ 38,834,088	$ 20,512,228	53%
Federal Pass-through	$ 30,478,017	$ 20,231,482	66%
TOTAL	**$ 69,312,105**	**$ 40,743,710**	**59%**

FY 2008			
	Total Research Award Funding	**Congressional Earmarks for Research**	**Earmarks as % of Total Federal Research Funding**
Federal	$ 25,226,273	$ 7,814,870	31%
Federal Pass-through	$ 9,451,214	$ 1,809,856	19%
TOTAL	**$ 34,677,487**	**$ 9,624,726**	**28%**

FY 2009			
	Total Research Award Funding	**Congressional Earmarks for Research**	**Earmarks as % of Total Federal Research Funding**
Federal	$ 27,881,510	$ 12,766,491	46%
Federal Pass-through	$ 8,022,693	$ 1,549,538	19%
TOTAL	**$ 35,904,203**	**$ 14,316,029**	**40%**

FY 2010			
	Total Research Award Funding	**Congressional Earmarks for Research**	**Earmarks as % of Total Federal Research Funding**
Federal	$ 22,583,067	$ 7,631,889	34%
Federal Pass-through	$ 13,390,905	$ 729,277	5%
TOTAL	**$ 35,973,972**	**$ 8,361,166**	**23%**

UNLV Funding Sources by Federal Agency

The dollar amount of total research awards in FY 2008-2010 by federal agency source is shown below. UNLV has a strong history of primary support from the Department of Energy (DOE), with a three-year average of $11.7 million per annum. The Department of Education provides a solid base of support for UNLV, but many of these funds support community outreach activities as opposed to direct research support. UNLV is regionally unique in having the Department of Interior as a primary research sponsor. Many of these funds support programs through the Public Lands Institute (PLI), reflecting the strong federal land management mandate in the Southern Nevada region and UNLV's active participation in those efforts. Funding from the Department of Transportation is viewed as another growth area, given UNLV's vibrant Transportation Research Center (TRC). UNLV has a modest NIH funding portfolio, an area of research support that the university is emphasizing in future planning.

UNLV Research Awards by Federal Agency – 2008-2010

(all awards in Millions)

Agency	2008	2009	2010	Mean
Dept. of Energy (DOE)	9.2	12.3	13.5	11.7
Dept. of Education (USDE)	15.5	8.7	8.7	11
Dept. of Interior (DOI)	4.4	4.8	2.1	3.8
National Science Foundation (NSF)	3.75	2.4	2.9	3
Dept. of Defense (DOD)	3.1	2.7	0.6	2.1
US Dept. Agriculture (USDA)	2.1	3.3	0.7	2
National Institutes of Health (NIH)	1.6	1.4	1.7	1.6
Dept. of Transportation (DOT)	0.28	0.41	0.46	0.38
Dept. of Justice (DOJ)	0.05	0.61	0.31	0.32
Environ. Protection Agency (EPA)	0.97	0	0	0.32
NASA	0.18	0.11	0.21	0.17
Dept. of Commerce (DOC)	0.37	0.06	0	0.14

State Research University R&D Support

Based on FY 2008 data, UNLV ranks 170th in national research funding, versus 129th for UNR and 190th for DRI, the other research institutions in the state. A statewide analysis of research funding shows that Nevada universities have higher federally-supported funding but lower state- and industry-supported research support than comparable national universities. UNLV, in particular, has a significant amount of federal pass-through funding, indicating that UNLV researchers fund a significant amount of their research from sub-contracts in collaboration with PIs from other institutions. By discipline, UNLV achieves its highest national rankings in environmental sciences and the physical sciences. UNR and DRI have similar portfolios. All three institutions have reduced relative funding in the Life Sciences area

(biomedical and molecular biology), with UNR having the most competitive portfolio due to the state's medical school being located in Reno. *Of particular note is that UNLV was ranked 4th in the nation in funding from the DOE in 2008*.

2008 R&D Expenditures — National Rankings

Parameter	UNLV	UNR	DRI
By Source			
Total R&D Expenditures	**170**	129	190
Federally Financed	151	123	167
Industry Financed	224	191	243
Nonfederal (State & Local)	218	137	232
Pass-through (total)	21	102	130
By Discipline			
Engineering	128	133	0
Computer Sciences	107	147	0
Environmental Sciences	48	40	20
Life Sciences	217	127	326
Physical Sciences (chemistry/physics)	77	71	0
Psychology	174	140	0
Social Sciences	125	148	294
By Agency			
Dept. of Defense	163	155	99
Dept. of Energy	**4**	8	32
DHHS (NIH)	232	127	0
NASA	184	156	131
NSF	165	99	130
USDA	90	60	166

The Mountain West R&D Expenditures

Within the Mountain West region, the State of Nevada ranks 5th out of eight states in total research funding, which generally correlates with population. However, regional trends in research funding are very instructive. First, Nevada has a higher relative ranking in federal funding than the other states in the region. This is because State and Industry support is lower in Nevada than in neighboring states such as Arizona (higher state/institution support) and Colorado-Montana (higher industry support). Second, Nevada has experienced a significant decline in research support by industry sources over the past five years (through 2008) while Utah and Colorado have seen significant increases.

2008 R&D Expenditures — Mountain West State Rankings

(all expenditures in millions; states listed in descending order for All R&D)

State	All R&D	Federal	State	Industry	Institution
Colorado	924	722	19.7	50	49
Arizona	831	417	58	31	276
Utah	426	278	29	22	73
New Mexico	417	287	25	15	84
Nevada	**191**	**138**	**12**	**3.4**	**34**
Montana	186	111	28	7.9	35
Idaho	113	67	22	5.1	17
Wyoming	75	28	6	2	37

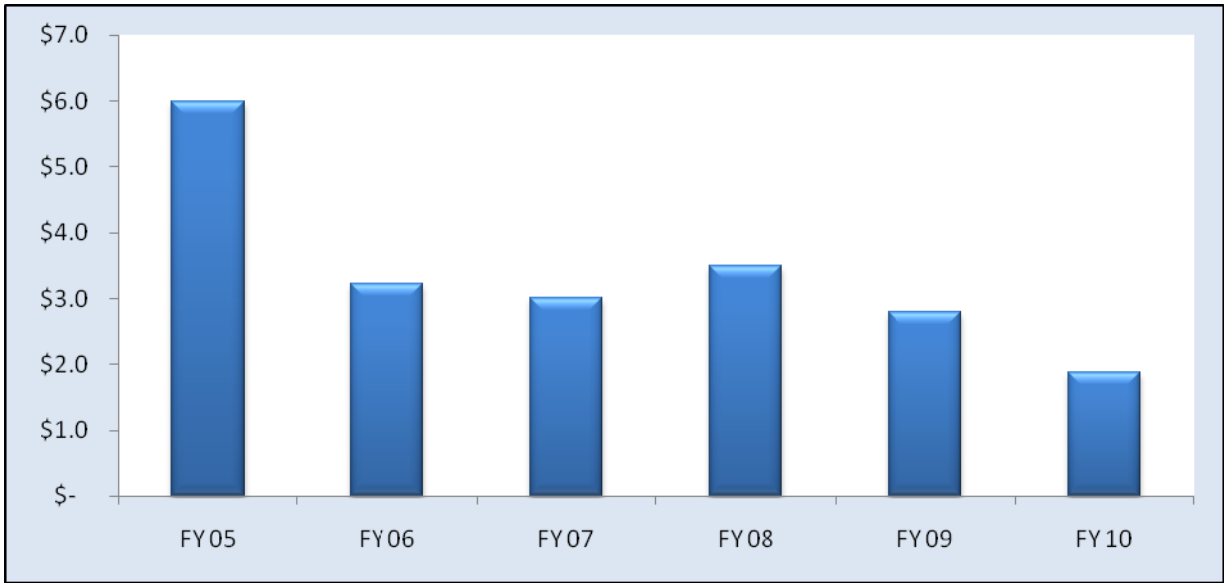
Percent Increases Since 2003 (five years; declines in red)

Colorado	33	35	(36)	35	27
Arizona	35	22	47	(23)	60
Utah	11	5	29	129	28
New Mexico	36	43	69	(3)	22
Nevada	**24**	**34**	**52**	**(40)**	**2**
Montana	32	31	32	14	31
Idaho	8	20	18	(17)	(26)
Wyoming	25	22	300	(22)	28

State Support for Research

The data on state support of research are very mixed. Data from 2003 to 2008 show a ca. 50% increase in state support for all three research universities combined. However, support for research from State of Nevada sources to UNLV has declined over the past five years (2005-2010; see below). The most significant decline occurred between FY 2005 and FY 2006, a 50% drop in research support, after which the funding level from state sources has remained relatively constant. The cause of the FY 2005 to 2006 decline is not readily apparent, although it did coincide with the transition from the Guinn to Gibbons administrations in Carson City. A second decline has occurred from 2008 to 2010 (46%), presumably as a direct result of the state budget deficit over the past two years.

State Supported OSP Funding						
	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10
(In Millions)	$ 6.0	$ 3.2	$ 3.0	$ 3.5	$ 2.8	$ 1.9



Conclusions

UNLV has an active (ca. $100 million) sponsored programs portfolio that is focused on several key areas of relevance to Southern Nevada: energy; education; environmental sciences (including water resources); transportation; and health care. The university is transitioning from significant support from appropriations requests to a more competitive-based portfolio, and is also cultivating stronger ties with regional utilities (e.g., NV Energy, Southern Nevada Water Authority), other research institutes (e.g., Nevada Cancer Institute, Lou Ruvo Brain Institute), and private companies (e.g., Pulte Homes, Acciona Solar). An active outreach program to the community and business interests is resulting in new partnerships that will significantly increase research support, technology transfer, and the diversification of the Southern Nevada economy as it moves beyond the current recession into a new economic model for the region.

APPENDIX 2 SUMMARY TABLE – PROGRESS TOWARD ACTION PRIORITIES, 2008-2010					
ACTION PLAN STATEMENT	**COMPLETED**	**SUBSTANTIAL PROGRESS**	**MODEST PROGRESS**	**NOT YET ADDRESSED**	**CORRELATES TO NWCCU CORE THEME**
Use access funds to expand recruiting of highly qualified graduate students		X			• Promote student success
Increase graduate student scholarship support			X		• Promote student success
Change the state's formula funding				X	• Advance & Support Research, Scholarship & Creative Activity
Provide graduate student housing as a recruitment mechanism			X		• Promote student success
NEW: Reorganize and revitalize the Graduate Assistant program		X			• Promote student success
NEW: Promote external research awards as a means to support graduate student research and training			X		• Promote student success • Advance & Support Research, Scholarship & Creative Activity
NEW: Examine how state-funded GA lines are currently used	X				• Promote student success
Continue discussions with faculty stakeholders to create an inclusive research environment			X		• Advance & Support Research, Scholarship & Creative Activity
Publicize research activities more broadly – brand efforts		X			• Advance & Support Research, Scholarship & Creative Activity • Foster Community Engagement
Focus faculty hires in areas directly relevant to 50-100			X		• Advance & Support Research, Scholarship & Creative Activity
Improve the quality of existing graduate programs		X			• Promote student success
NEW: Continue discussions to specify research focal areas that are responsive to the needs of the community, state, and Intermountain West region		X			• Advance & Support Research, Scholarship & Creative Activity • Foster Community Engagement

ACTION PLAN STATEMENT	COMPLETED	SUBSTANTIAL PROGRESS	MODEST PROGRESS	NOT YET ADDRESSED	CORRELATES TO NWCCU CORE THEME
NEW: Encourage faculty to develop innovative and transformative research			X		• Advance & Support Research, Scholarship & Creative Activity
Use Digital Measures software to create a research expertise database			X		• Advance & Support Research, Scholarship & Creative Activity • Foster Community Engagement
Create incentives that encourage collaborative research			X		• Advance & Support Research, Scholarship & Creative Activity • Foster Community Engagement
Embed collaborative research into promotion and tenure and/or annual review and merit				X	• Advance & Support Research, Scholarship & Creative Activity
Facilitate graduate students working across department boundaries			X		• Promote student success
Use the Science & Engineering Building to encourage collaborative research		X			• Advance & Support Research, Scholarship & Creative Activity • Foster Community Engagement
DELETED: Encourage research that brings practice and basic research closer together					
NEW: Develop interdisciplinary research teams that address the needs of the community, state, and region			X		• Advance & Support Research, Scholarship & Creative Activity • Foster Community Engagement
NEW: Encourage collaboration with outside partners		X			• Advance & Support Research, Scholarship & Creative Activity • Foster Community Engagement
Create additional methods of promotion for senior faculty to encourage life-long research				X	• Advance & Support Research, Scholarship & Creative Activity
Raise funds for endowed chairs and graduate scholarships			X		• Promote student success • Advance & Support Research, Scholarship & Creative Activity

ACTION PLAN STATEMENT	COMPLETED	SUBSTANTIAL PROGRESS	MODEST PROGRESS	NOT YET ADDRESSED	CORRELATES TO NWCCU CORE THEME
Change department cultures through clustered research hires			X		• Advance & Support Research, Scholarship & Creative Activity
REVISED: Maintain moderate teaching loads for research-active faculty			X		• Advance & Support Research, Scholarship & Creative Activity
Create incentives for competitive grant-writing			X		• Advance & Support Research, Scholarship & Creative Activity
Use Hobson's Index for graduate student tracking	X				• Promote student success
Improve grant-writing support			X		• Advance & Support Research, Scholarship & Creative Activity
Adjust the F&A recovery rate			X		• Advance & Support Research, Scholarship & Creative Activity
NEW: Fast-track technology commercialization				X	• Advance & Support Research, Scholarship & Creative Activity
NEW: Improve compliance communication			X		• Advance & Support Research, Scholarship & Creative Activity
NEW: Implement electronic protocol service for IRBs, grant routing for sponsored programs, and other services				X	• Advance & Support Research, Scholarship & Creative Activity
NEW: Improve research safety protocols		X			•Advance & Support Research, Scholarship & Creative Activity
NEW: Increase research staff support				X	•Advance & Support Research, Scholarship & Creative Activity