A 2020 Vision:
The Future of Research and Graduate Education
at UNL

the report of the
Future Nebraska Task Force
March, 2000

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I. Introduction and Report Scope

The Future Nebraska Task Force was charged with the task of providing a "Sesquicentennial Vision", an ambitious statement of what the nature, scope and quality of UNL's research and graduate programs should be at our 150th anniversary, in the year 2019. Briefly, it is our vision that the University of Nebraska-Lincoln should become one of the premier public research universities in the United States.

What makes a university great? The greatness of the best research universities is grounded in the uncompromising pursuit of excellence. Their campuses have excellent faculty and excellent students in a superb learning environment. Their outreach and engagement activities are responsive to constituent needs and research-based. The core activity is the research and scholarly endeavors of the faculty, working with students. This activity itself, and the new knowledge it reveals, crucially inform the teaching and outreach functions of the institution. As Chancellor Moeser has stated "Discovery is the foundation of learning and of engagement and it is at the core of our mission. It is what shapes our national reputation as a university." As this statement implies, throughout this report we use the term "research" to embrace all processes of discovery, including creative activities in the arts and humanities.

Research and scholarship are central to all of the missions of a university, and must be emphasized by those that aspire to the highest levels, as UNL does. Therefore, as our charge directed (see Appendix A), the Task Force has developed a set of recommendations, guidelines and benchmarks to be used as a basis for campus-wide discussion, to inform campus decisions and to assist UNL in monitoring its progress.

A.   Our operating premises

•   Improving the national reputation of the University in the areas of research and graduate education is vital to improving our ability to attract and retain high quality graduate students and faculty and to increase collaborative ventures with other

research institutions and private organizations. It is also important to enhancing our pride of accomplishment and maintaining a vibrant intellectual campus culture.

- The University of Nebraska-Lincoln has the ability to develop the human and financial resources necessary to become a nationally recognized research university. Creating a culture of excellence at UNL requires a commitment from both the administration and the faculty to seek the highest academic standards in our work.

- The University of Nebraska-Lincoln should be reaffirmed as the state's premier research university, maintaining its historical affiliation with the American Association of Universities (AAU), its Carnegie Research I designation and land-grant status.

- The Task Force expects that a high quality undergraduate teaching mission will remain a vital part of UNL's comprehensive future vision. Strong research and graduate studies programs complement undergraduate education. Two factors remain key in accomplishing this premise: 1) the University recognizes the resource commitments needed to accomplish excellence on both fronts and 2) the University culture finds ways to recognize different paths to faculty excellence.

- The resources of UNL are placed in trust with the faculty and administration, with the obligation to create future value for Nebraska citizens. Improving the level of scholarly productivity at UNL is critical to yielding long-term and enduring benefits by increasing the value of the degrees we confer to both undergraduate and graduate students over the next 20 years.

B.   This report and its organization

This report articulates our recommendations for research and graduate education at the University of Nebraska-Lincoln and provides background on the current state of the research environment. The Task Force met both as a whole and in small groups over the course of 15 months. During that time, the Task Force reviewed research related to institutional eminence, evaluated UNL's standing on key indicators of research and graduate productivity, read internal reports related to UNL's research and graduate studies missions, and met with representatives from Texas A&M University about the visioning process underway at their university.

Predicting the research mission of a major university twenty years from now or attempting to predict what research will be important twenty years from now are interesting, but speculative, exercises. Task Force members instead focused on the more immediate problem of preparing our university for future success in its research mission, whatever form it may ultimately take, recognizing those unique elements of our particular institution. The vision then is oriented around identifying factors and cultures that enable faculty to produce research at a high level of quality.

The remainder of the report is organized as follows. The next section provides a brief description of the historical context of UNL and the strengths of that legacy. Section 3 assesses the current state of research and graduate education, and Section 4 identifies what we see as the future environment for research universities. Section 5 is the heart of this document. It lays out the Task Force's Sesquicentennial Vision for UNL and presents sets of "aspirational family members" to help situate the vision within the context of major American research universities. The final section provides a set of general recommendations the Task Force views as potential next steps on the path to attaining the vision.

II. Historical Context and Cultural Legacy

Part of what makes a great university great is its understanding of its unique past and the legacy that provides a context for the University's current missions and roles. Some strands of the UNL culture have carried through the epochs and have been maintained; others have been transformed or replaced by newer features. This section describes selected historical themes in order to create a bridge to the future in regard to research and graduate education. A bridge can be built by creatively drawing from the features that are or have been *strengths* of the University's culture. The following are aspects of the University of Nebraska heritage that may be useful in defining the culture we seek to develop for the future.

A. Early in its history, the University of Nebraska was known as one of the great public American universities. Early on, the University of Nebraska quickly assumed a place among America's leading public universities. It boasted one of the first chapters of Phi Beta Kappa, was elected as one of the earliest members of the elite Association of American Universities, and has recently been recognized as a Carnegie Research I University. This spirit of greatness has been kept alive through the generations.

B. UNL rests upon a cultural foundation that began with "an atmosphere of endeavor and bright hopefulness" (Cather, *My Antonia)*. The early University was noted for a spirit of engaged learning, vigor, high purpose and achievement, offering new possibilities for the citizens of the state who drew from the opportunities of homesteading and the agricultural productivity of the late 1800's. Nebraska's culture arose as one of intense individualism, autonomy and self-reliance, along with a respect for achievement, and a strong work ethic . . . a strong ethic for cooperation, mutual support and pragmatic orientation to uncertainty. Achievement in an uncertain environment has also given rise to an entrepreneurial orientation and a deep respect for overcoming long odds. Nebraskans readily idolize extraordinarily high achievement among their own. Pride in achievement and achievement in the context of long odds, hard work, and optimism are the University's legacy.

C. Principles of inclusion and access underlie the University's culture. The Nebraskan respect for achievement is tempered by a deep respect for community as such and for the promise of equal opportunity. It is characterized by a general disinclination to give special respect to an individual's origins, native intelligence or other essential features in and of themselves. Nebraska, with its own blend of populism, offered a University that generated a culture of student access and a culture of strong mutual support among all the members of the university community. The cultural features of achievement and mutual support are not intrinsically incompatible and in the early university, they worked synergistically to create seemingly limitless opportunities for the bright young persons of the plains and scientific productivity among the faculty.

D. UNL and the state have a strong tradition in the humanities. At its founding the University determined that the traditional and industrial arts should be studied together -- following the Universities of Wisconsin and Minnesota -- so that students would all benefit from letters and arts. We have brought forward writers and thinkers, from Willa Cather to Roscoe Pound, who have written of the state's culture and of great ideas and have built a fertile ground for continued work and development in the arts and humanities.

E. The professional colleges have made UNL unique in the state. The Colleges of Architecture, Engineering, and Journalism are found only at UNL, and each has a tradition of over 100 years of quality education. Although the other professional college of Business, Law, and Teachers can be found at other Nebraska universities, only UNL offers the Ph.D., and these colleges are recognized as premier programs in the state and as significant national programs.

F. UNL has traditionally had strong research *and* teaching missions. During the early years of the University, passion for research -- generating studies on insect pests and hog cholera, chemistry studies that helped found the sugar beet industry, and, finally, physics studies on the nature of light, the latter so fundamental that Einstein is said to have drawn upon them -- existed side by side with high teaching efforts (generally 20 hours a week in class). Demanding teaching loads and research have balanced one another during successful periods, as students are given access to the freshness and vigor of ideas that inquiry at the cutting edge of knowledge make possible.

G. UNL's culture has been shaped by strong faculty leadership and a rich tradition of shared university governance. For the first 100 years, UNL was governed by a "senate of the whole," constituted of all faculty members and all administrators. Although we have moved to a representative senate, the principle remains fixed that direct participation of

faculty in university decision making and regular dialogue between university administrators and faculty are valued in decisions related to all areas of the university.

H. The land grant mission and the University's tradition for addressing real-world problems contribute to the University's culture. The new University committed to the land grant mission immediately following passage of the Morrill Act, becoming ever after a "people's university" and, following the Hatch Act, emphasizing statewide technical support for agriculture, home economics, technology and industry and widespread access to the university. Through its service mission, the University has reached out to the citizens with information to improve their lives and livelihoods. Some departments have worked successfully with a model of applied research and teaching and service in which components are integrated and mutually reinforcing.

I. The natural resources of the state and the production of food make important contributions to the state and the University culture. The state and UNL build upon and revere the responsible conservation and development of the state's natural resources, including rivers and underground water, the natural and semi-natural state of vast acres of grassy range land, and agricultural produce. Much of the applied research responds to needs for conservation-responsible development within the context of the type of agriculture possible on the Nebraska plains.

J. UNL has a strong, supportive and unique relationship with the citizens of the state, who contribute generously and liberally and expect a strong blend of good teaching and access to an outstanding education for their children, extension education and the high caliber research that defines a great University. When Chancellor Canfield left the University in 1895, a contemporary wrote that the University was the "pride of the State as a whole" (Knoll, 1995, p. 37). The state and UNL thus have developed a strong sense of place and history which has generated extraordinary commitment and loyalty and an inextricable bond between the University of Nebraska and the citizens of the state. This pride is found, for example, in a recent capital campaign that raised 6 times the targeted amount of funds for university improvements; by buildings and new programs prompted by large and generous donations from citizens of the state, and by other forms of citizen involvement.

III. Current Assessment

Despite this rich cultural history, current measures of research stature and productivity indicate that UNL falls short of its vision and potential.

A.   Research productivity and impact

Commonly used measures of research productivity fall into three categories: 1) empirical measures of research productivity and impact, 2) measures of research funding, and 3) reputational measures. This section summarizes key information reviewed by the Task Force and paints an overall perspective on our current research standing compared to our peer institutions. While UNL has some departments and areas of research strength, on the whole, UNL falls below the average of both research institutions in general and those institutions that we have generally regarded as our research peers.

1. Empirical measures of research productivity or faculty prominence. Graham and Diamond (1997) developed three non-financially based measures of faculty productivity. Using data from publication databases, they measured the ratio of campus researchers publishing in scholarly journals as a measure of the quantity of research being performed. As a related measure of research quality, they considered publication in top-rated science and social-science journals. Finally, they identified the number of Arts and Humanities competitive grants and fellowship awards. Table 1 presents the results of these measures. Table 1 also includes an additional measure of faculty prominence, the number of faculty belonging to one of three scholarly academies. UNL does not compare well with its Regent's peers, falling at the bottom of the peer group on all measures. Similar measures of research productivity and impact studied by the Task Force yielded a similar picture of UNL's standing.

2. External research funding. External research funding statistics are frequently cited as evidence of research productivity since these are among the most measurable indicators of research activity. Although external funding does not provide a complete picture of productivity or impact for all disciplines (especially the arts and humanities), external funding is a fundamental success indicator in a number of costly research disciplines within the sciences and social sciences. Table 2 shows the total research and development (R&D) expenditures for UNL and its peer group for 1997, by the source of funding. Two points are important. First, UNL is near the bottom of its peer group in total R&D expenditures; only the University of Kansas had a lower level of R&D expenditure. Second, UNL receives proportionally more of its R&D funds from state and local sources than do most other peer schools.   The proportion of R&D funds coming from Federal sources is only 35%, less than for all other peer schools except Iowa State (at 34%) and Missouri (27%). In contrast, Federal sources of R&D make up over half of R&D funding for four of the peer schools with funding levels larger than ours. These data suggest that UNL has not been effective in obtaining Federal research funding relative to other schools in our peer group.

Table 3 focuses on trends in Federal research and development funding, summarizing total Federal R&D funds for the past six years, as well as UNL's rank among all other funded universities. UNL falls near the bottom of the ranking categories in Federal funding. Adjusting for faculty size does not change evaluation of our relative ranking on Federal

funding. UNL is at the bottom of the per-faculty ranking for Federal Science and Engineering funding and next to the bottom in total Federal R&D funding (Table 4). An encouraging trend, however, is that our percentage increase in funding over the past five years is higher than for any other peer school. Among all public AAU institutions, the percentage of Federal R&D funding has increased by 49% since 1990 and by 5% since 1995. UNL's increase is much higher than those averages as well, at 89% since 1990 and 12% since 1995.

Federal research grants are important not only for the specific research projects that they support, but also because the indirect cost (IDC) recovery attached to grants is vital to the university's ability to generate increased research money, especially for areas of research that have fewer sources of external funding. Continued support for those research and scholarly activities that do not bring in external funding can occur more readily if the total University increases its IDC income. The relative size of UNL's R&D grants and the recovery of indirect costs are areas of concern when compared with other institutions. Table 5 summarizes UNL grant awards from all sources for the past four years by amount awarded. Between 1,900 and 2,400 grants were awarded from all sources each year during that period. Over 80% of the grants awarded in each of the past four years were for less than $25,000. Less than 1% of awarded grants were for over $500,000.

3. <u>Reputational measures</u>. During the past year, the Task Force spent considerable time looking at indicators of research eminence, including both empirically-based and reputationally-based factors. A continuing dialogue within the Task Force involved whether "reputation" was important and whether it captured the underlying quality of the institution. Our conclusion is that we must recognize and acknowledge both reputation and quality; the two are not separable in achieving our vision for the future. Although reputational rankings should not drive policy, they remain important in creating an environment that enables a variety of other positive changes to occur. Enhancing our reputation in research and graduate education is critically important in increasing the pool of talented students and faculty, capturing the interest of prospective employers for our students, enhancing the quality of research-based engagement, and promoting collaborative associations with industry and other institutions. Conversely, an environment with great students and great faculty increases the ability of the university to provide high quality, high impact research and graduate education.

The National Research Council ranked graduate programs in 1995 relying primarily on reputational surveys. Table 6 shows the number of programs ranked that were above one standard deviation from the mean ranking and the number of programs that were in the top 25 in the nation. Among the Regent's peer schools, only UNL and the University of Missouri have no programs ranked by the NRC in either category. Table 6 also presents the eminence scores developed by Keith (1999) from an analysis of data in three national studies of research-doctoral programs. His analysis suggests that departmental ratings are largely dependent upon the overall rating of the institution.

4. Summary. Overall research productivity is difficult to measure empirically, especially if the measures attempt to go beyond measures of quantity to that of quality or impact. These measures cannot distinguish research that makes a difference to society. Each assessment strategy has its flaws. Nevertheless, research productivity and impact are very real, but multifaceted, qualities that materially affect the reputations of academic departments and our ability to attract and retain high-quality students and faculty. There also is clearly a high degree of correlation between various reputation rankings and more quantitative measures, such as those based on publications in top journals or citations (Graham and Diamond, 1997). Although areas of strength exist within our University, taken as a whole, the data in this section suggest that UNL currently is at the bottom of the Regent's peer schools in terms of research productivity, whether measured in quantitative terms or through reputational surveys. Rather than concentrate on the rankings *per se*, the Task Force viewed its central question as oriented toward the future. That question is: What aspirations or dreams do we have for the future of UNL's research and graduate programs and what elements of university culture and administration would enable faculty to conduct productive, high impact research?   Addressing this question requires considering the competing demands on faculty research time, state support of the University and broader elements of the UNL environment.

B.   Balancing teaching and research

Under current circumstances, faculty often experience conflict between the goals of teaching excellence and outstanding research. There are, after all, only so many hours in a day. Ambitious research programs often make it difficult for faculty to commit the time and energy required for planning creative, active learning exercises for students and, conversely, faculty who are deeply involved in innovative classroom learning often suffer limited research productivity. An institutional acknowledgment of this apparently zero-sum game can be seen in the teaching buy-outs commonly incorporated into research grants and the diminished research expectations for outstanding classroom instructors.

At the heart, however, excellence in research and teaching are complementary. The skills required for strong research are very similar to those required for outstanding teaching. Writing a strong grant proposal and an inspiring lecture require very similar intellectual skills. Fundamentally, higher education involves developing essential research skills of critical thinking and creativity in our students and developing in them an understanding of and appreciation for research. The widespread perception of incompatibility may reflect only a time constraint or it may reflect a need to develop (or return to) an educational model that emphasizes discovery. Competing demands on faculty time (or the perception that teaching and research are competing obligations) is, however, an important issue to address in strategies to move UNL to the forefront of research universities.

C.   State resources and support

Nebraska has a relatively small population. Its 1996 population of 1.6 million is 38th in the nation. Nebraska is also becoming increasingly urban, with just over half of the population residing in the two largest metropolitan areas (Omaha and Lincoln). Further, population growth has centered on these urban areas, while rural counties have been losing population. As Table 7 shows, however, UNL competes well with other schools for state financial support; UNL is placed in the midpoint of its Regent peer group with respect to state appropriations.

The role of the state in university funding has been declining nationally. As Table 8 shows, a higher percentage of total revenue comes from state and tuition sources at UNL than at many of our peer or aspirant schools (54.1% in 1998 compared with 49.6% average for the Regents Peers). Schools that have more aggressively sought alternatives to state funding, such as the University of Michigan, have reduced the proportion down closer to 40% (40.6% of total revenues were from state and tuition sources at the University of Michigan-Ann Arbor in 1998). State support of the university cannot be expected to increase due to significant economic growth. This suggests that increased resources for funding research and graduate programs must come from growth in research funding from grants and other sources external to state government. This is also suggested by the comparative data in the previous section.

D.   Qualitative elements of the UNL research and graduate environment

Task Force members believe that the unique elements of the culture of the University and the state must be considered in shaping any vision for research and graduate education. Measuring the culture of an institution as complex as the University of Nebraska is difficult. The Task Force looked at two recent studies that included summaries of conversations with faculty (the Farnham report and a faculty survey evaluating the research environment) as measures of our University culture. The Task Force also found that, in the course of its own conversations, some issues kept resurfacing, suggesting other elements of our culture and values.

1. <u>UNL has multiple missions.   It is a land grant, an AAU, and a Carnegie Research I university.</u> The scope of UNL's mandate spans the entire range of scholarship, from the most abstract, theory-driven basic science to the most practical, mission-oriented applied research. All is incorporated into UNL's mission. Furthermore, all of this work must be of the highest quality, for this is the essential requirement of faculty in order to serve their constituents. Moreover, the results of this research should be transmitted beyond the limits of the academy, to the citizens of Nebraska and the world.

Like faculty elsewhere, UNL faculty tend to perceive a gap between basic and applied research, and this has led to the perception of "two cultures" of research on our campus leading to two distinct research models. One emphasizes applied problem solving with an

orientation to economic development and technology transfer. The other emphasizes theory-driven basic science. But this perceived split is inappropriate to the historical mandate of the land-grant mission, as described by Robert Knoll (1995) in *Prairie University*. The Morrill Act of 1862 that established land-grant universities envisioned institutions offering both liberal and practical education that would be readily available to the sons and daughters of ordinary citizens. Although agricultural and mechanical engineering have always figured prominently at land grant institutions, so also were programs in classics, mathematics, languages, and the sciences explicitly mandated by the land grant tradition. The same tradition was affirmed in the 1869 charter establishing our university as the state's only comprehensive university as well as its land grant institution. Like Wisconsin and Minnesota (where these missions are combined), but unlike Iowa and Kansas (with distinct institutions), UNL has always had an integrated mandate.

It is time for UNL to recover its original mission. The perceived intellectual divide between pure and applied research has been reduced by technology and by the emergence of multidisciplinary research. The future requires an integration of these formerly separate domains that are represented by City Campus and East Campus. Integrating the basic and applied science of our institution, such as in recent initiatives in genetics and biotechnology, would strengthen our faculty's ability to compete for external funding, and improve our ability to participate in shaping the future priorities of funding agencies. Like other strong land grant research universities that are also comprehensive in mandate and outstanding in quality -- such as Illinois, Wisconsin, and Penn State -- UNL should support multiple models of research and scholarship in an integrative framework to produce work that meets national and international standards of excellence.

At the same time, UNL should also consider seriously what a 21st-century edition of the land grant mission means to the people of Nebraska. For more than a century, the land grant tradition has been strongly identified with agriculture and engineering, and these remain important strengths of this tradition, especially to a state like Nebraska. But with the national and state economy becoming increasingly technological and commercial in orientation, with information sciences a stronger feature of professional work and private life, and the characteristics of urban communities a concern for the majority of Nebraska's population, the "practical education" required of land grant institutions needs to be broadened. UNL must look both to the future as well as to its past in defining what it means to be a contemporary land grant comprehensive university in service to Nebraska's citizens and to promote economic growth.

2. <u>Confusion exists about our institutional priorities.</u> The two recent documents earlier noted reported on faculty perceptions of their roles and the priorities within the institution. Both the Farnham report and the faculty survey indicated that faculty are confused and frustrated by perceived conflicts in the relative priorities of the institution for teaching, research and engagement, as well as the relative recognition and importance of different forms of research and scholarship. A common theme arising in the course of Task Force discussions was also that a set of seeming paradoxes about the priorities and plans of the

institution exists. For example, the existence of the Future Nebraska Task Force is a clear indication of a leadership decision to enhance the level of research and scholarly productivity at UNL. On the other hand, despite acknowledgment of UNL as a research university, the Regents have identified teaching as the number one priority of UNL. Further, short-term resource shortfalls and faculty reductions reduce confidence in the longer-term availability of resources for supporting research.

A further consequence of the lack of a clear institutional vision for excellence is a personalistic style of management and politics which is often seen as a failure to develop businesslike and effective systems of administration or as a constant shifting of the institution's priorities, standards of academic rigor and systems of reward. The Task Force heard Chancellor Bowen of Texas A&M University speak of the latest planning exercise in a 20 year history of developing systematic plans for improving the stature of that university. Developing a clear statement of the important elements and mission of the university provides a basis for systematically evaluating strategic and operational decisions made on campus. Developing a 20 year plan should incorporate a vision for the entire university, facilities, and operating structure (tenure policies, incentives, etc.) that represent commitments by the campus community as a whole, regardless of who is located in leadership positions.

IV. The Future Environment for Research Universities

The Task Force's future vision for the University of Nebraska-Lincoln is shaped by several trends that we believe characterize the future environment for research universities.

A.   Globalization

Research and industry will have a more global focus. This will affect the topics of research, the consumers of research, the reward structures for research, and the languages and practices through which research is disseminated. For example, different standards for knowledge sharing and dissemination in for-profit and university communities and in different cultures will alter the climate of basic and applied scholarship.

B.   Greater role of for-profit sector in research / graduate education

 The university must develop closer ties to business and industry to support itself while maintaining its independent mission. Corporate demands for research applications may conflict, at times, with the basic research concerns of university scholars. Much professional and undergraduate education will be done in the for-profit sector, including both for-profit universities and those associated with large corporations (e.g., Motorola University). Additionally, collaboration with business and industry provides a synergism of

research ideas, research and development, as well as opportunities for students' education, internships, and placement. Professional education will increasingly be shaped by the needs, standards and priorities of professional organizations.

C.   Research and graduate training will become more interdisciplinary and multi-institutional

The direction of science research in the future will be toward large, multidisciplinary and/or multi-institutional efforts. Multiple factors are influencing this trend. Science research is becoming more expensive, perhaps prohibitively so. Other forces include a drive towards "big" research, the trends of large funding agencies and university administrations, and a natural evolution based on technological advancements and the shrinking of communication distance and complexity.

Technologically, the capability of electronic (cyber) communication will continue to evolve with emphasis in the following areas: real time, video/audio conferencing over the Internet, the remote control of laboratory equipment and worldwide access to traditional databases. Computer access through speech recognition, language translation, disability assistance further reduces institutional boundaries. These technological capabilities combined with other trends identified above suggest that research and graduate education will be affected by increased collaboratories (collaborative laboratories) in which collaborators will work as effectively across the country (world) as they now do in the same building. Graduate students may be supervised by a committee of experts from different universities and participate in classes and seminars with students from around the world. Geography will become much less important as research will no longer need to be in the same facility.

D.   Changes in how universities "do their business"

Included among these are (a) increased expectations from students and their parents as well as administrators and public officials concerning the quality and cost-effectiveness of research and teaching activities (e.g., the expectation of doing more with fewer resources; consumer expectations), (b) advances in information technology and telecommunications that change the nature of interpersonal interaction within the university and across the country, and (c) growing importance of cross-disciplinary and interdisciplinary thinking that will blur traditional lines of scholarship.

All of these changes point to an environment that will grow increasingly complex and competitive for major research universities. Improving the quality and quantity of research and graduate studies in such an environment suggests that we cannot simply look at what other institutions have done, but must craft organizational forms and cultures that continually help faculty improve their research productivity.   The Task Force believes that the best way to predict the future is to *create* it through the research mission.

V. A Sesquicentennial Vision: UNL in the Year 2019

Our vision for the year 2019 is that the University of Nebraska-Lincoln become one of the leading public research universities in the nation and ranked among the strongest state universities in academic quality. Strong graduate and professional programs exist with more undergraduate programs also recognized as excellent programs. This section of the report articulates this vision in greater detail and specifically identifies the family of institutions to which we aspire by 2019.

A.   Components of the Sesquicentennial Vision

1. <u>Faculty</u>. The core of a strong research university is a strong tenure-line faculty with a significant number of nationally and internationally preeminent scholars associated with prominent research and graduate education programs, and connected to national and international scholarly networks. Hiring in selected areas is competitive with the best public universities.

2. <u>Research</u>. The emphasis of basic and applied research programs is on quality, with several highly visible national centers and preeminence in selected areas in the sciences, humanities, social sciences, and professions.

3. <u>Teaching</u>. A cornerstone of a leading research institution with strong graduate and professional programs is high quality teaching, both at the undergraduate and graduate levels. In order to support our status as a leading research institution, teaching is not only of the highest quality, but also focuses on the integration of teaching and research. This is accomplished not only by having excellent instruction that provides the necessary information and skills in the content area, but that also imparts to the students the ability to apply this knowledge to research activities. Teachers foster the kinds of critical thinking skills and quest for knowledge that are fundamental to the development of scholars and researchers.

4. <u>Graduate education</u>. Graduate studies provide a comprehensive set of programs whose graduates are highly sought after for professorial positions in a full range of post-secondary institutions, positions in industrial R&D, in government, and in various professions. Selected programs are internationally prominent. The university is more competitive in graduate student recruiting, with the result of increased quality and diversity in the student body. Mentoring graduate students is valued by programs and colleagues. Programs provide

expanded competitive post-doctoral training and/or training grants in program areas of growing visibility and impact.

5. <u>Engagement</u>. The university is widely recognized as a source of expertise and collaboration with Nebraska citizens, agriculture, business, government, and professional communities and also with national and international communities. Faculty and the university want to have an impact on the world and are devoted to meaningful projects that are important for the future of humanity. The University embraces the missions implicit in both its land-grant and AAU legacy, through engagement and outreach. The University continues to enjoy financial and programmatic support from Nebraska citizens and the legislature.

6. <u>Institutional support</u>. Strong financial and other support exists from state government, local business, citizens and professions as well as from the Regents, with genuine commitment to work with UNL toward achieving nationally competitive facilities, salaries, and general support. Expectations for UNL's contributions to teaching, research and engagement are appropriate within the context of these funding constraints. The institutional infrastructure to support a culture of research excellence exists, including excellence in (a) high-performance computing, (b) state-of-the-art instrumentation resources, (c) library and museum collections pertinent to prominent areas of scholarship, and (d) clerical and professional staff to support research.

7. <u>External research funding</u>. UNL significantly increases competitive grant funding, both through increased numbers of grants as well as increased average size of grants. Strong ties to state, public and private grants programs also exist. The university has a strong, visible presence in Washington D.C. where both faculty and administrators work toward shaping the national research agenda, matching UNL researchers with funding sources and securing funding.

8. <u>Collaborative and multi-institutional graduate teaching and research</u>. Faculty research interactions across campuses, colleges, and disciplines are flexible, encouraged and easily accomplished. Faculty continue the tradition of working with researchers at other institutions (public, private, and commercial) inside and outside of Nebraska.

B. Characteristics of a vigorous scholarly community

The university is more than a collection of people, programs, and buildings. Increasing the external funding or recruiting additional top quality faculty will not bring lasting and global improvements without the presence of a campus culture that celebrates, nurtures and supports the development of these resources. Many aspects of UNL's cultural legacy

support these goals, and, even as we adopt new values, we should strive to affirm our strengths, such as our has deep commitment to the community and to accessibility as well as to high achievement. In addition, the following nine elements are suggested as cultural elements that require new or renewed commitment if we are to become again a great public university.

1. <u>A vigorous scholarly community demonstrates a passionate commitment to work which holds promise for contributing to the betterment of society</u>.   This sense of purpose is inspired by an understanding of the university's mission as something more than a bland institutional assignment, but rather as a call to making an impact on our world. To achieve this type of community, the institution must nurture and retain creative, talented, and highly-committed faculty and encourage them to address the major issues of the day in their work. It must strive to create an environment in which every faculty member, whether doing basic or applied work in the natural sciences or the arts, is supported in his or her efforts to engage in work that really matters.   Faculty members must be encouraged to participate in national and international dialogues and to demonstrate the impact of their work both locally and beyond the campus and the state.

2. <u>High aspirations and significant achievements are the norm for every faculty member, administrator and employee in a vigorous scholarly community</u>. Achieving this requires a campus culture that recognizes the unique potential of every member of the academic community, and that provides a constant source of encouragement, appeal, and motivation for each individual to strive to make contributions that have significant impact. A culture of high achievement transforms faculty members' expectations so that they become unwilling to settle for modest aspirations. It encourages all faculty to put forth their best effort, to strive for, look forward to, and thrive on the high morale that comes from successfully competing and achieving in their own field of endeavor. Succeeding in competition – however defined – becomes a legitimate source of validation for one's accomplishments, and a spur to further achievement. Note that this outlook permits – indeed often encourages – collaboration, because collaboration is frequently the most successful strategy. Moreover, what constitutes success must be defined by the people and goals involved; high achievement is sought and valued in all of our mission activities.

3.   <u>A vigorous scholarly community cultivates sustained and regularly-experienced high morale</u>. In a university, as in other work organizations filled with highly-talented and creative people, *sustained high morale grows out of people regularly and personally experiencing high achievement*. This fosters pride in being associated with one's colleagues and institution, excitement with one's own work, and personal satisfaction with one's workplace. Faculty cultivate this kind of environment by contributing their best, and recognizing the best efforts of others.

4. <u>The members of a vigorous scholarly community are committed to the success of the institution and of all the participants in our campus life</u>. We build quality and rigor by expecting success from all members of our academic community, and by accepting only the best from ourselves, our colleagues, our co-workers and our students. And we do this in all aspects of our mission. This does not mean that everyone will succeed: faculty who fail to achieve our tenure standards should not be tenured. Students who do not perform acceptably should be failed. But our regular expectation is high achievement and success; anything less should be the occasion for surprise, dismay, regret.

5. <u>A vigorous scholarly community welcomes the addition of even higher quality faculty, staff and students through recruitment, than those already in the ranks of the institution</u>. A self-confident community recognizes that having high quality people means that we can attract even higher quality people to join our faculty, staff and student body. By attracting new hires who exceed our existing talent, drive and creativity, we increase the institution's quality as well as our own expectations for excellence. The best units on this campus and at other universities regularly hire and matriculate the best, and welcome the excitement of being challenged, pressed, and stimulated by these new members of the academic community.

6. <u>Vigorous scholarly communities value and embrace great research faculty, senior lecturers, extension educators, and others in non-tenure-track appointments who bring talent, passion, and creativity to the institution</u>**.**   The tenured faculty will always be the core of the institution, but to fulfill our research and graduate capacity, we need many others who will be more specifically focused on research activities, on specialized teaching opportunities, or on outreach and engagement activities. If people in these positions are somehow seen as anomalous or second-class, we cannot succeed. People in these positions should receive salaries, benefits, and support commensurate with the talents they bring.

7. <u>A vigorous academic community finds ways to value, celebrate, and make visible in the everyday life of our institution the outstanding academic achievers of the institution</u>**.** It has often been said that an institution becomes what it celebrates and honors, and we cannot become an institution of high academic success if we do not honor those individuals and teams among us who achieve exceptional success in their scholarly endeavors. Doing so does not diminish our appreciation for the achievements of those not singled out for recognition, nor does it deny the possibility of others' success. Too often we fear that such recognition will cause others to feel uncomfortable – it may offend, create jealousy, or seem unfair. Nevertheless, when we do showcase our best faculty, everyone feels *better*, not *worse*: it's exciting, thrilling, *self*-satisfying to know that people this good are our colleagues and it encourages a culture in which people take pride and add to their own stock of self-esteem via the institution's achievements, stature and reputation. And when this is done on a regular basis, an in all areas of scholarly endeavor, it creates a collective experience of institutional pride that breeds even more success.

8. <u>A vigorous scholarly community fosters support of the notion that University resources, because they are scarce, are always to be viewed as provided in trust, as part of a bargain to leverage (expand) them with other resources</u>. By doing so, we serve as good stewards of the University's resources, increasing the overall capacity of the institution for research, and raising the value of its degrees for alumni and future generations of students. This principle applies equally to financial and non-financial resources. We can dramatically increase our ability to achieve and to lead highly fulfilling professional lives by growing the University's assets; this impulse should be part of every faculty member's and every administrator's understanding.

9. <u>An active, respected and fully engaged system of faculty governance , and a faculty that possesses a strong sense of efficacy, are essential elements of a vigorous scholarly community</u>. The policies and decisions governing the conduct of research, and the delivery of graduate programs, must be responsive the advancement of disciplinary knowledge and practices, and to the needs of faculty working with cutting-edge technology. Decisions about systems, budget allocation, programmatic priorities, admission standards, research funding, graduate student stipends, space utilization and campus planning all have immediate and significant impact upon the scholarly productivity of faculty and graduate students. These and related decisions should not be made without input from faculty currently engaged in research and graduate education; their input must be actively sought and genuinely respected by those responsible for administering programs at the institution. A disenfranchised faculty cannot lead an institution to excellence. But a faculty governance system that is effectively utilized fosters a sense of efficacy among faculty that attracts the involvement of the most highly qualified faculty. Any university that seeks to be great must start by welcoming and respecting the efforts of faculty to contribute productively to the future of the institution.

C.   Our aspirational "family"

As a way of exemplifying the qualities we seek in our vision for research and graduate studies, the Task Force proposes a "family" of universities that serve as a reference, or aspirational, group. That is, in twenty years, this set of universities represents that group that we would hope UNL would be associated with, both reputationally and in terms of the more quantitative measures presented earlier in this report.

The Task Force considered several factors in identifying this list, some measurable and some qualitative. The primary consideration was to define the set of those institutions that serve similar missions and have similar aspirations for research, teaching and service. We reviewed state and institutional demographics, research quality and quantity indicators and student and faculty characteristics.   The criteria we used include:

- Universities rated as Carnegie Research 1 institutions. This defines universities in magnitude of R&D funding and in the number of doctoral degrees granted. UNL is currently a Carnegie Research 1 institution.
- Universities included in the top tier or second tier of national universities as defined by the US News & World Report (USNWR) rankings. Since we believe that top quality undergraduate teaching remains an important part of our institutional identity, the USNWR rankings arguably provide an external reputational assessment of programs that place some emphasis on undergraduate education since they are intended for students choosing an undergraduate institution. This ranking focuses largely on the inputs and impact of the teaching dimension of the institution.
- More qualitatively, the Task Force looked at a variety of institutional and location characteristics, including geographic location, size, the scope of professional and graduate schools and the presence of an agricultural school. Academic rankings that attempted to capture more qualitative aspects of academic research or eminence were also considered (Graham and Diamond, 1997; Keith, 1999).

Exhibit 1 lists the 46 public universities that meet the first two criteria identified above. These institutions are viewed as incorporating the committee's most basic perception of the University of Nebraska-Lincoln within the family of national universities. Exhibit 2 identifies the 16 universities that the Task Force proposes as its "aspirant family." Although not all of these institutions have the same features as UNL, they are broadly comparable in terms of overall missions and institutional features and represent schools with whom we would be pleased to be identified.

Identifying schools that we seek to become identified with is only a first step. Achieving the goal of increased scholarly productivity, with its concomitant improvements in instruction and engagement, will require specific strategies. The universities listed in Exhibit 2 show promise for further study in developing strategies for enhancing research productivity and quality. To this end, the Task Force has also identified two sets of three public institutions that should be looked at quite closely. One set is made up of three "stellar" universities at the top of most lists of public institutions ranked by quality: University of California (Berkeley), University of Michigan (Ann Arbor), and University of Wisconsin (Madison). The Task Force suggests analyzing these institutions to learn how they became great research institutions and how they maintain their greatness.

In addition, we also identified a set of three public universities that have achieved (or are in the process of achieving) quantum increases in their institutional eminence: University of Massachusetts (Amherst), Texas A&M University and University of North Carolina – Chapel Hill. Their status is rapidly rising in higher education. The Task Force recommends studying the methods these institutions used to achieve their improved eminence so that the University of Nebraska can adopt those strategies that are appropriate to our situation.

VI. How Do We Get There?

Over the course of more than a year, various subgroups within the Task Force have recommended strategies for advancing UNL's research productivity. This section presents promising strategies for implementing our vision through concentrated actions. Exploring whether the universities we have identified were able to succeed through implementing one or more of these strategies represents the next step in exploring our vision.

The incentives, resources, opportunities, and strategies necessary to develop strong humanities, professional, or fine arts programs are not the same as those necessary to develop strong programs in the social and natural sciences or in agriculture. A "one size fits all" approach to strategic planning is likely (inadvertently or deliberately) to privilege some disciplines over others. Instead, it is important to value the alternative approaches necessary for developing successful programs in different areas of scholarship. This report cannot capture all of the distinctions, exceptions, and differences in terminology used by different disciplines and units across campus. However, the strategies outlined below are developed from the underlying perspective that the common thread across the campus should be an emphasis on excellence and on scholarly impact, however defined within each discipline.

A.   Maintain a strong faculty

1. <u>Recruiting and hiring faculty</u>. Good hiring is the single most important action that we can take to upgrade our reputation. Aggressive recruiting of nationally recognized senior faculty and the recruitment, development and support of outstanding junior faculty are all necessary. Chairs, deans and every member of search advisory committees should be selected for their commitment to an uncompromising search of excellence, hence, hiring the most highly qualified candidates. The goal of every search committee should be to hire candidates "better" than themselves. Never should we hire faculty or matriculate students just to fill a slot temporarily or raise enrollments. Faculty recruiting policies must encourage diversity in background, perspective, even ideology. Strategic faculty hiring practices should permit the development of clusters of strong researchers working on allied problems. Only persons with demonstrated capability in research and/or creative activity will be hired.

2. <u>Retaining outstanding faculty</u>. Efforts to recruit and develop outstanding junior faculty need to be paired with sustained efforts to retain them and to retain our nationally recognized senior faculty. At some leading universities, for example, special professorships are created that include a salary supplement (to ensure that salaries are strong compared to those offered by competitors), and funds are provided to enhance the senior faculty's research and/or teaching program through travel support, equipment purchases, research assistance, graduate student stipend supplements, and the like. At UNL, by contrast, funds from the Othmer bequest can be used to recruit outstanding senior faculty from outside the

university, but are unavailable to reward those who have become outstanding scholars while at UNL. Many senior faculty at our university discover that the only way to bring their salaries to nationally competitive levels is to entertain outside job offers, but doing so renders these scholars vulnerable to leaving the university. In these circumstances, administrators must aggressively propose counteroffers to retain these outstanding scholars. Even so, the Task Force believes that preventive efforts that seek to reward and support outstanding senior faculty are likely to be far more effective than responding with counteroffers after these faculty have begun to look elsewhere. Improving the intellectual culture on campus and celebrating the successes of our outstanding faculty through public recognition are other non-financial elements important for retention.

3. <u>Reviews, tenure and promotion</u>. Departments must establish very high standards for research and creative activity accomplishments in promotion and tenure decisions. All current tenure track faculty must be actively engaged in research and creative activity. Personnel policies and practices (hiring, workload, tenure, reward) should be oriented towards excellence in all expressions of scholarly endeavors while recognizing different missions across colleges, programs, and faculty members within programs. Similarly we should seek to understand why some promising members of the academic community fail – or leave the institution - and what could be done differently to help others avoid a similar fate.

4. <u>Non-tenure track research associates</u>. The vision of a significantly expanded research agenda funded by outside grants suggests an increase in the number of research associate appointments as part of a contract research project team. Such positions are non-tenure track and often supported solely with outside funding for specific projects. The role research associates will carry out is different in type from the more familiar role of undergraduate teaching which most temporary or part-time faculty traditionally perform at UNL. Such investigators are typically contracted for specific projects and are not free to define the nature of their research or to publish results of work without the consent of the project director, who is normally a tenured faculty member. National AAUP policy has not recommended a tenure policy for investigators who do not have regularly funded faculty appointments. We need to protect the integrity of the tenure system for regular faculty whose appointments are not temporary/part-time nor defined by a specific research project contract. At the same time, we must carefully define the nature of contract research associates so as to afford the individuals who will fill these positions the rights and responsibilities appropriate to the nature of the duties they perform.

5. <u>Developing external networks</u>. Strengthening national and international scholarly networks that include the work of UNL faculty would foster the development of the "relational capital" of our scholars within broader research and funding networks. Faculty should be encouraged to use development leaves, and a regular part of the process should be an accompanying fellowship or grant application to extend the one-semester leave to a

full year. In addition, scholarship networks can be fostered through flexible travel funding, conference and working-group support, visiting scholars program, and strong investment in information technology.

B.   Increase graduate program standards and support

Recruiting, graduating, and placing more top quality graduate students is central to improving our reputation.   Strong research programs and strong research faculty are the key requirements for increasing our graduate programs. To attract top students, however, competitive stipends are also essential. To offer stipends and benefits that match those of our peer institutions, we need to attract donors to provide named assistantships and to increase the stipends associated with assistantships. Additional funding for graduate student research and doctoral dissertations is needed, both through external funding and the indirect cost recovery funds and through other sources.   Better funding of graduate fellowships will be enhanced if the Graduate College has stronger ties with both the NU Foundation and with the Office of the Vice Chancellor for Research.

Graduate student recruiting must be global and must provide multiple ways for good applicants to learn about our programs and faculty. Prospective students use multiple routes to learn about university programs, including websites, faculty contacts, alumni friends and family, and conversations with current graduate students. Improving the ability of prospective students to connect through these various means increases the number of students who hear about the opportunities at UNL. Providing quick responses to inquiries made by prospective students is necessary to successfully recruit students. Funding to bring outstanding potential graduate students to campus for interviews increases our ability to compete for strong students.

Once on campus, students must be provided with the support of high quality programs that meet their career directions, and a culture that emphasizes graduate scholarship, research and creative activity. The elements of a successful culture discussed earlier apply to graduate students, graduate education, and post-doctoral researchers as part of the larger intellectual community. The graduate education program in most units should be upgraded by increasing admission standards, requiring essential coursework, increasing the rigor of qualifying exams and final exams, conducting rigorous creative scholarship, and expecting high-quality research and well-prepared dissertations.

Graduate programs are preparing future professionals in the professoriate, in professional practice, in public policy roles, and in private research and industry. We need to have institutionalized programs that will prepare students for their career paths in the wide range of positions taken by our graduates. Because Research I universities produce 80% of all Ph.D.s but employ only 5% of them, we must maintain and expand the Preparing Future Faculty program. Programs providing professional development opportunities for students seeking academic careers at non-research institutions as well for those seeking careers in government, industry, and non-profit agencies should be expanded.

Post-doctoral positions increasingly are a necessity for entry into tenure-leading academic appointments in a number of disciplines, including temporary post-doctoral positions in the humanities. We need to recognize the importance of post-doctoral education and increase both the number of post-doctoral positions and the support and structure for those in such positions. The Graduate School should provide additional preparation and support for those in post-doctoral positions to help enable them to develop their career potential. Such support includes developing policies on intellectual property issues, good lab practices, ethical practice in teaching and research, developing teaching competencies and grantwriting skills, and assisting them in the best placements possible. The planned Graduate Center is expected to provide this more comprehensive support and to provide a forum for the lively interaction of graduate students and faculty.

C.   Renew the research environment

The University needs to make a sustained and stable commitment to research excellence. In addition to sustained articulation of this vision at the top levels of administration, this will require coordinating efforts at the departmental, college, and institutional levels to make sure our reward structures and resources are used effectively to promote research and that our administrative support units for research operate effectively.

Mixed messages and dust-covered strategic plans have led to confusion and doubt at all levels about our primary mission.   Before we can expect departments and faculty members to establish high research standards for hiring and promotion, there must be a reasonable belief that this is a sustained and important priority of the university.

Reward structures and resources at all levels (including, for example, development leave policy, merit pay, the distribution of summer and research funding, foundation dollars, distinguished professorships, visiting scholars programs, equipment funds) need to rethought so that these scarce resources are used effectively to promote the highest quality research.   At the present, lack of coordination among these resources and the tendency for many to be distributed on principles of equality and access dilutes their effectiveness for promoting research.

Our administrative structures in the Office of the Vice Chancellor for Research and in Sponsored Programs must be effective in helping researchers apply for, and obtain and administer external funds. Currently, bottlenecks exist that make it unnecessarily difficult to submit or administer grants and contracts. If research and external funding are to be a priority, the university must evaluate these programs critically and invest in them appropriately. The inclusion of active researchers on the advisory boards of these entities would increase their responsiveness.

D.   Support faculty careers

Institutional commitment to every individual's success should be evident throughout a person's career. New faculty need access to seed money and development workshops on writing successful grant applications. They need opportunities to form partnerships with senior researchers and opportunities to attract top graduate students to work with them. As they mature professionally, faculty should be encouraged to take on new responsibilities and to participate in opportunities to acquire new areas of expertise. Senior faculty should never be allowed carry the same departmental assignments year after year without opportunities to explore new vistas. Faculty should be encouraged to strive for professional recognition and awards, and those who successfully compete for these accolades should be honored.

Opportunities to learn about the interests and expertise of other faculty both inside disciplinary units and beyond provide a basis for faculty growth and collaborative opportunities. One strategy would be to create "research communities" within the institution that would sponsor periodic research seminars featuring work by one or more of its members or their graduate students. The goal might be that every faculty member with a research appointment would become a member of at least one university "research community." Sponsored programs could be reorganized to support these research communities. Scholarly networks of UNL faculty with researchers at other universities can also be fostered through flexible travel funding, working-group support, visiting scholar and conference programs, and other resources.

Both junior and senior faculty need better access to information about the accomplishments of our faculty, our research productivity and the reputation of our graduate programs if we are to create a sense of pride and instill a shared responsibility for UNL's reputation. Benchmarks that help us understand UNL's standing among research universities need to be visible to all in the campus community in order to better monitor the health of our academic environment. Fundamentally, we should seek to create an academic culture in which each member of the community plays a meaningful role in the organization and has a clear connection with the institutional purpose. This role may be defined primarily within departmental structures, but must extend beyond them as well. Faculty must be encouraged to maintain regular and substantive communication networks that extend across departmental lines.

E.   Capitalize on faculty strengths

Scholarly vitality requires involvement in both teaching and research. In most UNL programs, faculty engaged in research and scholarship also teach undergraduate and graduate courses. All students at a land grant, Research I university have unique educational opportunities which are unavailable at many other institutions. This creates the potential for strong positive relationships between teaching and research, and we should strive to develop and promote policies that boost these symbiotic and synergistic possibilities. Some of the most exciting teaching arises from research insights derived from

the lab or field, and new research perspectives emerge from efforts to explain prior findings to new audiences. Research and teaching are also integrated in practical ways, such as the mentoring of promising undergraduate and graduate students in research apprenticeships, the integration of research practica into coursework, and collaborative writing projects with students. Both teaching and research provide sources of creative inspiration that make these intellectually comparable, not competitive activities. But institutional support for a productive balance of teaching and research begins with the recognition that quality of both instruction and research should be valued more highly than quantity. Work with individual students outside of the classroom, such as graduate and undergraduate research advising, must also be given full recognition as a contribution to the teaching mission. Further, thoughtful teaching assignments can enhance researchers' contributions to education. Faculty who seek to be outstanding researchers and teachers should be recognized.

At the beginning of a faculty career, young scholars are hired and tenured with the expectation of a productive career of research and creative activity. As careers develop, however, other strengths may emerge (such as in undergraduate instruction or community outreach) that are also beneficial. The realization of different areas of faculty strength justifies the development of a policy of "multiple profiles" of responsibilities for tenured faculty. The concept of "multiple profiles" is that different faculty may contribute differently to the achievement of the institution's overall mission and mandate. As a consequence, some faculty may devote unusual amounts of time to productive research, while others who are skilled teachers may devote greater time to the classroom, and others to various service activities. The overall point is to encourage faculty to work within their strengths and to expect excellence within their areas of expertise. The Task Force endorses this approach, provided that multiple profiles of faculty workload are responsive to faculty strengths and interests, and are not driven by a deficit approach (e.g., a poor researcher is rewarded with enhanced teaching responsibilities absent clear evidence of instructional skill and interest).

F.   Strengthen faculty governance of the university's research mission

Faculty leadership in the creation, execution and oversight of university policies and practices governing the allocation and investment of institutional resources for research needs to be strengthened, as does faculty accountability.

Attention should be given to strengthening the role of faculty governance in shaping university policy decisions that affect the quality of the research environment. Research faculty need effective governance mechanisms through which to discuss emerging research issues facing the campus and researchers, including issues related to information transfer, intellectual property, faculty rights, academic freedom issues, collaborating with external business and other organizations, and research ethics. A structure for careful, shared faculty and administrative consideration of these and other related issues must exist for establishing policies and plans that further the university's research mission. Decisions about issues such as technological infrastructure, priority research areas, major new initiatives, and

facilities must be made with leadership and participation by research faculty. In some cases, existing governance structures within UNL and the graduate college may be inadequate; in other cases, existing provisions may merely need to be made to function more effectively. More senior faculty should be encouraged to serve in these governance roles.

G.   Increase resources

Every faculty, staff and student should have access to tools adequate for the levels of productivity expected of him or her. Expectations for research productivity vary greatly across units, as do faculty workloads, reward structures, and access to support staff. Performance expectations that are disproportionate to the resources available to support research and graduate programs in each area of the institution not only stunt research in undersupported disciplines, but also have a negative impact on institutional culture and hinder efforts at collaboration. These issues may need to be addressed if attitudes are to change, and interdisciplinary research efforts are to increase.

Although individual investigators must bear the primary responsibility for determining new directions for research and creative activity, we should also develop administrative and financial incentives for high-impact, multi-investigator, long-term research projects that can attract external support. Other ways of increasing resources include strengthening ties with the for-profit sector of the economy (whether local, national, or international), improving external funding for research, increasing tuition income through improved enrollments (especially the enrollment of out-of-state students), and increased foundation bequests that are used thoughtfully and strategically to change the scholarly climate at UNL.

The campus's indirect cost revenues (IDC) will grow as faculty recognize that increasing the IDC is critical to building the research capability of the institution. The expectation that existing resources will be used to leverage additional external funding also needs to be fostered among all faculty, especially new faculty. The Office of Sponsored Programs might provide faculty workshops specifically focusing on the keys to success in this funding strategy. Faculty who have been successful in such efforts could serve as mentors and sources of inspiration for others trying to develop these skills. The role research faculty themselves play in determining how IDC revenues are allocated by the institution should also be rethought. At the same time, it is important to reaffirm the importance of existing relationships with funding sources that provide a steady stream of revenues to support ongoing research programs, even if they do not fully cover IDCs. Expectations need to reflect the realities of available funding for research in different disciplines.

H.   Promote UNL's research and graduate studies missions

As we seek to increase our research funding and productivity, we must rekindle our own articulation, and the state's understanding, of the contributions of the full spectrum of our research programs to the well being of our communities. As the university's dependence

upon external funding agencies increases, we must understand the research priorities of external funding agencies and the intellectually compelling issues facing citizens of the state. To reclaim its primary purpose of sustaining a knowledge base for educating the citizens of the state, we must envision the future of Nebraska that is broader and richer than either its past or present. And we must demonstrate our commitment to this role in all aspects of the life of this institution.

To do this, UNL needs effective public relations efforts to increase the visibility of the contributions the university's research programs make to the quality of life in Nebraska. We need an arm of public relations working with the faculty. The University must have an active advancement team to promote the University in such a way as to increase the quality of students who are recruited, improve the perception of University both within the state and nationally, and facilitate access to research funding. The term "advancement team" is not meant to imply that this is a centralized organization. In fact, it may exist as a number of individuals distributed across campuses and the country, but acting in concert to improve the quality of graduate education and research at UNL. Specific issues that this team might address include student recruitment, earmarked research funding, and interactions with various constituencies within the state of Nebraska. State efforts include communicating to the citizenry and legislature the importance of research to the overall quality of the institution and the positive impact of sustained state funding in research. This is particularly important in those disciplines whose economic impact is less immediate and possibly less relevant to the economic demography. In addition, the team should facilitate relationships between faculty and local industry and encourage the growth of local industry in disciplines represented at the University.

Because national reputation does have consequences, we should consider whether our current organizational structure interferes with appropriate recognition of our strengths. Joint faculty appointments, for example, might increase our national rankings by pulling more of our senior research scholars into ranked departments.

I.   **Enhance flexibility in response to new opportunities**

The Task Force considered the need to focus resources and develop "Centers of Excellence." We concluded that reallocations of resources occur as a continual process of the University in the course of its normal operations. Although central to campus flexibility and dynamism, the Task Force concluded that reallocation cannot be a central strategy in building excellence. Rather than focusing on how to slice, or re-slice, the resource pie, the top concern at the university level should be on ways to grow new research resources, through innovative and synergistic research combinations. This calls for leadership and decision making that permits investment in emergent areas of scholarly growth; flexibility and creativity in the organization of programs; a genuine, clear, and consistent organizational reward structure; clear and consistent direction for the institution that chooses among competing priorities; and other incentives (some perhaps borrowed from the corporate culture) that enable UNL to be promptly responsive to changes in the research

world. In the process, we may focus to improve productivity – we may choose to do less, but do it better.

Departmental structures themselves should be flexible, and the institution as a whole needs to develop mechanisms for remaining flexible to accommodate changes in workloads and assignments so that faculty can take advantage of new opportunities for research as they arise. Overall, faculty at UNL need to be encouraged to take risks and explore ideas with promise, recognizing that not all initiatives will prove successful. Evaluation procedures and reward structures should recognize all good efforts, not just those that result immediately in external funding.

Conclusion

The University of Nebraska-Lincoln has a legacy of being one of the nation's great public research universities. The Task Force believes that we can be such a university again by the time we celebrate our sesquicentennial anniversary in 2019. To reach such a goal, we need to recommit ourselves to building and retaining strong faculty who are dedicated to the process of discovery and to create an environment that supports and encourages their best efforts. We believe we have outlined the steps necessary to create such an environment, and we urge the campus community to consider how to implement this vision at every level of the university.

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Appendix A

**Charge to the Future Nebraska Task Force by
Senior Vice Chancellor Richard Edwards
August 12, 1999**

The Task Force will provide a statement of what the nature and scope and quality of UNL's research and graduate programs should be some two decades hence – say in the year 2019, on the 150th anniversary of the University's founding. Call this our Sesquicentennial Vision – what aspirations or dreams or obligations do we have for the future of UNL's research and graduate programs? Our Sesquicentennial Vision should be ambitious, moving UNL beyond our current achievements and status, and recognize our role as one of America's premier research and graduate institutions; it should be hard-headedly realistic, and not necessarily limited by current financial or other constraints; and it should be rooted in our traditions and role as Nebraska's principal state university.

The statement needs to be sufficiently engaging, detailed, and documented to help the campus understand its purpose and embrace its merits. The statement will be put forward for campus (and wider) discussion. The statement will be successfully adopted and used only if in general it wins support across the campus.

The statement does not need to and should not identify specific areas, disciplines, or topics for enhanced programming – those decisions will be left to "ordinary" planning processes within the colleges and in campus-wide mechanisms.

The statement should provide sufficient guidelines, or benchmarks, or indicators of progress so that the Task Force's vision may inform campus decisions and so the university may regularly monitor its progress towards achieving it.

Future Nebraska Task Force

John Angle	retired
Azzeddine Azzam	Agricultural Economics
Stephen Baenziger	Agronomy
David Baltensperger	Agronomy
Paul Barnes	Music
Andrew Benson	Food Sciences and Technology
Nancy Betts	Nutrition Science
David Beukelman	Special Education
Donald Clifton	The Gallup Organization
Dermot Coyne	Horticulture
Sidnie Crawford	Classics
Richard Edwards	Senior Vice Chancellor for Academic Affairs
Brian Foster	Dean, Arts and Sciences
Mark Gustafson	farmer; President, Ag Builders
James Hendrix	Dean, Engineering and Technology
Alan Kamil	Biological Sciences
Gail Latta	Libraries
Fred Luthans	Management
Edna McBreen	Associate Vice Chancellor, IANR
Darrell Nelson	Dean, Agricultural Research Division
Lorraine Olson	Mechanical Engineering
Lance Perez	Engineering
Barbara Plake	Educational Psychology
Daniel Pomp	Animal Science
Linda Pratt	English
Earl Scudder	Scudder Law Firm
Helen Raikes	The Gallup Organization
Ross Thompson	Psychology
Lynn White	Sociology
Sylvia Wiegand	Mathematics
Steven Wilborn	Law
Green Yuill	Engineering
Linda Ruchala	Accountancy; Task Force Project Director
Larita Lang	Administrative assistant
Connie Frey	Research assistant

Exhibit 1: Public Universities that are both Carnegie Research 1 and in the Top 2 tiers of USNWR rankings (listed in order of their USNWR ranking)

1. University of California–Berkeley
2. University of Virginia
3. Univ. of California–Los Angeles
3. University of Michigan–Ann Arbor
5. U. of North Carolina–Chapel Hill
7. Univ. of California–San Diego
8. U. of Illinois–Urbana-Champaign
8. Univ. of Wisconsin–Madison
10. Georgia Institute of Technology
10. Pennsylvania State University
12. University of California–Davis
13. Univ. of California–Santa Barbara
13. University of Texas–Austin
13. University of Washington
16. University of California–Irvine
16. University of Florida
18. Purdue Univ.–West Lafayette (IN)
18. Texas A&M Univ.–College Station
18. Univ. of Minnesota–Twin Cities
21. University of Iowa
22. Rutgers–New Brunswick (NJ)
22. University of Georgia
22. Univ. of Maryland–College Park

28. Ohio State University–Columbus
28. Virginia Tech
31. Indiana University–Bloomington
31. Michigan State University
31. University of Colorado–Boulder
31. University of Connecticut
38. Iowa State University
38. North Carolina State U.–Raleigh
38. University of Kansas
38. University of Pittsburgh
45. Florida State University
45. Univ. of Tennessee–Knoxville
48. University of Arizona
48. Univ. of Massachusetts–Amherst
48. Univ. of Missouri–Columbia
T2. Colorado State University
T2. SUNY-Buffalo
T2. SUNY-Stony Brook
T2. Univ. of Kentucky
T2. Univ. of Nebraska
T2. Univ. of Oregon
T2. Univ. of South Carolina
T2. Washington State Univ.

NOTE: Tier 2 (T2 schools listed in alphabetical order; "top 50" schools listed USNWR ranked order.

Exhibit 2: The "Aspirant Family"

1. University of California –Berkeley (stellar)
2. University of Michigan- Ann Arbor (stellar)
3. University of Wisconsin – Madison (stellar)
4. University of Virginia
5. University of California- Los Angeles
6. University of North Carolina-Chapel Hill (rising)
7. University of California-San Diego
8. University of Illinois-Urbana
9. Pennsylvania State University
10. University of Texas-Austin
11. University of Minnesota
12. University of Iowa
13. University of Georgia
14. University of Maryland – College Park
15. Texas A&M University (rising)
16. University of Massachusetts – Amherst (rising)

Table 1: Faculty Academy Membership and Faculty Awards, 1994-1996

Institution	Per Capita Publications	Per Capita Publications Top-Science Journals	Per Capita Publications Top-Social Science	Total Acad Member (NAS/NAE/I
University of Illinois	2.75	.4512	.1113	52
University of Minnesota	3.41	.2893	.0899	33
Ohio State University	2.40	.1954	.0672	11
Purdue University	2.28	.3479	.0588	22
University of Iowa	3.75	.2480	.0756	12
Iowa State University	1.52	.2325	.0215	7
University of Kansas	1.83	.1098	.1119	6
University of Missouri	2.17	.1021	.0586	5
Colorado State University	1.59	.1937	.0141	N/A
Univ. of Nebraska-Lincoln	**1.51**	**.0939**	**.0515**	**2**

Notes: Publication measures taken from Graham & Diamond (1997) based on data in mid to late 1980's. Academy membership National Academy of Sciences, National Academy of Engineering and IOM. Arts and Humanities Awards & Fellowsh fellowships documented by the National Endowment for the Humanities, the John Simon Guggenheim Foundation and Societies, 1994-1996.

Table 2: Total R&D Expenditures by Source of Funds, FY 1997

Institution	Federal Government	State and Local	Industry	Institutional	Other	Tota
University of Minnesota	55%	14%	7%	15%	9%	
Ohio State University	42	16	13	21	8	
University of Illinois	55	13	4	24	5	
Purdue University	45	10	13	32	0	
University of Iowa	59	3	9	22	7	
Iowa State University	34	30	5	27	3	
University of Missouri	27	14	6	48	5	
Colorado State University	62	16	4	17	0	
University of Nebraska-Lincoln	**35**	**33**	**4**	**26**	**2**	
University of Kansas	43	9	8	35	6	

Note: Institutional funds include: 1) institutionally financed funds and 2) unreimbursed costs.

Source: National Science Foundation.

Table 3: Total R&D funding from all Federal Agencies (in thousands)

Institution	1997 Rank	1993 Rank	1997	1996	1995	1994	
University of Minnesota	14	13	$ 200,149	$ 198,927	$ 194,819	$ 181,039	$ 17
University of Illinois	23	20	156,366	145,514	139,078	138,734	14
Ohio State University	31	29	122,582	118,811	122,660	113,186	10
University of Iowa	36	36	108,534	105,646	103,115	99,536	9
Purdue University	48	51	91,969	91,632	93,256	82,148	7
Colorado State University	57	56	79,393	74,930	75,216	66,464	6
Iowa State University	86	71	52,938	54,904	58,766	56,439	5
University of Kansas	93	95	46,733	41,858	42,209	40,816	3
University of Nebraska-Lincoln	**102**	**117**	**41,269**	**32,352**	**36,897**	**35,471**	**2**
University of Missouri	110	110	35,993	33,397	32,420	31,299	2

Table 4: Federal research funding per full-time faculty (in thousands)

Institution	Total R&D funding	Science & Engineering funding
University of Minnesota	$ 187.55	$ 129.0
University of Iowa	178.70	105.1
University of Illinois	168.31	89.9
Iowa State University	154.97	59.3
University of Missouri	147.31	64.5
Colorado State University	139.91	80.8
Ohio State University	135.60	59.3
University of Kansas	115.48	52.8
Purdue University	112.22	52.2
Univ. of Nebraska-Lincoln	**113.03**	**38.2**

Source: UNL Office of Institutional Planning.

Table 5: Number of grants awarded by amount of contract

Amount of grant	1995-96	1996-97	1997-98	1998-99
$ 1 –$ 24,999	1,588	1,636	1,785	1,894
$ 25,000 - $ 49,999	122	126	141	149
$ 50,000 - $ 99,999	113	131	137	148
$ 100,000 - $499,999	107	126	129	140
$ 500,000 - $999,999	7	10	7	6
$1,000,000 or more	6	4	9	6
Total awards	1,943	2,033	2,208	2,343

Source: UNL Office of Institutional Planning, Rebecca Carr.

Table 6: Reputational Survey Based Rankings

Institution	Number of programs ranked 1 or more standard deviations above the mean	Number of programs ranked in top 25 nationally	Eminenc Keith (19
University of Illinois	16	21	74.35
University of Minnesota	10	21	70.71
Ohio State University	1	14	58.37
Purdue University	7	7	63.35
University of Iowa	0	5	55.24
Iowa State University	2	3	53.89
University of Kansas	0	1	48.75
University of Missouri	0	0	44.70
Colorado State University	1	1	44.62
Univ. of Nebraska-Lincoln	**0**	**0**	**41.00**

Source: National Research Council
Keith (1999)

Table 7: State Appropriations by School and State for 1999-2000 (in thousands)

State Appropriations by School 1999-2000

Institution	Amount	1-year change
University of Illinois	$808,214	+4%
University of Minnesota	$585,558	+5%
University of Missouri	$450,764	+6%
Ohio State University	$408,810	+6%
University of Nebraska - Lincoln	**$375,616**	**+5%**
Purdue University	$304,345	+7%
University of Iowa	$274,828	+6%
Iowa State University	$263,147	+5%
University of Kansas	$226,830	+3%
Colorado State University	$142,050	+4%

State Appropriations by State 1999-2000

State	Amount	National Rank	1-year change	National Rank	5-year average annual change
Colorado	$719,221,000	29	+5%	28	+5.7%
Illinois	$2,554,402,000	5	+6%	25	+6.1%
Indiana	$1,227,076,000	15	+7%	17	+5.8%
Iowa	$826,589,000	26	+5%	30	+5.2%
Kansas	$622,198,000	32	+3%	44	+4.1%
Minnesota	$1,280,627,000	13	+3%	42	+4.4%
Missouri	$977,626,000	21	+6%	21	+7.7%
Nebraska	**$473,939,000**	**36**	**+8%**	**14**	**+5.1%**
Ohio	$2,060,555,000	8	+6%	20	+5.6%
Total U.S.	*$56,683,511,000*		*+7%*		*+5.8%*

Source: Chronicle of Higher Education

Table 8: Percentage of Total Revenue from State and Tuition (less medical center revenue)

Institution	1998	1997	1996	1995	1994	1993	1992	19
University of Illinois	47.6%	48.1%	49.2%	48.8%	47.2%	47.2%	47.5%	4
University of Minnesota	45.5	45.1	45.7	45.1	47.8	47.3	48.5	4
Ohio State University	53.0	52.8	53.3	53.0	52.0	53.3	54.9	5
Purdue University	54.1	53.9	53.9	52.5	52.6	53.8	54.1	5
University of Iowa	47.4	48.0	46.0	46.8	48.2	48.0	47.6	4
Iowa State University	55.6	54.6	54.5	54.0	52.7	53.6	53.7	5
University of Kansas	51.4	53.5	56.0	56.2	54.7	56.6	57.6	5
University of Missouri	49.3	50.0	53.0	48.9	49.9	50.4	50.3	5
Colorado State University	44.4	51.5	43.4	50.0	51.1	52.0	52.1	5
Univ. of Nebraska-Lincoln	**54.1**	**54.1**	**52.5**	**54.2**	**55.1**	**55.9**	**56.9**	**5**
Average of Regents' Peers	**49.6**	**50.1**	**49.3**	**50.0**	**50.3**	**50.9**	**51.3**	**5**

Source: NSF WebCASPAR Database System; IPEDS Financial Reports