INSTITUTIONAL STRATEGIES TO INCREASE GRANTS AND CONTRACTS

September 2013
Prepared by the Office of Academic and Student Affairs
Board of Regents

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The University of Nevada, Las Vegas has been working with key campus stakeholders and external partners to identify strategies to increase grant activities. Key objectives were agreed upon during 2012-2013. During academic year 2013-2014, performance indicators and benchmarks will be established.

**General Strategies**

- Continue making targeted, high-impact hires in grant active areas (e.g., engineering, science, hotel, health sciences)
  - 13 faculty hired in 2012-13 at cost of $6 million
  - One impact of these hires is that $20 million in grant proposals have been submitted since July 2012
- Fully establish the Collaborative Research and Education (CoRE) program
  - Identify and develop teams to pursue high-profile, high-dollar institutional interdisciplinary grants
  - 6 topical meetings being held in September-October 2013 to further develop the initiative
- Provide internal funding to help faculty increase the amount of research/scholarly and creative activity funded through competitive solicitations
  - Faculty Opportunity Awards totaling $500,000 in 2012 and $400,000 in 2013 require recipients to submit a major external grant or finish a scholarly/creative project
  - New in 2013 – 5 Innovation Technology Awards to seed-fund research disclosures and patents
- Establish clear goals and metrics for research funding at the college/unit level
  - Quarterly reports are now provided to every dean from the Office of Sponsored Programs, which track performance down to the unit level
  - As an example, the College of Engineering metrics demonstrated increases in awards in FY11-12 ($3.6 million) to FY12-13 ($7.1 million)
- Establish variable teaching loads that accommodate research-productive faculty.
- Establish proposal development grant-writing and editing teams
- Develop a statistics support center to assist faculty with research projects
  - An effort is underway to assess a potential, university-wide role for the Center for Research, Evaluation and Assessment
- Identify and increase assistance to highest producing researchers
- Continue offering grants workshops
  - Topical grants workshops for all faculty and staff
  - Tailored training workshops for faculty in colleges
- Improve and increase research space
  - Vivarium Master Plan and Research Master Plan
  - Research Visualization Facility
  - Core labs in Harry Reid Center and Science and Engineering Building
  - Accelerator Facility
- Increase applications for grants to Minority-Serving Institutions
• Department of Defense - Research and Education Program for Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI) Equipment/Instrumentation
  • Continue memberships in national and regional research consortiums and associations
    o Oak Ridge Associated Universities (109 major Ph.D.-granting academic institutions)
    o US Department of Interior Great Basin Cooperative Ecosystem Studies Unit (8 federal agencies and 15 universities)

Economic Development Strategies:
• Continue to work with GOED on the state-wide Unmanned Aerial Systems (UAS) initiative
  o Lead the NSHE effort in the FAA proposal submission
  o Hosted a two-day conference in partnership with GOED, Nellis Air Force Base, and private companies
• Capitalize on State of Nevada Knowledge Fund opportunities
  o Clinical Trials Design Initiative, Global Gaming, UAS, Security Technologies
• Align areas of research to fit within the GOED economic development sectors and other economic development entities (e.g., Las Vegas Global Economic Alliance)
• Facilitate collaboration with external research partners to increase applied and translational research
  o Cleveland Clinic/Lou Ruvo Brain Center (NIH COBRE proposal on neurodegeneration)
  o “Prevent Alzheimer’s Disease by 2020” organization (national computer modeling system for the study of complex brain disorders)
  o Switch Communications (research cloud computing environment)
  o Varian (Accelerator Facility)
  o NSTeC
    o Over the past three years, research funding through NSTec has increased from $300K (2010), $1 million (2011), to $2 million (2012)
  o Pathion and Los Alamos (battery technology)
  o Arcata/Teledyne Brown Engineering (NASA research)
  o Cohen Medical (biodegradable platforms for the timed release of pharmaceuticals)
  o VA Hospital
• Actively pursue venture capital, seed investment, business incubation, and start-ups
  o Revamped, revitalized UNLV Business Startup Center
  o Rebel Venture Fund
  o SBIR/STTR Summer Grant Program to foster the growth of grant applications
• Increase research disclosures and patent filings
  o 100% increase in research disclosures between FY2012 and FY2013 (9 → 18 received), 10 of which have/will have patent applications filed
  o 104% increase in patent applications filed between FY2012 and FY2013 (5 → 14)
  o Review/update underway of university IP policies to remove obstacles
• Implement an aggressive plan to market the advantages of recently passed AB 138 to companies that provide R & D monies to UNLV.
University of Nevada, Reno

What institutional strategies are you pursuing to increase grants and contracts from all sources including federal, federal pass-through, State of Nevada, other state and local government, foreign governments, and private (for and non-profit) entities.

Strategies employed by the University of Nevada, Reno to increase grants and contracts include:

- Strategic faculty hires who have demonstrated success securing competitive grant funding;
- Aggressive program to retain outstanding faculty who are being or are likely to be recruited by other universities;
- A Research Fellows Program where faculty, nominated by their dean, receive a year of mentorship from an accomplished grants person through workshops and one-on-one interactions;
- Increasing the availability of undergraduate research awards to encourage outstanding undergraduate students to participate in research;
- Increasing graduate stipends to make us more competitive for recruiting outstanding graduate students;
- Strategic discussions with federal, state and local program managers that allow us to be more proactive in responding to program initiatives and funding opportunities;
- Close communication with legislative delegation to strategically leverage political support for specific initiatives and funding opportunities;
- Providing grant-proposal editor/reviewer services;
- Providing a part-time position to identify interdisciplinary research funding opportunities and facilitate project development;
- Transitioning to a more effective web search program to identify external funding opportunities
- Training programs for utilizing funding search engines;
- Streamlining grants submittal procedures;
- More aggressive pursuit of foundation sources of funding, such as the Keck Foundation and Gates Foundations
- Aggressive pursuit of private/university research partnership, e.g. NV Tech...
What are you additional plans for research initiatives going forward? If specific research strategies include collaborations with community colleges, provide a brief statement on the engagement activities.

Additional research plans/initiatives from the University of Nevada, Reno include:

- Efforts to enhance/leverage research projects that involve unique research capabilities within the University, (e.g. research collaboration internationally with the Earthquake Structures facility; the TerraWatt facility with its laser capacities);

- Efforts to enhance biomedical research such that the basic sciences research that is well established will be complimented by clinical research by establishing a clinical research support team in OSP;

- Adoption of an institutional “Strategic Plan for Advancing Research, Scholarship and Creative Expression” that expands the research portfolio, increases interdisciplinary research activities, and enhances undergraduate and graduate research efforts;

- Strategic faculty hires to develop and enhance current research around three cutting-edge foci – cybersecurity, large data management, and advanced manufacturing;

- Administrative restructuring will place greater emphasis on translational research. The current position of Vice President for Research will be retitled “Vice President of Research and Innovation” as of Oct. 1, 2013, when Dr. Mridul Gautum begins his appointment at UNR. Further, the current VPR also holds the title of Dean of the Graduate School. As of Oct. 1, the Dean of the Graduate School will be a separate administrative position, which will allow the VPRI to focus on enhancing grant funding and public-private partnerships;

- Develop policies for more expeditious hiring of grant-supported research staff;

- Coordinate existing multidisciplinary graduate research programs and develop policies and incentives to encourage more synergistic interactions across disciplines and with other institutions.
Workforce, Research and Economic Development (WRED) Committee

Until October 2011, Nevada State College did not have an Office of Sponsored Projects. Prior to that date, administrative support for all grants and contracts was provided by the Controller’s Office, with daily grant management residing at the department level. With the addition of the Director of Budgets and Sponsored Projects Administration position, Nevada State College now has a centralized Sponsored Projects Office (SPO) to assist faculty with the identification of extramural funding sources and the writing/submission of proposals while ensuring compliance with federal, state, and private sponsor regulations, terms, and conditions.

Currently, a Budgets and Grants Analyst position is being recruited to assist the Director with post-award activities, including setting up accounts, monitoring spending, preparing and submitting invoices for payment, preparing and submitting all required progress and financial reports, and the closing of all grant accounts. Post-award compliance issues are a top concern of NSC. With this additional position, the Director will be able to focus additional time and attention to efforts on further increasing grants and contracts from all sources.

Key milestones since the establishment of the Office of Budgets and Sponsored Projects Administration include:

**FY12**

- NSC applied for and received designation as an Eligible Institution to receive funding under U.S. Department of Education Title III programs.
- NSC applied for a Title III grant under the Strengthening Institutions Program (SIP). Only 14 proposals were funded, and, unfortunately, NSC was not one of them. However, NSC’s proposal ranked 33 out of 151, and was highly regarded by the reviewers.
- NSC becomes a member of AASCU’s Grants Resource Center (GRC).

**FY13**

- NSC applied for and received designation as an Eligible Institution to receive funding under U.S. Department of Education Title III programs for a second consecutive year.
- NSC re-applied for a Title III grant under the Strengthening Institutions Program (SIP). The proposal is currently under review.
- A Sponsored Projects Seed Money Program was established to assist full-time academic and administrative faculty develop grant proposals in the pursuit of external funding for scholarly and creative activities. Proposals are directed toward innovative and meaningful
advances in teaching, research or service endeavors on campus. The program allows faculty to submit requests for seed money that will assist them in developing larger grant proposals to external agencies.

• NSC continues its membership with AASCU’s Grants Resource Center (GRC). NSC, in collaboration with GRC, hosts its first Faculty and Staff Development Day dedicated exclusively to grants development.

FY14

• The Sponsored Projects Seed Money Program continues.
• NSC continues its membership with AASCU’s Grants Resource Center (GRC).
• NSC adds a Budgets and Grants Analyst position to the Office of Budgets and Sponsored Projects Administration.
• NSC engages the services of Hanover Research to assist in the areas of identifying grants and contracts opportunities and to provide grant writing expertise. Using an institutional profile, Hanover will communicate weekly funding opportunities that could be of interest to NSC. Those lists, which contain announcement from a myriad of agencies including Federal, State, and Private, will be distributed to campus decision-makers. Once an opportunity is selected, Hanover will assign a grant writer who is experienced with that particular funding source, to help guide the grant writing process.
• NSC engages the services of Porter Gordon Silver to assist with Washington contacts, primarily with respect to federal and private grant opportunities.
College of Southern Nevada
Strategies to Increase Grant and Contract Activity

Within the strategic plan of the College of Southern Nevada, the institutional core themes have been identified as access, quality, diversity and student success. With those institutional themes in mind, the College of Southern Nevada has also identified the impact of the new funding formula and its implementation at CSN. Both of these guiding principles have provided some strategic direction in the efforts at CSN to increase grant and contract activity.

In an effort to expand the utilization of external funding, the following priority areas have been identified:

- Expansion of TRIO program to include redesign and expansion
- Student Success Initiatives
- Workforce Development
- Hispanic/Minority Service Institution Status

CSN will intentionally develop work groups, within the institution, to:

1. Develop grant project ideas
2. Develop funding needs to execute the project
3. Identify potential funding streams to meet the identified project need
4. Instill ownership of project within appropriate work unit

The initial work group includes representatives from Student and Academic Affairs, Foundation, Finance and Budget and Resource Development. This group of individuals will begin to distill project ideas to increase student success and access. There is an existing work group working on project ideas for Hispanic/Minority service institution status.
MEMORANDUM

To: Crystal Abba  
Vice Chancellor of Academic & Student Affairs

From: Mark A. Curtis  
President

Date: July 18, 2013

Subject: WRED Information Request – Great Basin College

The institutional strategies that Great Basin College (GBC) is pursuing to increase grants and contracts from all sources including federal, federal pass-through, State of Nevada, other state and local government, and private (for and non-profit) entities include utilizing its Grants Office; providing incentives and support for faculty members; creating local, regional and state-wide partnerships; and working closely with the GBC Foundation.

First, GBC employs a full-time Grants Director who researches, writes (or assists with writing), and manages all institutional grants initiated by administration, staff or faculty members. The Grants Office provides a clearinghouse for all grant proposals to ensure all efforts are efficiently coordinated and provides technical assistance to anyone who wishes to pursue grant funding. The Grants Director is involved in the entire grants process from research to submission to management and assists each individual administrator, faculty or staff member who is leading the grant project. Periodic grant writing and GBC grants procedures workshops are offered during faculty in-service times and funding opportunity information is widely distributed throughout the institution in an effort to match research/project ideas with appropriate funding mechanisms.

Second, faculty members are encouraged to pursue grants to further GBC’s overall mission as well as expand discipline/department-related research or project ideas. Faculty may build in costs related to release time, stipends, equipment, and facilities needs. These are often an added incentive for pursuing grant funding for many faculty members and departments. Faculty may also use their pursuit and administration of grants in their annual GBC evaluation process and may tie their grant-related efforts to goals and objectives which may favorably impact their scores. Additionally, pursuit and administration of grants will be a consideration within the new merit review process; grant activities will be viewed as a positive factor in determining whether people are eligible for merit increases.
Third, GBC continually builds relationships with employers and organizations throughout its service area as well as throughout the state. These relationships lend themselves well to determining needs and providing ideas for collaboration and creation of grant projects to address the needs. Our relationships also afford us the commitment and support that is always needed for grant proposals and projects, and our employers and organizations are very responsive to our requests for letters or other types of assistance for grant proposals. We also have a long history of working with UNR and UNLV, as well as the System Sponsored Programs and EPSCoR Office on various grant-funded projects. We continue to be willing to collaborate wherever possible. We also actively pursue consortium opportunities with WNC, TMCC and CSN whenever appropriate and feasible, such as with the recent DOL/ETA TAACCCT rounds 1 and 3 grant funding.

Finally, the GBC Foundation works for the benefit of GBC and has currently been engaged in “Vision 2020” a major campaign for college initiatives including support for scholarships, health sciences, institutional sustainability and new and emerging technologies. The GBC Foundation actively pursues private donors and businesses, as well as local, state, federal and private foundation grant funding for “Vision 2020.”
TMCC


**Strategies to Increase TMCC Grant Submissions**  
*Institutional Advancement*

In July 2012, TMCC Institutional Advancement (IA) was charged with all publically funded grants for the College and began researching strategies to increase grant submissions and awards. A key component of this effort is creating a strong grant-seeking culture among the faculty and staff at TMCC. The strategies below are designed to increase grant submissions that are well researched, well written, and more competitive.

**Strategies in process**

1. **Increase prep time**: Most publically-funded grants have a lead time of 30 to 60 days, a timeline under which TMCC Principal Investigators (PIs) are not always comfortable creating a proposal. One solution is to create an internal Expected Grants Calendar for each calendar year with predictions for which grants will open in specific time periods. The TMCC Grants Writer will notify potential PIs and appropriate administration in the fall for grants anticipated to open during the next calendar year. This advanced planning will allow potential PIs ample time to brainstorm, seek external support, and take advantage of the proposed strategies (3 & 4) below. TMCC’s Grants Writer utilized this strategy in FY13 and was able to begin institutional discussions for two significant federal grants—TAACCCT and SIP—submissions far in advance of the release of the solicitations for funding.

2. **Enhance College and community awareness**: Through conversations with PIs and prospective PIs, IA identified that some TMCC faculty and staff were unaware of the College Grants Office services; they had not submitted proposals because the preparation and implementation burden seemed too high. Several community partners were unaware of TMCC’s diversity of programs and TMCC’s interest in partnering on future, joint grant submissions.

   IA is spreading the word that the grants team is available by making presentations at TMCC Professional Development workshops in both the fall and spring semesters to explain the range of services, including proposal preparation, non-technical writing, soliciting external and internal letters of support, preparing and vetting budgets, and checking for compliance with the RFP at the outset and with implementation and management after award. As part of this strategy, key Grants Office staff (Executive Director of IA, Grants Writer, Grants Specialist, and current Principal Investigators) have and will continue to hold two professional development workshops per semester, and to attend annual departmental meetings and events. Grants staff have also attended CTE Advisory Board meetings to increase community awareness that will ultimately help solicit private and corporate financial support, and letters of support for public grants.

3. **Make grant writing a recognized component of the faculty annual plan, and have it authorized as an activity the meets the institutional service component of the faculty workload policy**: The appropriate institutional representatives have approved grant writing as an institutional service activity that can be included on faculty’s annual plan.

(WORKFORCE, RESEARCH AND ECONOMIC DEVELOPMENT COMMITTEE 09/05/13) Ref. WRED-4, Page 18 of 25
4. **Standardize the institutional breakdown of indirect funds**: Most colleges with a strong grant seeking culture have a publicized indirect breakdown that specifies an amount that can be used at the discretion of the grant PI and department. However, TMCC did not have an institutional policy regarding indirect distribution until recently. PIs have indicated that being given a percentage of indirect to spend on grant-appropriate activities will encourage them to seek grant funded projects in the future. Therefore, beginning FY14, TMCC will allocate approximately 15% of the actual F&A return on most grants back to the PI, department, or Division.

5. **Provide contracts and stipends for grant preparation**: Currently TMCC faculty work on grant submissions in their spare time as volunteers, and grant writing is not part of their expected faculty workload (grant writing can be incorporated in their annual plan through strategy 3 above). Beginning in FY14, TMCC will offer stipends or overload contracts for faculty to do the technical writing components of grants. The contract would include a statement of work with deliverable timelines and a clear delineation of tasks to be completed by the participating faculty and staff. Stipends will range from $500-1500 depending on the complexity of the work and will be paid after faculty have met the agreed upon deliverable deadlines.

6. **Track grant opportunities and awards**: IA prepares and emails a weekly grants tracking report for all grants in preparation, submitted, and awarded for College leadership (deans and above). This regular report is one strategy to ensure that College leaders are completely abreast of all grant activities. IA uses Raiser’s Edge software to track all grant awards.
MEMORANDUM

TO: Crystal Abba, Vice Chancellor, Academic and Student Affairs

FROM: Carol Lucey, President

SUBJECT: SUMMARY EXTERNAL FUNDING REVIEW FOR WESTERN NEVADA COLLEGE

DATE: July 30, 2013

Current Major Funding
- Trade Adjustment Assistance Community College and Career Technical: $450,000 (Collaboration with CSN, GBC & TMCC)
- Adult Education and Family Literacy Act: $515,423
- National Fish and Wildlife Foundation Desert Terminal Lakes Restoration: $802,401
- Perkins: $332,716

Pending Major Funding
- TAACCCT: $1,567,530 (Collaboration with GBC & TMCC)
- Make it in America Challenge: $610,000 (Collaboration with Western Nevada Development District; Department of Employment, Training, and Rehabilitation; GBC; TMCC; Nevada Industry Excellence & Dream it Do it Nevada)

Future Funding
The review and approval of grant proposals at WNC is the purview of the Grants Review Committee (GRC). The GRC is composed of the Foundation Director (Katie Leao), Controller (Coral Lopez), Publications Development and Project Manager (Jamie Craig), and a representative from Human Resources (currently vacant). The Vice President for Finance and Administrative Services (Chet Burton) provides direct oversight for the committee. To ensure that grant activity is aligned with college strategic initiatives, the GRC provides an annual report to the college’s committee for Strategic Planning for Institutional Effectiveness.

Current Biennium For the current biennium, the college will add to its existing base of external funding through a series of grant proposals focused on student recruitment, retention and success. This effort is consistent with state objectives relative to Complete College America, performance funding, and Fifteen to Graduate. Two proposals will form cornerstones for this effort: (a) an NSF S-STEM proposal for $600,000 over five years, and (b) a Department of Education Title III part a proposal for $2,000,000 over five years.
THE NSF S-STEM grant would provide scholarship funds for students in the STEM meta-major, increasing the number of students that WNC can attract and retain in these high-demand fields. The Title III grant would provide funding for new programs in WNC’s Division of Career and Technical Education, as well as support for “high touch” student retention efforts in Student Services. Both proposals will be submitted in August, 2014.

Long Term  Consistent with the Board’s interest in increasing Hispanic participation in higher education, WNC’s long term goals for external funding are directed toward achieving Hispanic Serving Institution status, and developing successful proposals for the federal grants that HSI status makes accessible. WNC’s Hispanic Cohort program has proven to be a successful means for recruiting and retaining Hispanic students. Through expansion of this program, we believe that WNC can reach HSI status within five years.
DRI Strategies to Increase Grants and Contracts from All Sources

DRI has undertaken a comprehensive strategy to enhance our research competitiveness that builds upon our core capabilities, which includes a diversity of research interests and expertise combined with an energetic and opportunistic approach to seeking sponsored projects. Our Darwinian soft money environment is very effective in rewarding successful activities while reducing or eliminating those that fail to achieve funding. The strategies we are implementing seek to build upon this foundation to identify new research areas, develop interdisciplinary research activities, increase our interactions with the private sector, and recruit and retain faculty. The last point is crucial for DRI’s long-term success since the bulk of our research portfolio is generated through faculty-developed initiatives. Activities include:

Identification of new research areas: The focus here has been to exploit the intersection of existing core capabilities and new opportunities while reflecting anticipated needs of sponsors, agencies, and stakeholders. This effort has primarily been undertaken at the Division level (i.e., Divisions of Atmospheric Sciences, Earth and Ecosystem Sciences, and Hydrologic Sciences) under coordination of the Vice President for Research. Examples of topical areas include:

- Regional climate change impacts: There is a need to quantify current and anticipated changes in temperature and precipitation including the variability and the physical factors leading to the observed and predicted changes in order to assess adaptation and mitigation strategies. This effort builds upon core capabilities and research efforts currently underway as part of DRI’s Western Regional Climate Center, aerosol monitoring and modeling, and atmospheric modeling activities.
- Computational genomics: The goal is to build a core capacity of advanced data mining and analytical approaches to address a wide range of emerging issues, including novel amino acid and protein synthesis, functional gene analysis and expression, patterns of species diversification, and organismal responses to environmental factors at the genetic level (e.g., potential benefit in developing bacteria that produce a greater amount of biofuel, biological remediation related to soils and water, human health issues, studies of life in extreme environments, etc.).
- Hydraulic fracturing for oil and gas development and enhanced geothermal systems for energy development and production. Hydraulic fracturing has greatly enhanced our ability to enhance our energy resources. However, there is a need to optimize the technique to enhance recovery. Further, there are concerns regarding the environmental impacts of these efforts on water quality. This effort builds upon our modeling and measurement expertise in fractured flow and solute transport.
- Alternative landscape functions across scales: Environmental and economic sustainability is a key issue of many cities and regions in the US and across the globe. Robust methods to assess options (environmental, social and cultural, and economic) at landscape scales is a rapidly emerging area of opportunity. DRI has the capacity to build in multiple landscape and hydrologic models into alternative futures assessments. This capability would permit sponsors to assess tradeoffs among multiple options for development and sustainability.
- Mercury science: The health and environmental impacts of mercury are a growing concern with new regulations proposed that would limit emissions and impact energy production from coal fired power plants that are the largest source of our current energy portfolio. This effort is seeking to develop a better understanding of the chemical and physical mechanisms that control the fate and transport of mercury in the atmosphere.
- Water needs for energy production: The energy sector is a major user of water; however, supplies are limited. This work seeks to determine the amounts of water used for conventional and renewable energy production.

Develop interdisciplinary research activities: One of DRI’s unique attributes is the ability of our faculty to develop interdisciplinary research efforts across our three Divisions. While many of these efforts have developed organically, we have sought to promote these efforts through the support of Interdisciplinary Science Centers (ISCs). Over the past year we have initiated a comprehensive review of our ISCs to enhance cross-disciplinary research activities and develop new research thrusts. Along these lines, we are in the process of transitioning a number of existing ISCs to shift Institute support to new areas of opportunity. A number of areas have been identified (energy, computation, visualization, modeling, environmental remediation and monitoring, watersheds and environmental sustainability) and over the course of the current fiscal year two new centers will be initiated. While the exact topical areas have yet to be determined, we have identified a number of promising areas. Examples of potential new interdisciplinary areas, which may be developed on their own or under the umbrella of an ISC include:

- International water, development, and global sustainability: Developing countries today face obstacles in achieving goals related to improved health and socioeconomic benefits while trying to sustainably manage
environmental resources, especially water. Achieving these goals will contribute to reducing poverty, increasing access to water, and improving basic sanitation. It is becoming increasingly critical to bridge gaps between scientific research and applied problem solving in the context of developing nations to ensure that optimal solutions are discovered and applied.

- **UAS/UAV technologies and implementation:** If awarded certification by the FAA, Nevada has the potential to be a leader in the development and implementation of UAS/UAV systems. Faculty in all Divisions have expertise in the use of these systems and development/application of sensors for environmental characterization and assessment. Potential research areas include cloud seeding, assessment of environmental contaminants, identification of archaeological sites, measurements of atmospheric processes, and data visualization.

- **Snow science:** Snow is a key component of many environments on Earth, permanently or seasonally covering up to 42% of Northern Hemisphere land surfaces. Snowpack both alters and creates new physical, chemical, and biological environments. In Nevada, snowpack provides most of the water needed for economic and residential development as well as for sustaining healthy ecosystems. We would build upon existing research programs in snow-related topics, including: surface-water and groundwater hydrology, hydrometeorology, climate change, radiative forcing, remote sensing, microbiology, soil physics, weather modification, and ecosystem sciences to develop a comprehensive program to address snow-related issues.

### Increasing interactions with the private sector:
Currently over 70% of DRI’s funding comes from federal sources. Given the potential for decreased support from this sector coupled with increased competition for a diminishing resource, there is a critical need to expand support from other sectors including state and local agencies, international organizations and governments, and the private sector. Much of the research performed at DRI can be categorized as applied science and engineering. Further, our unusual financial model has led to a core competency in operating under deadline and NDA constraints with specified deliverables and we have developed alternative cost models more in line with private sector expectations. This dovetails with private sector operational and research needs for external R&D activities. Through proposal development activities and internal funding we are currently pursuing three primary areas likely to increase our interactions and support from the private sector. One of our previously described efforts related to UAS/UAV technologies and implementation. The other two are:

- **Applied research related to computation:** Many industry analysts, economists and scientists are projecting an upheaval in advanced data collection and analysis for intelligent systems. The impact to business and industry is expected to be profound, redefining competitive advantage and creating demand within the technology sector for skilled data practitioners. This effort is geared towards supporting data intensive computing, high performance computing, and data visualization. We have been working with GOED to build upon our core expertise to help differentiate existing businesses in Nevada and attract new ones.

- **Center of excellence related to water in arid environments.** In conjunction with GOED, DETR, other NSHE Institutions, IBM, SNWA and other private sector entities, we are in the process of creating a non-profit entity to address critical needs related to water supply and technologies. The focus will be on developing applied technologies that can transition to the private sector and drive workforce and sustainable economic development.

### Recruit and retain faculty:
Recruitment and retention of competitive and entrepreneurial faculty is key to the success of securing research funding. Unlike universities, our ability to offer startup packages is limited. On the other hand, many faculty are drawn towards DRI because of its focus on research and flexibility to perform studies that are not tied to an academic calendar. Further, DRI is able to provide significant levels support for faculty throughout their career. Over the past year we have reviewed the success of various recruitment strategies including hiring of established researchers to develop new programs, mid-career faculty to enhance/continue existing programs and establish new programs, early career faculty to fill topical needs and develop programs, and postdocs that if successful could be transitioned to faculty status. While all of these paths had some measure of success and importance in furthering our research efforts, the hiring of postdocs appeared to be the most cost effective strategy. To promote an increased effort in faculty recruitment, the VPR is providing funds that are matched by the Divisions to undertake nationally competitive searches to recruit postdocs to support existing research programs. Further, through support of the Redfield Foundation and the Divisions, we are allocating additional resources to support this recruitment mechanism. This path has the advantage of providing additional support for ongoing research programs, integrating potential future faculty within the DRI research structure, and providing a scenario to assess the potential of the postdoc for future success. With regard to faculty retention, DRI allocates 5% of the indirect costs from research programs directly to the faculty to promote their research efforts, has established a fund to provide time for creative activities that are not covered under existing contracts (the faculty support program), and provides additional resources for IR&D activities.