

OUR TIME, OUR FUTURE:

THE UNC COMPACT
WITH NORTH CAROLINA

STRATEGIC DIRECTIONS FOR 2013-2018

D R A F T
JANUARY 16, 2013

THE FIVE GOALS

In considering the challenges facing North Carolina, the broad changes affecting higher education, and the University's historic commitment to serving all citizens of the state, the UNC Strategic Plan for 2013-2018 focused on five high-priority goals:

1. Setting degree attainment goals responsive to state needs
2. Strengthening academic quality
3. Serving the people of North Carolina
4. Maximizing efficiencies
5. Ensuring an accessible and financially stable university

Higher education represents a significant investment, and citizens rightly expect a return. That is especially true during a time of constrained public resources and general economic difficulties. The University must create real value, and all stakeholders — students, parents, teachers, citizens, and lawmakers — must be good stewards of the public trust.

Higher education is undergoing dramatic structural changes in response to economic and technological forces that extend far beyond North Carolina. This represents both a challenge and an opportunity, one that must be met with a culture of evidence that values data-driven analysis and strategic thinking. The University must confidently embrace these changes to sustain and strengthen what the citizens of North Carolina have built over the past two centuries.

In meeting the goals above, our approach has been to:

- Collect, analyze and critique data from internal and external sources
- Set aside preconceived notions and allow facts to drive the outcomes;
- Establish actionable strategies that are clear, measurable, and affordable;
- Define sources and uses for all funds, creating clear accountability for strategic investments.

The plan that follows is faithful to this approach and to our longstanding commitment to North Carolina.

HISTORICAL CONTEXT

The University of North Carolina, the oldest public university in the nation, traces its roots to the state's 1776 constitution, which held that "All useful learning shall be duly encouraged and promoted in one or more universities." Chartered in 1789, the University opened its doors to 51 students in the spring of 1795. Today, more than 220,000 students are enrolled at 16 University campuses across the state and at the North Carolina School of Science and Mathematics, the country's first public, residential high school for gifted students.

From its earliest days and through most of the nineteenth century, North Carolina remained largely poor and suffered massive out-migration. The state's leadership was reluctant to invest in roads, ports, and other and basic infrastructure necessary to foster trade and economic prosperity. With opportunity lagging for most citizens, 30 percent of North Carolina's native-born white population was living outside of the state by 1860. Revisions to the state Constitution in 1835 paved the way for lawmakers to promote public education and infrastructure improvements. These were slow to emerge but proved key to the state's future development.

The University endured through the Civil War but faced considerable hardship in the years that followed. Beginning in 1871, the University shuttered for four years, emerging in 1875 with a radically new curriculum. Evolving from its traditional roots in classical education, the "Battle Plan" — named for legendary University President Kemp Battle — created a new structure of colleges and schools within the University. This reorganization provided the underpinning for University liberal arts education ever since, bringing the scientific, technical, engineering, and agricultural fields into the University. Forged amid daunting economic and social challenges, the new curriculum demonstrated

. . . an effort by the trustees to 'keep step with the century in its march of knowledge, invention and discovery.' Their metaphors testified to a radically new vision of education and society. The University would serve no longer as a mere repository of knowledge By 'gathering, creating and distributing knowledge,' it would become 'a potent force in the world's progress, a wide-felt influence throughout the State to make all men love and seek after learning.' (1)

Between the University's emergence from Reconstruction and the Great Depression, the state of North Carolina adopted or created new colleges and universities (by modern reference): Fayetteville State University, UNC-Greensboro, UNC-Pembroke, North Carolina State University, North Carolina A&T State University, Elizabeth City State University, Appalachian State University, East Carolina University, North Carolina Central University, Western Carolina University, Winston-Salem State University and UNC-Asheville.

The Great Depression prompted the first consolidation of the University, with its original campus in Chapel Hill, and what is now North Carolina State University and UNC-Greensboro, which had been founded in 1887 and 1891 respectively. The other state-supported colleges remained autonomous. Following the Second World War, returning service members supported by the GI Bill dramatically increased enrollment at the various institutions, marking the beginning of a phenomenal expansion. North Carolina established education centers across the state to serve returning veterans, and two of these centers grew into universities

(now UNC-Charlotte and UNC-Wilmington). In 1963, the state established the first public arts conservatory in the United States, now known as the UNC School of the Arts.

In the last century, political and cultural progress opened the University's doors at every campus to women and minorities, further cementing the institution's central role in North Carolina's public life and economic development. The post-World War II era marked the beginning of the rapidly expanding manufacturing and industrial base in North Carolina.

As demand for a higher education increased and the population in North Carolina expanded, so did the University. In 1969 and again in 1971, legislative action further consolidated the University by putting all public, 4-year institutions in the state under one general administration. In 1980, the state created the North Carolina School for Science and Mathematics, a public residential high school for exceptional juniors and seniors to focus on the intensive study of science, mathematics, and technology, and it was made a constituent institution of the University in 2007.

Over two centuries, the University has evolved into one of the strongest and most successful systems of public higher education in the country. It remains today, as Governor Zebulon B. Vance described in 1866, "the pride and chiefest ornament of North Carolina." University graduates have become leaders in business, politics, journalism, law, medicine, religion, art, and teaching. They have risen to national prominence, serving as President and Vice President of the United States, cabinet members and federal officials, and military officers of the highest rank. They have become Pulitzer Prize-winners, Nobel laureates, civil rights pioneers, astronauts, inventors, Olympic athletes, business leaders, and renowned artists.

The University's centuries-old roots remain central to its modern role. North Carolina still needs outstanding teachers, a diverse industrial base, innovative business leaders, and an educated citizenry. Today's high-tech world certainly needs scientists and engineers and mathematicians. But North Carolina is and will always be a richer place for the artists and historians and scholars of the humanities who help tell the story of our past, bridge our differences, and better understand the present so that we might shape our future. Today's mission — to discover, create, transmit, and apply knowledge to address the needs of individuals and society — remains true to the University's founding ideal of shared knowledge in a free society. That mission is still carried out through teaching, pathbreaking research and dedicated scholarship, all driven by the creativity and energy of students and faculty and guided by an unwavering commitment to public service.

From the state's earliest days, visionary leaders have worked tirelessly to secure the future of the University. It was William R. Davie's time in 1789 to establish the country's first public institution of higher learning. It was President Kemp Battle's time in 1875 to build the University's liberal arts foundation. It was President Edward Kidder Graham's time in 1913 and President Frank Porter Graham's time in 1931 to guide the University through a rapidly changing world. It was Governor Robert W. Scott's and President William Friday's time in 1972 to establish the University as a consolidated system of higher education. Along the way, countless others have shaped the future of the University and this great state. It falls to us to renew the University's covenant with its people and secure the promise of public higher education for all of North Carolina. It is our time and our future.

STRATEGIC PLANNING AND MISSION

The UNC Board of Governors has engaged in strategic planning, oversight, and evaluation since the Board was created by the North Carolina General Assembly in 1972. The Board adopted its first long-range plan in 1976, during the administration of President William Friday. The most recent plan was approved in 2006, when the Board adopted the *Supplement to Long-Range Planning 2004-2009*. Further updates were adopted through the 2007 report of the UNC Tomorrow Commission, which was informed by broad discussion with the public through a statewide listening tour.

From the outset, UNC's long-range planning has been guided by strategic directions recommended by the President and approved by the Board of Governors. These strategic directions serve as the foundation for current and future priorities, resource planning and allocation, program development, and review and refinement of missions, and strategic planning by constituent institutions and affiliated entities. The strategic directions also reflect the University's deep commitment to teaching, research, and public service, historic responsibilities that remain vital in meeting the state's 21st-century challenges.

The mission of the University is shaped in large measure by the constitutional and statutory mandates by which public higher education is established and maintained. Article IX of the Constitution of the State declares:

Sec. 8. Higher education. The General Assembly shall maintain a public system of higher education, comprising The University of North Carolina and such other institutions of higher education as the General Assembly may deem wise.

Sec. 9. Benefits of public institutions of higher education. The General Assembly shall provide that the benefits of The University of North Carolina and other public institutions of higher education, as far as practicable, be extended to the people of the State free of expense.

This constitutional mandate for a public system of higher education is effected by Chapters 115 and 116 of the General Statutes. Chapter 115A, enacted in 1963, provides for a statewide network of community and technical colleges and institutes which offer two-year college transfer and technical and vocational programs. Chapter 116 of the statutes, as amended by the General Assembly effective July 1, 1972, provides in Section 3 that:

The board of trustees of the University of North Carolina is hereby redesignated, effective July 1, 1972, as the 'Board of Governors of the University of North Carolina.' The Board of Governors shall be known and distinguished by the name of 'the University of North Carolina' and shall continue as a body politic and corporate and by that name shall have perpetual succession and a common seal.

Section 4 of the statute defines the University of North Carolina as the 16 public senior institutions in the state.

The Higher Education Reorganization Act of 1971 placed those 16 institutions under one governing board and defined the basic objectives for the University: to develop a well-planned system of higher education, to improve the quality of education, to extend its benefits, and to encourage an economical use of the state's resources. In the same act, the legislature reaffirmed the core role of the University in public life, declaring that “Teaching and learning constitute the primary service that the university renders to society.”

CHALLENGES

As a public institution, the University’s fortunes are wedded to those of North Carolina. For more than two centuries, the University has both shaped and been shaped by the dramatic transformation of the state's economy, society and politics.

That relationship remains paramount today, even as some of the most urgent issues confronting the University emerge from broad trends affecting all of higher education. Across the world, colleges and universities are responding to the same technological and economic forces that have reshaped fields from manufacturing to publishing. Some of these changes will prove beneficial, others disruptive. By democratizing information, new technologies offer unprecedented opportunities to radically expand the University’s core mission of transmitting knowledge. They also raise fundamental questions about the role of higher education, both today and in the years ahead.

It is vital that the University be proactive in shaping the relationship between traditional models of education and new methods of instruction. Students today have a far wider array of choices in pursuing higher education, and many of these emerging options place a greater value on speed, convenience, and flexibility. Demand for consumer-focused information, greater accountability, and transparent performance analytics is growing among policymakers, students, and the public.

It is incumbent upon the University to explore new and innovative ways to leverage and deliver our most valuable asset — the knowledge and experience of our faculty. The University of North Carolina enjoys a sterling academic reputation, a long history of pathbreaking scholarship, and intellectual talent that rivals the finest institutions in the world. It is our responsibility to ensure that these advantages are matched by a technological infrastructure and an entrepreneurial ethos that enable the University to compete effectively without compromising core values.

For the University’s diverse campuses, that competition is playing out regionally, nationally, and around the globe. The United States once held a commanding lead in higher education attainment, but that position has been eroding for decades. In 2010, according to the Organization for Economic Cooperation and Development, the U.S. fell to 12th place among 36 developed countries in postsecondary attainment among 25-to-34-year-olds. “If the United States is to regain its status as the leader in educational attainment and increase its economic competitiveness, the nation must make an investment in higher education access, admission and success for all students,” wrote the College Board in its 2011 report (2). Policymakers at every level and across the political spectrum have called for the United States to improve the

preparedness of high school graduates for college-level work, and for colleges and universities to more effectively guide enrolled students toward degree completion.

That challenge is magnified by the changing nature of student demographics. The average UNC-system student today is 22 years old, white, female, a North Carolina resident, and attending college full-time. But that traditional profile is giving way to an increasingly diverse population of prospective students. The 2010 Census detailed strong population growth in the South; a doubling of the the state's Hispanic residents, part of an ongoing shift away from a majority-white population (3); and an increase in the average age of the population as the Baby Boom generation begins to reach retirement (4).

These trends will inevitably impact the demands made on the University. Today, 68 percent of the University's students matriculate directly from high school. Growth in the state's K-12 population, especially among historically underserved populations, will push the University to help ensure better college readiness among high school graduates. At the same time, there is increasing demand from adult learners seeking access to higher education. As economic pressures and an aging population combine to drive more adult learners into college, UNC campuses will need to serve a wider array of students with different educational needs, varying levels of academic preparation, and demands for more flexible methods of instructional delivery.

The uncertain future of higher education funding magnifies all of these challenges. The University's reliance on public funding is both a historical strength, binding the institution closely to the needs of North Carolina, and a near-term difficulty, given the state's weak fiscal position in the aftermath of the Great Recession. Largely static funding for the past five years has coincided with continuing enrollment growth to produce a meaningful reduction in resources across the UNC system.

Even with a slow recovery in state revenues, there is little question that public resources for higher education will remain severely constrained. Like state governments across the country, North Carolina is grappling with intractable increases in health care costs, particularly funding for Medicaid. "The pressures of mandatory budget items will likely mount in the future, as the population ages and health care costs rise," noted a 2012 report by Demos (5). Those mounting pressures underscore the importance of work by the UNC Health System to develop new, cost-efficient models of care.

While universities across the country have responded to stagnant state support by leaning more heavily on student revenues, UNC has honored its bedrock commitment to low tuition. Maintaining that emphasis on affordability is critical to ensuring the University's role as an engine of opportunity for all students, regardless of income or background, particularly given the changing demographics of the state.

Higher education faces additional uncertainty at the federal level. The federal government invests in higher education through funding for financial aid, appropriations for teacher training, education benefits for veterans, research grants and contracts, and other sponsored programs. Given the ongoing political focus on deficit reduction and cuts to discretionary federal programs, these resources will at best remain flat and more likely decline.

More than ever, it is incumbent on the University to demonstrate that it is an able and efficient steward of public money and student investment. In 2006, the University initiated a business transformation project known as PACE (President's Advisory Committee on Efficiency & Effectiveness), and followed up that effort with the 2008 implementation of UNC FIT (Finance Improvement and Transformation). These best practices and business-oriented strategies — developed further in this plan — are meant to strengthen the University's competitive position and better utilize resources to enable our faculty, staff, and students to focus on the centuries-old mission of serving North Carolina.

The world is changing in ways that are both heartening and challenging. With confident action and innovative thinking, there is immense opportunity for the University to renew its commitment to North Carolina, to help chart the course for the state, and to inspire the dreams, foster the creativity, and open a world of opportunity for our students and citizens.

UNC COMPACT: THE COMMITMENT TO NORTH CAROLINA

The University commits to the people of North Carolina:

Academic excellence and the opportunity for success for all students

- We will admit and educate students who are academically prepared to succeed;
- We will equip students for lifelong learning by providing a high quality, rigorous education to develop students with the knowledge, skills, and integrity needed to become engaged citizens;
- We will ensure that our graduates have engaged in core studies to master critical thinking, verbal and written communication, computational competence, a global awareness, and the ability to work collaboratively;
- We will be true to our core mission of teaching, and offer multiple pathways for student learning;
- We will perform our duties and responsibilities with integrity and dedication to the highest ethical standards;
- We will support scholarly work that meets the highest intellectual standards; and
- We will value the talents and contributions of the University's faculty and staff, as well as their continued role in the shared governance of the constituent institutions and the University system.

Value for students and for North Carolina

- We will maintain our commitment to low tuition and reasonable student fees;
- We will recruit and retain faculty and staff whose teaching and research are enriched through new technologies and classroom innovations; and
- We will use every dollar efficiently and effectively by fostering shared services, greater collaboration, and interconnectivity that strengthens each campus and the system as a whole.

Solutions to North Carolina's biggest challenges

- We will pursue and share knowledge and research that advance the state's economy and improve the quality of life for all North Carolinians;
- We will support and reward faculty who demonstrate an entrepreneurial spirit and seek new frontiers of knowledge, commercialize technology, and create opportunities for students;
- We will support faculty and other university researchers in tailoring research and knowledge in ways that advance the state's economy;

- We will nurture and protect the University’s culture of inquiry, innovation, and the free exchange of ideas;
- We will rededicate ourselves to improving the health of all North Carolinians;
- We will engage businesses, nonprofits, state agencies, and others in a continuous effort to improve North Carolina’s competitiveness; and
- We will identify social, scientific, and economic trends that affect the State’s well-being.

Connection and engagement with North Carolina communities

- We will engage in outreach and development that nurtures the connections between the University and the people and communities of North Carolina;
- We will promote diversity and maintain an environment that celebrates and values the many perspectives, cultures, and traditions of our state;
- We will continue to make rich contributions to the cultural and artistic life of the state, and;
- We will devote the University’s knowledge and talent to protect, preserve and promote the natural and cultural resources of North Carolina.

REFERENCES

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Set Degree Attainment Goals Responsive to State Needs

The University of North Carolina's degree attainment goals are grounded in projections of state workforce demand for employees with a bachelor's degree or higher, and also take into account the broader economic and social impact of higher education. The guiding principles in degree attainment goal development were:

- (1) the goal must meet state needs;
- (2) the goal must be achievable without sacrificing quality;
- (3) the goal must be based on the best data available, recognizing that various data sources are created for reasons other than setting attainment goals and thus may have limitations; and
- (4) the plans based on this goal should reflect the changing nature of state and prospective-student demographics, the economic landscape, and underlying data, and they should be flexible enough to accommodate evolving understanding of all three.

BACKGROUND

Post-secondary education is recognized as a top priority nationally and in North Carolina (1). While current research is insufficient to establish a clear causal link, the preponderance of evidence shows a strong correlation between post-secondary degree attainment and higher earnings, lower unemployment, better health, lower probabilities of incarceration, less dependency on government programs such as Medicaid, SSI, and food stamps, and more civic participation (2-4).

While all of these factors are important, there must be solid linkages between education, jobs, and the economy.

Projections of future jobs needs vary, but this plan is based on North Carolina-specific data wherever possible (5-8). This plan focuses on setting an appropriate state attainment goal for individuals 25-64 years of age with a bachelor's degree or higher. Thus data must relate to:

- How many new graduates will be needed over the plan period (2013-1018)?
- What type of graduates (bachelor's, professional, graduate) will be needed?
- How do campus missions and capabilities fit into an overall plan?
- What can be achieved, how do we go about it, and what will it cost?

GOALS

- **The University of North Carolina will help the state reach a bachelor's and higher degree attainment level of 32% by 2018.**
- North Carolina will become one of the top ten most educated states by 2025, aiming for 37% of the population with a bachelor's degree or higher.

METHODOLOGY

How did we arrive at these projections, which must be supportable, achievable and linked to jobs and the economy?

WORKFORCE DEMAND

The strategic direction for degree attainment was developed using a range of workforce demand projections and the data and the methodologies behind them. Two publications illustrate the range of the workforce-informed pathways for North Carolina. Both use the same data as a foundation for their projections, but their methodologies lead to different results (6, 9).

The State of North Carolina Workforce 2011-2020, published by the North Carolina Commission on Workforce Development, uses data collected by the North Carolina Department of Commerce, Division of Employment Security, which is responsible for the cooperative Occupational Employment Statistics Program (between the state and the federal Bureau of Labor Statistics, or BLS) (5). The Commission's report presents projections made from these data by Economic Modeling Specialists, Inc. (EMSI). In addition to projecting industry and occupation growth, these projections link educational requirements to those occupations.

Those linkages are the primary distinction between the Commission's projections of what education levels employers will demand of future employees and other approaches to projecting the workforce demand for education. The EMSI projections assign educational requirements for various occupations based on BLS determination of the "typical entry level" education required for a given occupation. All individuals in a given occupation are assumed to have currently and to require in the future only that "typical entry level" education. For example, all registered nurses are assumed to possess and to require in the future only an associate's degree, and all economists are assumed to require only a master's degree.

The Georgetown Center on Education and Workforce has produced a series of reports (e.g., Projections of Jobs and Educational Requirements through 2018) that use the same baseline labor statistics, but take a different approach to assigning educational requirements for those occupations (6, 10). Their approach is to look at annual Census Bureau survey data (American Community Survey) and from that to compute the percentage of individuals in each occupational category who have given levels of education (11). Looking back historically, the Georgetown researchers computed the change in workers' education levels and projected

those rates of change to continue in the future. It is that projected distribution of actual degree attainment on which the Georgetown Center based its assessment of what the workforce will demand.

Both of these approaches have flaws. The approach based on BLS coding of typical entry-level educational requirements understates the actual distribution of degrees so drastically that it suggests North Carolina needs to reduce bachelor's-or-higher degree attainment by nearly 5 percentage points. This approach is at odds with what is already found in state's labor market. The Georgetown model is criticized for overstating demand due to underemployment, and that underemployment is magnified in the current economy. Others counter with data that show the "wage premium" paid to individuals with higher degrees is still present and has grown over time, despite the economic downturn.

Neumark, et al, who look at national rather than North Carolina data, suggest an alternative to the previous two approaches. These authors project that 31.4% of workers will require a bachelor's degree or higher by 2018, in contrast to the 21.5% estimate based on BLS national employment projections and 32.6% based on the Georgetown approach (12).

In addition to these and other reports, UNC General Administration staff and consultants from the National Center for Higher Education Management (NCHEMS) developed projections based on the same EMSI labor projections, through 2020 rather than 2018, and following similar methods to those described above. (One notable difference, however, was that the UNC/NCHEMS approach attempted to adjust the low-end projection to be consistent with the Census-based age group of 25-64-year-olds that was the basis for the high-end projection, such that the populations in question would yield a more direct comparison.) The results showed projections of North Carolina workforce demand for bachelor's degree or higher in that 25-64-year-old population of 23.4% and 32.1%, respectively (13,14).

An additional caveat that should be considered when looking at these projections relates to timeframe. Short-term economic conditions do not necessarily reflect long-term trends or needs. While current unemployment/underemployment is relevant when making projections and evaluating the impact of near-term options, it should be discounted when interpreting available data for longer-term strategic planning.

ECONOMIC AND SOCIAL BENEFITS

North Carolina's leaders have long recognized the broad value of an educated citizenry. Benjamin Smith, a Constitutional delegate and one of the University's earliest benefactors, wrote in 1790 that, "in all free and enlightened Countries, the encouragement of learning is acknowledged to be among the wisest measures a state can pursue." It remains so today, and there is substantial data and wide acceptance of the notion that higher education yields public benefits beyond the employment and wages that accrue to individuals. Though precisely quantifying those benefits with data is problematic — it is not possible to separate correlation from causation in the existing studies (3) — it is clear that North Carolinians with bachelor's and higher degrees require less support from public programs (Medicaid, welfare, food stamps, etc.) and, in general, have higher volunteerism rates, civic participation, and positive health and educational outcomes for their children (15).

CURRENT SITUATION

How many graduates are being produced in North Carolina? For the 2010-2011 academic year, UNC campuses accounted for 47,955 graduates, or 70.6% of the North Carolina total (16).

	Bachelor's	Master's	Research Doctorate	Professional Doctorate
UNC	34,462	11,236	1,237	1,020
Private Inst.	13,959	4,208	483	1,259
Totals	48,421	15,534	1,720	2,279

For the 2000-2001 year, UNC produced 32,007 graduates (undergraduates and graduate students), or 67.2% of state total). During the intervening years UNC has accounted for 78.7% of the increase in graduates compared to private institutions. Over the 10-year period, UNC graduates grew at compound annual growth rate of 4.13%.

BACKGROUND DATA ON THE UNIVERSITY SYSTEM (16)

There are a number of characteristics and trends that are informative and serve as reference points for subsequent discussions in this section and others in the Plan.

	2002	2011
Total Enrollment	177,000	220,330
Full Time	137,600 (77.8%)	176,800 (80.2)
Part Time	39,400 (22.2)	43,500 (19.8)
In State	151,300 (85.5)	188,200 (85.4)
Out of State	25,600 (14.6)	32,100 (14.6)
Female	99,900 (56.4)	124,900 (56.7)
Male	77,000 (43.6)	95,400 (43.3)
Average Age	24.2 yrs	24.1 yrs

As shown above, not much changed over the period, except that slightly more students attended full-time in 2011. By comparison, out-of-state enrollment at private institutions was 38.3%.

As of fall 2011, racial and ethnic demographics for all students in the UNC system broke down as follows:

White	61.5%
Black	21.5
Hispanic	4.1
Asian	3.3
American Indian	1.0
Hawaiian / Pacific Islander	0.1
Two or more races	1.7
Race unknown	3.2
Nonresident alien*	3.6

* Note: Race/ethnicity is not reported for nonresident alien students.

Approximately 67% of graduates in 2010-11 were white and 33% non-white. Systemwide retention and graduation rates for undergraduates improved between 1995 and 2010.

	1995	2010
1-year retention	80.5%	82.2%
4-year graduation	32.1	37.4 ('07)
5-year graduation	52.6	55.3 ('06)
6-year graduation	57.2	59.4 ('05)

Transfers to UNC campuses in 2011 (totaling 13,579) came from out of state (24.7%), community colleges (52.6%), private institutions (6.6%) and intra-system (16.0%). Transfers out to private institutions and community colleges totaled 2,076.

While the enrollment mix varies widely among campuses, on average, only 32.7% of enrolled students come from their institution's home county or adjacent counties.

Summer school enrollment in 2011 was 90,034 students. Summer school students took 582,551 credit hours, or an average of 6.1 hours per student.

THE JOBS SITUATION IN NORTH CAROLINA

In 2010, approximately 19% of North Carolina jobs "required" a bachelor's degree or higher. Degree attainment estimates were in the range of 26-28% statewide, but differed regionally, with Charlotte at 36.1% and Raleigh-Durham at 34.7% (5, 32). Unemployment stood at 9.1% as of November 2012 (34), and researchers at UNC-Chapel Hill estimated the state's underemployment at 17.9% in 2011 (15). Interestingly, GDP in North Carolina increased during 2010-2012, indicating an increase in productivity per worker.

Between 2002 and 2012, North Carolina gained 21% in population but only 0.3% in jobs. Estimates indicate that the state needs 6,000 new jobs per month to keep pace with work force growth; however, in 2011 the state netted only 3,600 jobs per month. One somewhat sobering statistic also showed an 8.7% job loss for engineers as a whole between 2001 and 2011, although biomedical engineering jobs increased (7).

GOING FORWARD

The NC Commission on Workforce Development report projected 555,151 new jobs between 2010 and 2012, with 150,017 (27%) requiring a bachelor's degree or higher (5). The report stresses that job seekers must be connected to education and training by enrolling in courses that teach skills linked to industry trends. The need for advanced degrees was projected to grow somewhat faster than bachelor's. It is noteworthy that average wages advance sharply with increased education, with obvious ramifications for the tax base and general economic well-being in North Carolina.

Educational Band	Emp 2010	Net new jobs (10-20)	Annual growth rate	Average Wages (2010)
Advanced degree	150,103	38,494	2.3%	99,634
4-year college degree	615,400	111,523	1.7%	73,909
Tech degree/post	353,273	81,105	2.1%	43,771
HS, some experience	667,049	59,980	0.9%	42,677
HS degree	793,478	94,882	1.1%	33,615
Below HS	1,442,115	169,167	1.1%	22,274
Totals	4,021,418	555,151	1.3%	39,838

Attempting to foretell the future of job growth and particular sector needs is difficult at best. That said, if future job requirements and the pool of qualified workers do not match up as expected going forward, it would be far easier to put on the brakes on degree attainment than to scramble to gear up quickly.

In setting a degree attainment goal, we must also consider other factors, as previously noted. The system should not grossly overshoot, however, thereby running up costs and saddling students with debt, only to find that they are unemployed or under-employed. Oregon, for example, has implemented a "40-40-20" program to reach 40% of the population with a bachelor's degree or higher, 40% with an associate's degree or post-high school certificate, and 20% with a high school diploma or equivalent by 2020 (17). In 2010, state attainment in Oregon stood at 28.8%, so this is a very tall order. In 2010, 19% of jobs in Oregon required a bachelor's degree or higher. While employers said they would like 25% if they had a choice. One of the questions raised in the report was, "Should we train everybody to meet the needs of half the jobs?"

If the projected need in North Carolina is 28%, then the state could choose to adopt various approaches:

- Accept the workforce projections for job/occupation growth and associated requirements for bachelor's degrees or higher, along with status quo rates of increase in attainment.
- Try to increase demand for higher-level and better-paying jobs by raising degree attainment, competing with other states and working to ensure that jobs will come.
- Deliberately overshoot projected labor/occupation/education requirements for various tangential reasons, such as improved health, lower dependencies, and so forth.

Neumark noted that “economists are naturally uncomfortable talking about shortages because in a market economy shortages are resolved by the market, and hence do not, literally speaking emerge.” (12) With respect to attracting good-paying jobs by raising the state’s degree attainment level, national attainment is projected to reach 31% by 2018, so North Carolina should not be hampered in efforts to compete for jobs and industries that require an educated workforce (14).

Taking everything into consideration, the University recommends targeting a 32% degree attainment goal (among 25-64-year-olds) by 2018.

MODELING THE PATHWAY TO A DEGREE ATTAINMENT GOAL

This proposed North Carolina attainment goal can be reached through a combination of UNC graduates, private institution graduates, and the in-migration of credentialed new residents. For example, during 2006-2010, North Carolina averaged an annual net in-migration of 28,000 people with a bachelor’s degree or higher (14).

UNC enrollment is fed from the following sources:

- High school graduates;
- Community college graduates and transfers;
- “Part-way home” students (individuals with some college credit, but no degree);
- Military-affiliated students/veterans
- Adult and distance learners

In absorbing increased enrollment of high school graduates, there are vast cost differences among UNC campuses. Such considerations will affect where undergraduate enrollment growth is concentrated within the system. “As we examined past patterns of enrollment change, it became clear that the major research universities are not likely to pursue undergraduate enrollment growth,” wrote public policy scholar David W. Breneman (32). “Nor should public policy push them to do so, as they are the least cost-effective institutions for that purpose.”

The number of graduates can be increased not only through increasing enrollment, but also by improving retention and graduation rates among current and future students (18). In addition to increasing the number of North Carolinians who hold college degrees, this dual strategy has the added advantage of doing so in a way that lowers student indebtedness and associated

default rates and requires only modest investments of new resources. In addition to investments in expanded enrollment and advising services for high school graduates, enhancing degree completion options for transfer students and adult learners will require that we implement a variety of technology-enhanced and distance-delivered degree programs and student support services. These steps would also dampen the negative financial impact of dropouts (18, 19, 20).

Note that all of these methods and sources of new graduates are associated with a natural “lag-time,” meaning that if retention and graduation rates are increased, it will inevitably take two to six years to move students through to degree. Therefore, degree attainment increases may not be linear. This could also be affected by flat enrollment rates recorded over the past couple of years.

FORMULAIC APPROACH

Degree attainment was modeled using UNC system graduates, private institution graduates, net in-migration, baseline attainment, older population aging out of the cohort, and the percentage of college graduates remaining in the state (21-26). UNC graduation rates are dependent on input rates from all student sources, plus any increases in retention/graduation rates. The following general assumptions were made:

- Net high school graduation rate increase of 1.25%;
- Self-employment of 10%;
- Approximately 73% of graduates remain in North Carolina;
- 228,248 58-64-year-olds with bachelor’s degrees age out of the cohort by 2018; and
- Average net in-migration of 28,100 per year over the 5-year period.

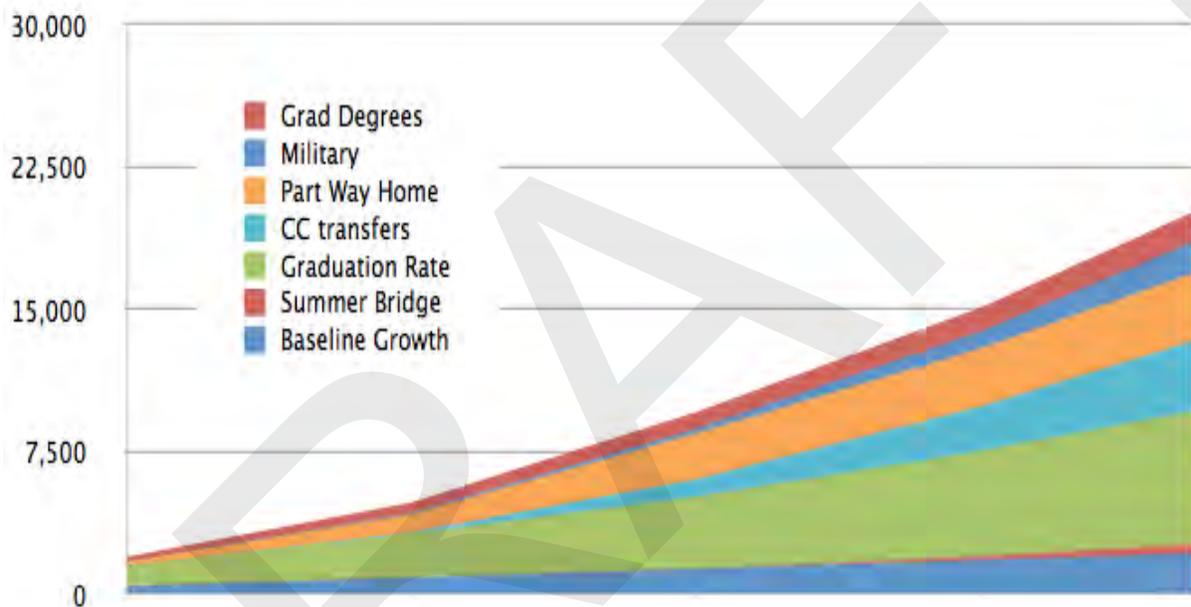
Please refer to Table 1 (see following pages) for a detailed buildup of UNC’s contribution to the state’s increase in graduates during the 2013-2018 period. This, combined with other contributors previously discussed, leads to the attainment levels shown in Figure 1 (next page) and Table 2 (see following pages).

Costs per year of the various investments designed to increase timely graduation are listed in Table 3 and summarized on a per-degree basis in Table 4 (see following pages). On a cost-per-degree basis during the first 5-year period, summer incentives, transfers, and military and veteran interventions are much costlier than increasing graduation rates and reenrolling part-way home students. But these costs diminish when calculated over a full 10-year period, falling more closely into line with the long-run cost of the other strategies.

While there remains legitimate debate about the data, the approach, and the projections for jobs, the case for raising degree attainment has been stated forcefully by Breneman, reflecting on the findings of his book, Financing American Higher Education in the Era of Globalization (32).

“We looked closely at the rationale for trying to increase the proportion of degree holders and found none of the projection methods particularly compelling, at least with regard to specific numbers or percentages,” he wrote. “Indeed, some observers have questioned the need to do more. While we do not endorse any given set of numbers, we do argue that the weight of evidence sides with those who seek to raise the percentage of college-educated people in our population. Our economic competitive advantage as a nation will continue to depend on innovation and skilled human capital. Losing ground to other developed (and developing) nations would be a disastrous outcome.”

Figure 1



Note: These projections are one of multiple possible sets of degree growth trajectories for the different attainment-related strategies. The impact of each strategy is based on assumptions about the populations affected and the timing and magnitude of the strategy's impacts, and the results are sensitive to those assumptions. Thus, the specific amounts projected are examples that represent the magnitude of expected impacts and should not imply a false sense of precision in the projections.

Table 1

Example of Projected Degree Contributions from Different Attainment Strategies

		12-13	13-14	14-15	15-16	16-17	17-18	TOTAL
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	14-18
Baseline Undergraduate Growth		400	420	450	456	462	467	2,255
Maintain Current Graduation Rate	68.8%		1.25%	1.25%	1.25%	1.25%	1.25%	
Senior HeadCount		52,346	53,001	53,663	54,334	55,013		
Increase			610	654	663	671	679	
Summer Bridge – K12 Expansion			-	-	-	200	370	570
Participation expansion (Est. 52% 6yr grad rate, 40% 5yr, 25% 4yr)			800	1,000	1,200	1,400	1,600	
Graduation Rate			1,047	1,193	1,342	1,494	1,650	6,726
Improve Graduation Rate			2.00%	2.25%	2.50%	2.75%	3.00%	
Incentives/funds for summer courses*	ramp up 20% ann.		-	277	634	1,030	1,426	3,366
Participation expansion	33,000		6,600	13,200	19,800	26,400	33,000	
6 pt rate additional grads				396	792	1,188	1,584	
Additional CC Transfers								
Enrollment Increases			1200	1750	1900	2100	2400	
Time to Graduate/Base Rate	2-4 yrs 74%		0	0	689	1,192	1,413	3,294
Part-Way Home								
Total Potential Population	22,000							
Graduate 10%	2,200		220	660	1,320	-	-	
5% ann. persistence/3 Yr to Grad	1,100		-	-	-	367	367	
Total Grads			220	660	1,320	367	367	2,934
Military								
Total Potential Population								
50% College Bound	7,800							
UNC gets 33%	2,574		644	858	1,287	1,716	2,574	
Time to Graduate	4-6 yrs 82%		-	-	-	409	656	1,065
Grad Degrees		160	263	298	335	372	416	1,684
Improve Graduation Rates	1% growth assumed 2010-11		2.00%	2.25%	2.50%	2.75%	3.00%	
Master's new enrollment		10,190	10,292	10,395	10,499	10,604	10,710	
Doctoral research new enrollment		1,155	1,167	1,178	1,190	1,202	1,214	
Doctoral professional new enrollment		1,653	1,670	1,686	1,703	1,720	1,737	
Graduate fellowships/support			10	30	40	40	40	
TOTAL			1,950	2,878	4,776	5,526	6,765	2,189

* In our pipeline estimates, incentive impacts are spread among grad rate, transfer, part-way, and military investment impacts from model based on estimated difference in grad rates between those who take summers courses and those who do not.

Note: These projections are one of multiple possible sets of degree growth trajectories for the different attainment-related strategies. The impact of each strategy is based on assumptions about the populations affected and the timing and magnitude of the strategy's impacts, and the results are sensitive to those assumptions. Thus, the specific amounts projected are examples that represent the magnitude of expected impacts and should not imply a false sense of precision in the projections.

TABLE 2

Year	25 to 64 Population Projections	Cummulative Current Net Degree Production	Cummulative Net Migration	Additional Net Degrees Produced	Cummulative Additional Net Degrees Produced	Current Degree Holders Not Aging Out of Cohort	Current Degree Holders Aging Out of the Cohort	Projected Attainment % Status Quo	New Projected Attainment
2011-12	5,045,524	38,072	28,100	887	887	1,422,771	32,607	29.5%	29.5%
2012-13	5,088,309	76,144	56,200	1,775	2,662	1,390,164	32,607	29.9%	30.0%
2013-14	5,136,886	114,217	84,300	1,950	4,612	1,357,558	32,607	30.3%	30.4%
2014-15	5,188,604	152,289	112,400	2,878	7,490	1,324,951	32,607	30.6%	30.8%
2015-16	5,241,186	190,361	140,500	4,776	12,266	1,292,344	32,607	31.0%	31.2%
2016-17	5,288,373	228,433	168,600	5,526	17,792	1,259,737	32,607	31.3%	31.7%
2017-18	5,332,286	266,505	196,700	6,765	24,557	1,227,131	32,607	31.7%	32.2%
2018-19	5,371,217	304,577	224,800	7,099	31,656	1,194,524	32,607	32.1%	32.7%
2019-20	5,405,858	342,650	252,900	7,986	39,642	1,161,917	32,607	32.5%	33.2%
2020-21	5,439,479	380,722	281,000	8,874	48,516	1,129,310	32,607	32.9%	33.8%
2021-22	5,470,296	418,794	309,100	9,761	58,277	1,096,703	32,607	33.4%	34.4%
2022-23	5,501,197	456,866	337,200	10,648	68,925	1,064,097	32,607	33.8%	35.0%
2023-24	5,535,020	494,938	365,300	11,536	80,461	1,031,490	32,607	34.2%	35.6%
2024-25	5,567,866	533,011	393,400	12,423	92,884	998,883	32,607	34.6%	36.2%

Table 3
Projected annual cost of timely graduation strategies

Attainment-related items	2013-14	2014-15	2015-16	2016-17	2017-18	Total 2013-18
Graduation rate improvements	(policy changes, summer courses, advising)					
Expand summer school enrollment (Strategy B)	5.0	10.0	15.0	20.0	25.0	75.0
Academic advising and career counseling staff	Initiatives have attainment impact, but funding is addressed in Section 3.					
E-Advisor initiative						
Early warning system (Strategy B)	1.0	1.0	1.0	1.0	1.0	5.0
Summer bridge (Strategy A)	2.5	3.5	4.5	5.5	6.5	22.5
K-12 pipeline initiatives (Strategy A)	1.2	1.2	1.2	1.2	1.2	6.0
Community College transfer and part-way home student initiatives (Strategies C & D)	4.0	8.0	8.0	8.0	8.0	36.0
Military and veteran population (Strategy E)	1.0	1.5	2.0	2.5	3.0	10.0
Platform for adult students (flexible times/condensed courses)	Initiatives have attainment impact, but funding is addressed in Section 2.					
Enhanced 2+2 Delivery						
Improve graduate student education (Strategy F)	0.3	0.3	0.3	0.3	0.3	1.5
Expand professional science master's	Initiatives have attainment impact, but funding is addressed in Section 3.					
Graduate fellowships and support						
Totals by year	15.0	25.5	32.0	38.5	45.0	156.0

Note: Above are the expansion budget items associated with degree attainment. Dollars are shown only for those items included in the attainment section of the strategic plan, and other items affecting attainment but included in other sections of the strategic plan are listed but without associated dollars, to avoid double-counting budget request items within the strategic plan document.

Table 4

Projected Expansion Budget Dollars per Degree Produced for Degree Attainment Strategies
2013-14 to 2017-18

	Expansion Budget (in millions)	2013-2018 degrees expected	Truncated expansion budget ROI Per degree 2013-2018	2013-2022 degrees expected from 2013-2018 investment	Complete expansion budget ROI Per total degrees produced
K-12 pipeline initiatives	\$6.0	2,255	\$2,661	2,255	\$2,661
Summer bridge	\$22.5	570	\$39,474	3,000	\$7,500
Graduation rates*	\$30.0	7,567	\$3,965	7,567	\$3,965
Transfers*	\$43.0	4,136	\$10,398	7,490	\$5,741
Military / veteran*	\$35.0	1,907	\$18,354	6,237	\$5,612
Part-way home*	\$18.0	3,776	\$4,768	4,142	\$4,346
Improve graduate educ.	\$1.5	1,684	\$891	1,773	\$846
		21,894			
Additional 2012 degrees anticipated		560			
Total Degrees Expected		22,454			

* \$75.0M in expanded summer school enrollment (Strategy B) is distributed among these categories

Note: The above dollars include only those expansion budget request items included in the attainment chapter of the strategic plan document. Moreover, it is worth noting the caveat that the above impacts of various investments are framed only in terms of degrees produced and do not consider other impacts of the investments. As an example, investments in advising will not only improve the percentage who graduate, but they will also lead to improvements in time to degree (thus, cost savings to students and taxpayers per degree) and have the potential to improve student career focus and thus post-college employment. We have not attempted to quantify all the potential impacts of the various initiatives here, but only to frame them in terms of their impact on the state degree attainment rate.

STRATEGIES

To meet UNC's share of these statewide degree attainment goals, UNC must focus on improving graduation rates of existing students, increasing part-way home and transfer student success, and expanding the pipeline vis-a-vis North Carolina's military, adult learners, and UNC largest historical source of undergraduate growth, high school graduates.

While these action strategies are conceived at the system level, they should be prioritized and implemented at the campus level, taking into consideration each institution's unique mission and relative costs.

A. **Strengthen and diversify a changing pipeline.**

Growth in the number of North Carolina high school graduates is projected to slow to an annual rate of approximately 1.6% in the coming decade, about 2 percentage points lower than the past decade. Moreover, that projected growth will be fueled largely by increases in Hispanic students, who have historically attended college at lower rates and have had lower graduation rates, once enrolled.

Adapting to the changing K-12 pipeline and closing gaps in student access and success are necessary to meet degree attainment goals and North Carolina's workforce needs. Our modeling assumes only a 1.25% annual growth rate in the number of new North Carolina high school graduates, and it builds in expectations that slowing growth rates and the impact of more stringent academic entry requirements will be offset by the following programs and continued improvement in graduation rates. To that point, with the exception of the Summer Bridge Program (the impact of which is projected separately), all of these programs are assumed to contribute to ongoing enrollment in the context of a changing population.

Action Steps

1. Implement Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) to improve college preparedness of high school graduates, and deliver on the goals set for that grant program.
 - GEAR UP is funded through a one-to-one match between state and federal grants. It is mentioned here as an example of related activities in which UNC is engaged to meet the needs of students coming through the K-12 pipeline.
2. Continue to grow College Application Week to serve all eligible high schools so that low-income students have the information and resources necessary to apply to higher education institutions.
 - College Application Week resulted in the submission of nearly 63,000 college applications over the past two years (2011 and 2012). Because it focuses on high schools with low-income populations, it is an important program for maintaining a flow of students from the changing high school pipeline.

3. Expand the Minority Male Mentoring Program

- UNC's Minority Male Mentoring Program is in the pilot stage on five campuses. The preliminary data show that this program has great potential to improve minority male students' persistence and graduation rates. Expansion and sustainability of this project is estimated at \$1 million annually, based on an expansion to all 16 campuses, with approximately 40 students served on each campus. The NC General Assembly has recognized the value of this program to the state, funding it within the NC Community College System at \$800,000-900,000 annually since 2006. Data from systemwide programs in Georgia and New York also suggest positive impacts on both enrollment and graduation rates of minority male students (percentage point annual increase in graduation rates, for example).

4. Build on success of the EDUMetric data and accountability.

- EDUMetric is a robust data tracking system, built and maintained through College Access Challenge Grant funding, that is designed to identify and track K-12 students participating in pre-college educational programs and services across the state. EDUMetric has been recognized by the U.S. Department of Education as an innovative tracking system. It allows for a greater level of accountability and program evaluation by enabling a link between the various services provided and student outcomes. Expansion should include, but not necessarily be limited to, pre-college programs such as TRIO, Carolina College Advising Corp, and the Minority Male Mentoring Program.

5. Evaluate Mathematics and Science Education Network (MSEN) Pre-College Program outcomes to determine next steps with program enhancements and potential expansion.

Steps 1-5 Year 1: \$1.2M | Y2: \$1.2M | Y3: \$1.2M | Y4: \$1.2M | Y5: \$1.2M

6. Expand the number of students served and number of campuses participating in the UNC Academic Summer Bridge and Retention Program.

- Results from UNC's longest-standing summer bridge program at Fayetteville State University point to retention rate increases of 6-13 percentage points. Based on these results, we project that the investment to expand the program from 300 to 1,600 participants will add 570 additional graduates by 2018 from among some of our most at-risk students. After all affected students move through the pipeline, the full impact of this investment is projected to be 3,000 additional graduates over 10 years.
- This program is an intensive "boot camp," a rigorous academic experience for students who are the first in their families to attend college or are not sufficiently prepared to begin college coursework. Students participate in a 5-6 week intensive residential program and take six hours of math and English coursework (not remedial). They are provided with tutoring, academic support labs, mentoring, and advising. Upon successful completion of the summer program, they transition into the university for the fall term, at which time various mandatory academic support

services continue. The success of summer bridge programs has been well-documented (28, 29).

Step 6

Year 1: \$2.5M | Y2: \$3.5M | Y3: \$4.5M | Y4: \$5.5M | Y5: \$6.5M

B. Improve retention and graduation rates: greater efficiency with those already in the pipeline

“Improving graduation and retention is the single most powerful lever in proving degree efficiency (as measured by cost-per-degree)” (38).

Analysis: Approximately 68.8% of students who have completed three quarters of their degree requirements eventually graduate. Transfer students’ graduation rates vary depending on from where they come and at what point in their education they enter. The most successful transfer student population is the group that enrolls with an associate degree (AA/AS), 74% of whom finish within four years of entering UNC.

Assumptions/projections: Based on historical gains seen by many UNC campuses and their national peers, as well as the experience of individual campuses that have made quick strides with targeted efforts, we assume an incremental increase in graduation rates among all cohorts, growing from a 2-point increase in 2013 to a 3-point increase by 2018. This increase in graduation rates would result in an additional 7,567 graduates by 2018, based on staff analyses.

Action Steps

1. Implement the student success initiatives, created by the Faculty Assembly and recommended by the Academics First Steering Committee, that are designed specifically to increase retention, student success, and timely degree completion. These include, for example, early warning systems and standards for increased grade point requirements for satisfactory academic progress (18).

Step 1

Year 1: \$1.0M | Y2: \$1.0M | Y3: \$1.0M | Y4: \$1.0M | Y5: \$1.0M

2. Increase number of courses offered in the summer to help narrow the degree completion gap of underrepresented students and reduce time to degree for all students.
 - This estimate assumes that additional funds for summer programs will allow summer course enrollment to expand by approximately 198,000 credit hours, with costs averaging \$125 per credit hour. Based on available data showing summer course-taking patterns, we estimate this will eventually affect participation by up to 33,000 undergraduates annually. Based on research regarding the effects of summer enrollment on the time to degree and probability of graduation, we project that over the period of this plan (ramping up to full funding in 2018), this initiative will result in an additional 3,366 graduates. Over the next decade, the full impact of the five-year investment will be 5,940 total graduates. These projected results have been spread (about 840 each) over all categories except baseline and summer bridge.

Step 2

Year 1: \$5.0M | Y2: \$10.0M | Y3: \$15.0M | Y4: \$20.0M | Y5: \$25.0M

C. Part-Way home students: help them find the rest of the way

Data indicate that approximately 1.5 million North Carolinians have some college credit, but no degree (22).

UNC Charlotte has had great success identifying and bringing back students who for one reason or another have stopped their educational pursuits. (Examples from other states include Wisconsin and New Mexico).

Matching UNC student data to national enrollment and completion data from the National Student Clearinghouse, we find that over the past six years, nearly 11,000 bachelor's-seeking students left UNC with 90+ earned credit hours, but no degree, and did not subsequently graduate from or enroll in another U.S. higher education institution. Because in-migration and private institutions account for more than half of the total degrees added each year in North Carolina, and recognizing that additional UNC students departed more than six years ago without completing their degrees, we conservatively estimate another 11,000 potential students statewide who have not yet enrolled on a UNC campus. Making assumptions that are somewhat conservative, lower than the percentages seen at UNCC, and also in line with experience at campuses outside of North Carolina, we project that just over 3,775 students (15%-16%), of this available 22,000-student pool could be brought to UNC over a five-year period and could complete their degrees by 2018.

Action Steps

1. Recruit students who have stopped-out from a UNC campus with at least 90 earned hours and a 2.0 GPA or higher.
2. Provide support to guide returning students in the readmission process.
3. Hire academic advisors to assist students with navigating the University and serve as an ombudsman between academic departments and students.
4. Create support programs to assist students returning to complete their degree. Increase academic advising by faculty.

(cost shared with Community College transfer programs, see below)

D. Community College transfer pipeline: promote greater access and success

Assuming a ramping-up of community college and other transfer enrollment, with emphasis on those with an AA or AS degree, we assume that approximately 9,400 additional transfer students (1.25% annual growth over baseline) will be admitted to UNC through 2018.

Allowing for a two-year lag time before they begin to graduate, and assuming that just under three-quarters of them graduate within four years, we project the resulting cumulative additional degree count by 2018 will be roughly 4,134 (recognizing that many brought into the pipeline during this period will graduate after 2018).

Background data:

- In 2010-11, more than 6,500 students earned an AA or AS degree from the NC Community College System, but in the following academic year, fewer than 3,000 new AA/AS transfers enrolled on a UNC campus. Accounting for estimates of those enrolling at private or out-of-state institutions, there was a potential pool of approximately 2,000 AA/AS recipients annually who did not continue on to the bachelor's level (30).
- In addition to new AA/AS recipients, earlier graduates who did not pursue a bachelor's degree represent an additional potential pool of bachelor's degree-seekers, similar to but not counted in the part-way home population.
- Associate degree growth in the NCCCS has been roughly 5% annually over the last two decades, and about twice that rate recently. For AA/AS degrees specifically, the number of degree recipients rose over 11% from 2010-11 to 2011-2012.
- In addition, hundreds of students graduate each year from 2-year programs at private North Carolina colleges, and thousands of additional potential transfers from NCCCS, private institutions, and out of state have accumulated significant lower-division coursework but no degree. Currently, the majority of transfers to UNC come without a degree.

Because the data show that those with an AA or AS degree are more likely to be successful, we propose to focus primarily on these students as a potential pool of future graduates. However, there are numerous other populations for whom success is likely, and some of the same actions and policies that facilitate AA/AS transfers' access and success will benefit other transfers, as well.

Action Steps

1. Complete revision of the Comprehensive Articulation Agreement between UNC and the NCCCS.
2. Create a transcript warehouse to improve the efficient transfer of course credit between UNC and NCCCS and among UNC campuses.
3. Create Transfer and Adult Student Success offices at each UNC campus.

Funding for part-way home (Strategy C) and Community College transfers (Strategy D)

Year 1: \$4.0M | Y2: \$8.0M | Y3: \$8.0M | Y4: \$8.0M | Y5: \$8.0M

E. Military and veteran population: improve and increase service to those in the Service

Roughly 116,000 military personnel are stationed in North Carolina and are eligible for tuition assistance benefits from the U.S. Department of Defense. UNC institutions claim a very small share (almost zero) of the military personnel using tuition assistance. As a result, this is a targeted area for recruitment and growth.

As military personnel separate from service in North Carolina and transition to veteran status (for benefits purposes), UNC should recruit these students to use their veterans education benefits at a UNC institution. Our projections are based on the approximately

250 service members who separate from the Marine Corps at Camp Lejeune every week. According to base education personnel, approximately 150 of these service members will use their veterans education benefits immediately. Our estimates assume that UNC can ramp up to serve one-third of those seeking to use their higher education benefits. (Because the projections are based only on this Marine Corps base, there is significant potential to grow this projection in the long run by connecting with other bases and veterans). With the expectation of 82% graduating within 4-6 years, based on historical UNC-system data showing an elevated graduation rate for military-affiliated students, we project this to result in an additional 1,907 degrees by 2018 and a cumulative total of just over 6,000 over the next decade (due to the lag in graduations resulting from the ramping up in the first five years).

Action Steps

1. Provide early resident status to certain non-resident veteran students who expect to establish formal residency. Prior to FY 2011-12, the federal Post 9/11 GI Bill capped tuition payments based on the highest in-state tuition in a given state. Beginning in FY 2011-12, tuition is capped at the actual in-state tuition at public institutions of higher education, lowering the amount of tuition covered for most nonresident students. Allowing the University flexibility to confer early resident status would eliminate this barrier to veteran students.

Step 1

Year 1: \$3.0M | NR

2. Develop a system-wide recruiting strategy for the military-affiliated student population to include custom academic pathways, academic success contracts, targeted collateral material, and other best practices. The General Administration shall provide publication and marketing support to UNC institutions targeting military populations for enrollment in courses and degree programs.
3. Establish system-level support and logistical assistance for UNC institutions that are recruiting, enrolling, and graduating military-affiliated students.
4. Establish successful academic advising centers at Fort Bragg and Camp Lejeune.
5. Streamline admission and transfer policies for consistency in determining residency and value of credit.
6. Incentivize faculty to develop flexible online courses that can be taken outside the normal semester system to meet degree requirements.
7. Create a web-based with clear information about veteran and Department of Defense tuition benefits, academic credit articulation, academic programs, admissions, and student services.
8. Create and utilize faculty and staff development tools (such as Virginia Commonwealth University's "Green Zone" and the Center for the Deployment Psychology's "UC4" program) to nurture a culture of acceptance and support for military-affiliated students on UNC campuses.

Steps 2-8

Year 1: \$1.0M | Y2: \$1.5M | Y3: \$2.0M | Y4: \$2.5M | Y5: \$3.0M

F. Improve graduate student education

The projections of graduate student degrees are modeled on an annual growth rate of 1% in masters and Ph.D. programs, combined with a cumulative 3% increase in masters and doctoral graduation rates across the 5 years covered by this plan. Together, these changes would result in 1,600 additional cumulative graduate degrees by 2018. While our projection of graduate enrollment growth is based on an aggregation of campus-based biennial graduate enrollment projections, it is worth noting that both nationally (35) and in North Carolina, the enrollment of new U.S. masters and doctoral students has actually decreased over the last two years. Thus, to meet the enrollment growth target modeled here, aggressive new investments in faculty, doctoral students, and industry-responsive masters programs such as the Professional Science Masters (PSM) will be of utmost importance. (See Section 3 of this document for complete details of these resource needs, and proposed returns on investment.)

In order to have an impact on our overall degree attainment goal, our model assumes that a disproportionate share of enrollment growth will be comprised of out-of-state and international graduate students, enrolled in programs with strong, attractive North Carolina employment opportunities. Our model is based on the goal of increase graduation rates of masters and Ph.D. students by 3% across all disciplines. Evidence from the only existing national study of Ph.D. completion rates and best practices for improving them shows that guaranteed, multiyear funding packages and enhanced professional development and career advising are the two high impact interventions that can significantly improve completion rates (36).

While there are few studies of masters degree completion, early evidence from the Council of Graduate Schools study of this topic suggest similar factors are important (37). In order to meet the proposed graduate degree attainment goal, we therefore, propose, the following actions.

Action Steps

1. Support existing and develop new Professional Science Master's programs (see section 3) and other industry-responsive programs.
2. Grow doctoral enrollment in programs aligned with state and campus strategic goals by providing the resources sufficient to attract and retain them, including tuition remissions and graduate research assistantships, and faculty and laboratory support (see section 3)
3. Improve degree completion rates and time to degree completion through the development of centrally supported campus-based professional development and career advising programs.
4. Recruit entrepreneurially-minded graduate students (see section 3) will result in an increase in graduate program enrollment, improvements in graduate program

graduation rates, and an increase in the percentage of graduates choosing to remain and work in North Carolina.

Year 1: \$0.3M | Y2: \$0.3M | Y3: \$0.3M | Y4: \$0.3M | Y5: \$0.3M

G. Further embrace distance education

Utilize technology-enhanced distance education as a means to facilitate increased access to educational opportunities for the citizens of North Carolina in pursuit of all of the above strategies.

Action Steps

(See section 2 on academic quality for additional elements of a comprehensive E-Learning and distance education strategy.)

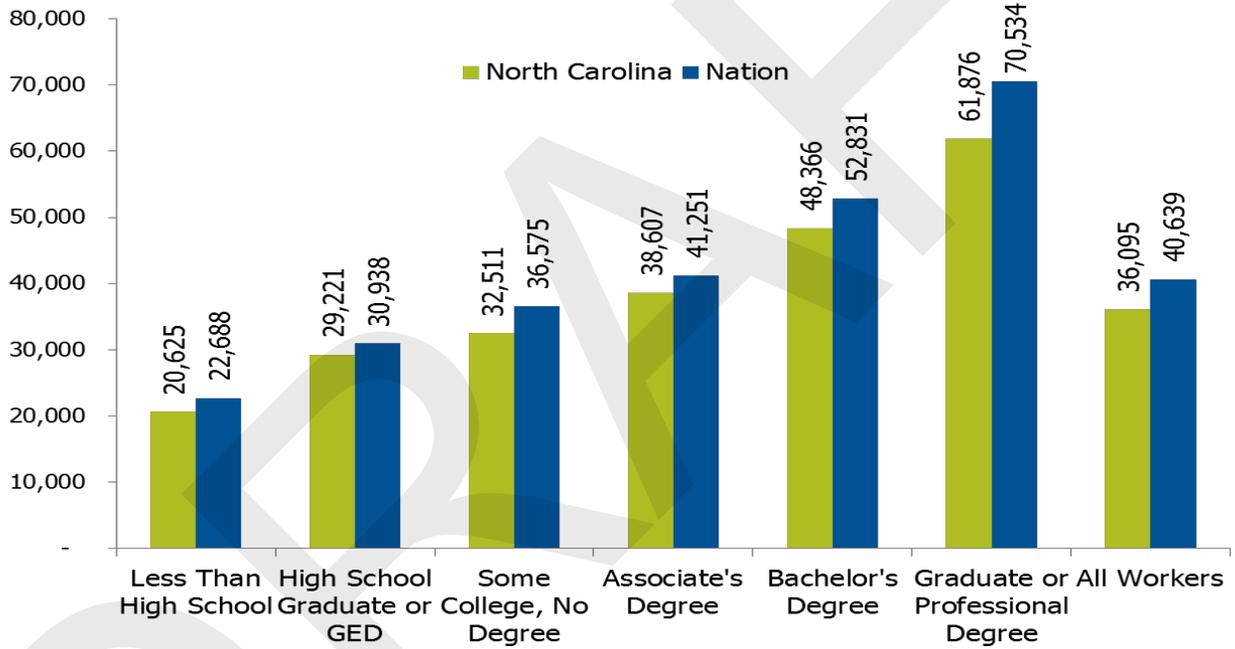
RETURN ON INVESTMENT

Please refer to Figure 2 (following page) for average annual wage data by level of attainment. In addressing a 32% attainment level for a bachelor's degree or higher, it would be reasonable to use a blended rate of bachelor's and graduate and professional degree attainment. However, to be conservative, the bachelor's number of \$48,366 was used and compared with average associate's degree income of \$38,607, resulting in an average annual income differential of approximately \$10,000 per year per degree.

Assuming 22,000 new degrees and an average working life of thirty years, multiplying 22,000 additional degrees x \$10,000 in additional annual income x 30 years of earning potential yields a figure of \$6.6 billion in additional income, without accounting for any inflationary increase. To conservatively account for those leaving the workforce early, moving out of state, et cetera, this figure is then cut by 50%, yielding \$3.3 billion over thirty years.

On an annualized basis, the state could enjoy an ROI in excess of \$100M as a result of the increase in degree attainment set forth in this plan.

Figure 2
 Median Earnings by Degree Level, 2008-2010



Prepared by the National Center for Higher Education Management Systems using data from the Source: U.S. Census Bureau, 2008-10 American Community Survey (ACS) Three-Year Public Use Microdata Sample (PUMS) File.

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Strengthen Academic Quality

ROLES AND RESPONSIBILITIES

Improving the quality of education for all citizens was among the core goals for the consolidation of University of North Carolina, as set forth in General Statutes governing the University. “In order to foster the development of a well planned and coordinated system of higher education, to improve the quality of education, to extend its benefits and to encourage an economical use of the State's resources, the University of North Carolina is hereby redefined in accordance with the provisions of this Article.” N.C.G.S. 116-1(a).

That charge continues to guide us today, as the University renews its commitment to the highest levels of student success and academic rigor. We do so through a commitment to becoming a national leader in the assessment of student learning outcomes, through the use of new instructional technologies to foster student access and success, through our dedication to improving K-12 education, and through the development of valuable work and life skills among our own students. We do so in deep appreciation of the public trust and investment in UNC and with a full understanding that we are accountable for responsible use of academic resources and for full transparency in our decision-making processes.

The General Assembly made clear that “[t]eaching and learning constitute the primary service that the university renders to society,” and that “[t]eaching, or instruction, is the primary responsibility of each of the constituent institutions.” N.C.G.S. 116-1 (b). Under state law, then, the fundamental responsibility for delivering a quality education rests with the individual campuses and their faculties, with accountability shared by the Board of Governors, the University president, campus trustees, and chancellors. University policies reflect this shared governance in connection with program development and review and in requirements for granting and maintaining faculty tenure.

In addition to efforts focused on curricula and program administration, the University’s commitment to excellence in scholarship and teaching is the foundation for tenure and promotion standards and post-tenure review on all campuses. In accomplishing their statutory responsibilities as arbiters of hiring, promotion and compensation policies and practices, and as stewards of institutional resources and the alignment of those resources with the highest academic priorities, the President, Chancellors, Trustees, and members of the Board of Governors all work to ensure that UNC institutions deliver programs and services of uncompromising quality, consistent with individual campus missions.

National higher education accrediting bodies acknowledge the shared responsibilities and engagement of governing bodies, administrative leadership, and faculties in ensuring academic quality. Quality enhancement is at the heart of the accreditation philosophy of the Southern

Association of Colleges and Schools Commission on Colleges. This outlook presumes that each member institution is engaged in an ongoing program of improvement and is able to demonstrate how well the institution fulfills its stated mission.

Although evaluation of an institution's educational quality is complex, accreditation standards require that an institution document the quality and effectiveness of all of its programs and services and use those results in an ongoing quality enhancement process. SACS accreditation standards also specify that institutions:

- a) maintain a faculty sufficient in size and quality to deliver high quality programs, consistent with their missions,
- b) have policies and practices in place to ensure faculty engagement in the development, review, and improvement of the curricula, and
- c) have developed a Quality Enhancement Plan that identifies a particular aspect of institutional performance for focused action and improvement.

Not only is a robust quality enhancement infrastructure required for basic accreditation, but a commitment to promoting the highest standards of excellence is also built into discipline-based accreditation processes, such as those of the Association to Advance Collegiate Schools of Business and ABET (formerly the Accreditation Board for Engineering and Technology).

CHANGING HIGHER EDUCATION ENVIRONMENT

The only certainty of the 21st century is the constancy and rapidity of change. Students entering the workforce today are likely to hold five to eight jobs over the course of their working lives, and a significant number of those just now entering the University will enter a job at graduation that does not yet exist. Arguably, the personal and public value of higher education has never been greater. However, the imperative that universities prepare the next generation of leaders with the skills to navigate a rapidly globalizing and changing society requires that the University retool, as well. It also requires that they adapt to meet the changing aspirations of students and the growing expectations of those who invest in higher education.

Change is not new to the University. During the past hundred years, the curriculum expanded in scope from the classics to the sciences to the social sciences. And the evolution of technology—radio, television, and now the internet—has opened the opportunity to learn anywhere and at any time. As a result, student enrollment has morphed from full-time residency only, to part-time commuters, and increasingly from part-time to any-time students.

Adaptations to the curriculum and the evolution of instructional delivery have progressed toward greater personalization of the educational experience and more customized teaching methods. Students can now choose a variety of paths to obtain a course or degree. They can attend classes full- or part-time. They can choose hybrid classes that mix face-to-face meetings with online work, or they can take classes fully online.

At the same time, advances in cognitive science have significantly improved our understanding of how people learn. The use of active learning pedagogies, the “flipped classroom,” modularized approaches to skill development, and instructional technologies that allow professors to understand in real time the facts, concepts, or skill sets with which their students are struggling means that we are now able to not only individualize instruction, but also to improve learning outcomes for all students.

A recent UNC Faculty Assembly survey found enthusiasm for technology and its use in all learning spaces, from fully online to the traditional face-to-face classroom. Of the 1,700 faculty who responded, more than 85% used a learning management system (LMS) to organize their classes, with Blackboard being the most widely used. In addition to widespread use of now “familiar” technologies (e.g., PowerPoint, recorded lectures, commercial and personally produced video materials, online discussion forums, web-based assignments, student response systems, email, social media), nearly 20% (300/1,700) reported that they also used other technologies for teaching.

In addition, 23% of survey respondents used the LMS in a highly specialized manner, 16% produced their own audio or video content, and 15% held synchronous online conferences to enhance student-teacher interaction. Faculty reported using technology for a variety of objectives, including skills development, performance assessment, online collaboration, and media production. While an overwhelming majority expressed enthusiasm about and interest in technology use, some also expressed concerns. Approximately 30% of those who were interested in expanding the use of instructional technologies were frustrated by the lack of infrastructure, institutional support, and opportunities for professional development to stay abreast of new practices and emerging technologies.

It is in this environment of rapidly changing technology and student demographics that UNC renews its commitment to the highest levels of student success, as measured by timely degree completion and the development of work and life-related skills and values. We commit to being a nationally recognized leader in the assessment of student learning outcomes and in the use of instructional technologies to foster student access and success. We do so with deep appreciation for the public trust and investment that has been placed in UNC and with a full understanding that we are accountable not only for the highest levels of efficiency in the use of academic resources, but also for full transparency in our decision-making processes.

ASSURING HIGH-QUALITY DEGREES: STUDENT LEARNING OUTCOMES

A survey of employers conducted by Hart Research Associates (2010) found employers expect current and future employees to use a broader set of skills and have higher levels of learning and knowledge than they have in the past. In order to meet projected increases in the complexity of workplace demands, 96% of those same employers said they would place as much or more emphasis on hiring individuals with four-year degrees, particularly those who had acquired depth of knowledge in their major and the broad skills often associated with the general education curriculum, including the ability to apply college learning to real-world situations and the ability to conduct research and develop evidence-based analyses. It is clear that North Carolinians also expect students seeking a UNC undergraduate degree to master

the knowledge and skills essential to 21st-century competitiveness, including those skills “necessary to good government and the happiness of mankind.”¹

UNC institutions and faculty are committed to delivering high-quality programs that position students for success in a global, ever-changing society. A variety of assessment methods are used to measure student learning at the course, major/degree, and general education levels. Examples include embedded pre- and post-learning assessments to determine content-learning in courses; use of standardized tests such as the Collegiate Learning Assessment (CLA) or the National Survey of Student Engagement (NSSE) to determine generalized learning outcomes such as critical thinking; writing across the curriculum and writing in the discipline programs that use faculty teams to evaluate student improvement as they progress from freshman to graduates; student achievement rates after graduation; portfolios; and capstone experiences.

Using a variety of complex assessment methods, the UNC system is already in full compliance with standards set by SACS and multiple disciplinary accrediting bodies. UNC is also already aligned with best practices in higher education assessment.²

The major challenges to effectively using student learning outcome data as a tool to improve the effectiveness of the curriculum and the quality of our higher education programs are threefold. First, there is no national consensus about a single methodology, sampling design, or test that can provide the types of robust and granular student learning outcome data necessary to inform institutional or program improvement strategies. Second, as eloquently stated by the Faculty Advisory Council in “Our University, Our Future,” “(a)ppropriate assessment processes must not be limited to any one measure that attempts to capture all of the complexity of the desired competencies.

Useful assessment – assessment that results in a full picture of what is working (and not working) to prepare students for their careers and lives – uses multiple methodologies, includes longitudinal studies of student performance, is formative in nature, is coupled with a continuous cycle of improvement designed to maximize the success of our students, and must “embody creativity, adaptability, reliability, and validity” (AAHE Principles of Good Practice.)” (See Appendix xx for a copy of the full Faculty Advisory Council report.) Finally, efforts to develop appropriate and useful assessment tools are complicated by the rapid movement away from course-based approaches to measuring student learning outcomes towards the more flexible, but in many ways more challenging, competency-based approach.

E-LEARNING

In July 2007, UNC General Administration launched The University of North Carolina Online (<http://online.northcarolina.edu/>), the official online site providing organization and integration of services and resources to assist prospective students, current students, and UNC institutions

¹ Northwest Ordinance, adopted July 13, 1787, by the Second Continental Congress

² See Peter Ewell, Discussion Paper at www.nchems.org/pubs/detail.php?id=52 and “*Our University, Our Future: A Faculty Vision for UNC Strategic Directions Moving Forward.*”

with increasing access to high-quality degree-credit online programs for North Carolina citizens. UNC Online is the public face of online education across North Carolina's public University system. It creates a single point of entry to the resources and services offered by the University and increases access to information about degree programs and courses.

Currently, UNC offers 628 authorized distance education degree and certificate programs. Of these, 313 are offered online: 70 undergraduate, 132 graduate, 2 doctoral, 2 intermediate, and 102 certificate/licensure. Online enrollments are increasing: in the five years from FY 2007 to FY 2011, online student credit hours taken by distance education students increased by 88.6%, from 152,854 to 288,339.

Since 2010, UNC Online has provided a test Proctoring Network for students and faculty. The network standardizes and streamlines the proctoring process for instructors and students. While some universities in the U.S. have made approved proctor lists available to students and others have internal proctoring systems, UNC's network is unique in that it offers this level of automation to all campuses. The network filters available proctors based on student location, exam type, length, and test-time, and allows students to auto-schedule exams.

Also available through UNC Online is the E-Mentoring Network, which enhances the academic experience for students in identified cohorts by connecting them with mentors from the workforce. A good mentoring relationship promotes a student's professional development and provides first-hand information about what is expected in a chosen profession.

In November 2012, another enhancement was added to the UNC Online site: The Exchange. The Exchange assists students in selecting online courses offered in the student's major program or in disciplines or languages not offered on the student's home campus.

Twelve years ago, faculty from eight UNC campuses created a German Inter-Institutional Agreement by which they would share courses across their campuses. German instructors from several campuses created a path to a German studies degree that involved video-conference courses delivered synchronously. This agreement had a number of advantages for participating programs. Most notably, two new German degree programs were created without additional resources. Today, the UNC Online German Exchange – with faculty from the eight participating campuses – forms the largest “federated German department” in the country. Currently, three languages have formal agreements that are being served by The Exchange – German, Russian, and Portuguese. A number of disciplines are now exploring options for leveraging learning opportunities, including general education courses, across UNC campuses.

The UNC Online website recently underwent an extensive upgrade and now offers a more user-friendly and easily navigable interface. The upgrade included an overhaul of the back-end database that drives the site and functional capabilities such as the test Proctoring Network, the E-Mentoring Network, and The Exchange.

Nevertheless, UNC has not yet fully capitalized on the opportunities that advances in technology and developments in the delivery of distance education can provide. In addition to expanding UNC's ability to deliver high-quality, low-cost education to the substantial numbers of adult learners who have been traditionally underserved, we now have the opportunity to redesign courses and degrees in ways that increase access to knowledge and learning for all students. In addition, personalized learning will allow students to gain a degree more quickly

by determining what knowledge the student has already mastered and focusing on the knowledge that the student still needs. With more clearly specified learning outcomes and with more sophisticated use of student learning outcomes data to improve the quality of both courses and degrees, UNC can make great strides in preparing students for productive careers, healthy lives, and engaged citizenship.

As part of the Strategic Directions process, President Ross engaged Bruce Chaloux of the Sloane Group to consult with members of the UNC community, including representatives from the Board of Governors, General Administration staff, and institutional representatives, in October 2012. Following interviews with key stakeholders, a full review of reports and documents provided prior to and during his two-day visit, as well as a review regional and national reports on e-learning and current trends and future directions in higher education, Dr. Chaloux submitted his analysis to the President in a report entitled “E-Learning as a Strategic Asset for UNC.”

To paraphrase and adopt the overarching recommendation from that report, the following principles will guide our implementation of a revised, comprehensive e-learning strategy, one built on a “strong and clear statement of the importance of e-learning as a central strategy for addressing broader goals at UNC and each of its constituent institutions:

- Be delivered with the quality expected of higher education services from UNC
- Be a mainstream component to the traditional campus model, not a supplement to it
- Be a viable tool that can help expand access for both traditional and ‘non-traditional’ students in North Carolina
- Assist in increasing degree attainment for a variety of populations in the state, in particular adult learners and those where traditional campuses are not in proximity to their residence
- Increase efficiencies across the entire university and at individual institutions by:
 - Increasing the capacity of institutions without increases in building and infrastructure
 - Reducing program duplication
 - Providing a larger number of student enrollment options with opportunities from across the university
- Increase access points to the university
- Strengthen the link between educational programming and state workforce needs, and
- Create enhanced teaching and learning environments for both faculty and students.”³

³ For full report, see Appendix TBD

ACCOUNTABILITY MEASURES

In addition to clear expectations about the content and rigor of the baccalaureate curriculum, in 2012, discussions of quality in higher education also inevitably entail a discussion of the personalization of learning, the customization of delivery modality, and the credentialing process that today's universities will use to certify mastery of degree-related skills, content, and values. Increasingly, prospective students and other stakeholders expect an education that is uncompromising in quality, but flexible in course timing, duration, pedagogical approach, and use of educational materials conducive to different learning styles. Increasingly, too, the expectation is that universities will meet students where their prior experience and learning has taken them and that they will provide the resources necessary to support and credential student learning in as expeditious and cost-effective a manner as possible.

As demonstrated in Section 1 of this document, to be competitive now and in the future, North Carolina needs an increased number of four-year degree recipients, living and working in the state, who have mastered sophisticated, in-depth technical competencies and broader, transferrable skills typically associated with the general education curriculum, including critical thinking and quantitative analysis, written and oral communication, scientific inquiry, historical and social perspectives, and human expression and creativity.⁴ To reach the State's educational objectives, public universities must operate at maximum efficiency to deliver the highest quality education to an increasingly diverse student body.

In this context, it is imperative that UNC engage in a full examination of the policies need to ensure:

- Students who are admitted are prepared to succeed;
- Students have access to the courses they need to complete degree requirements on time and with minimal unnecessary duplication of courses or course content;
- Faculty have access to state-of-the-art learning technologies and related professional development opportunities necessary to deliver a high-quality, cost-effective education;
- Baccalaureate study at UNC will encompass mastery of the 21st-century skills demanded by employers and associated with general education requirements in addition to the technical skills and competencies associated with a specialized field of study;
- Employer feedback and data on student learning outcomes guide the continuous improvement of courses and degree programs.

⁴ Note that the Faculty Advisory Committee's "Our University, Our Future" report identifies these five skills as common to the general education programs at all 16 undergraduate degree-awarding institutions within UNC.

COST AVOIDANCE

We propose that one measure of the return on the combined investment for the strategies proposed below would be a 3.2% reduction in the average number of hours to degree attempted by UNC undergraduates by 2018. In the 2011-2012 academic year, the UNC system total average hours attempted was 138.5. The goal is to reduce the total system average of hours attempted to 134 hours, a system-wide reduction of 4.5 hours (3.2%) by 2018. This reduction will be accomplished within the following timeline with the following projected cost avoidance:

Year 1: 0.5 reduction. Total projected cost avoidance \$6,468,750 (Weighted average for both the state and the student tuition contributions to per-undergraduate credit hour cost is $\$375 \times 0.5 \text{ hours} \times 34,500$ – average number of undergraduate students who graduate each year).

Year 2: 1.0 reduction. Total accumulated cost avoidance \$12,937,500.

Year 3: 2.0 reduction. Total accumulated cost avoidance \$25,875,000.

Year 4: 3.0 reduction. Total accumulated cost avoidance \$38,812,500.

Year 5: 4.5 reduction. Total accumulated cost avoidance \$58,218,750.

There likely will be substantial differences in how much progress can be made in this regard for various subgroups of students, e.g. transfer students, students who change majors, etc., and an effort must be made to specify and address subgroup targets.

STRATEGIES

A. Assess the impact of minimum admissions requirements

Complete comprehensive data analytics review of the effects of the recently increased minimum admissions requirements (MARs) on student success at both the campus and system levels. Propose changes or amendments to those standards, consistent with the research results.

Actions Steps

1. Complete analytics research on the likely impacts on student success if the new minimum admissions requirements had been applied to past cohorts.
2. Develop a process for tracking those who fail to gain admission to UNC under new standards to determine if, and where, they go to begin post-secondary education and whether and how soon they ultimately enter a UNC institution.
3. Complete a comprehensive assessment of the predictive utility of current GPA and test score standards on the retention and graduation rates of future cohorts, and analyze whether different, additional, or weighted measures of student academic preparation should be included in the minimum admission requirement policy.

B. Set core competencies for General Education programs

Guarantee a set of minimum competencies for General Education programs, based on recommendations from faculty from across the UNC system, to assure seamless transfer opportunities between UNC campuses and from North Carolina Community Colleges.

Action Steps

1. Complete revision of the Comprehensive Articulation Agreement consistent with time line submitted by UNC and NCCCS to the Educational Oversight Committee. (See Appendix TBD)
2. Appoint a General Education Council composed of faculty and chief academic officers to undertake a comprehensive review of existing General Education programs across all 16 UNC undergraduate-degree granting institutions and recommend a set of core competencies that will strengthen and streamline learning outcomes. (Committee to be appointed by March 2013; recommendations and analysis received no later than January 2014)
3. Consider the following for inclusion in a core set of system-wide general education competencies, recognizing that general education is not limited to these areas and will be supplemented by learning outcomes aligned with each institution's mission:
 - Critical thinking and quantitative analysis;
 - Scientific inquiry;

- Communication skills;
 - Historical and social perspectives;
 - Human expression and creativity;
 - Information and technology literacy;
 - Global and cultural awareness, diversity, and citizenship
4. Use results of council review as basis for discussion of a common set of core general education competencies and value outcomes across UNC and of the proposed tools and methodologies that will be used to measure them. (January 2014-May 2014) Initiate pilot projects designed to refine the proposed quantitative measures of student learning and develop appropriate and cost-effective test administration protocols. (Fall 2014) cross-referenced below
 5. By December 2013, ensure that all general education courses at all UNC institutions meet transfer-level quality SACS accreditation standards.⁵
 6. Update and expand current course equivalency library (Transfer Navigator) to include a search function not only by course name and title, but also by minimum course objectives and competencies. (2016-2017)
 7. By fall 2015, ensure that any change to campus curricula be assessed for compatibility with the equivalency library and Comprehensive Articulation Agreement (CAA) before implementation.
 8. Develop system for continuously updating course equivalency portal. (January 2017 – May 2017)

C. Become the national leader in the assessment of student learning gains

Increase the transparency and coverage of current student learning assessments, fully implement a robust general education learning outcomes assessment strategy that is integrated with current assessments of learning in the major, and develop a strategy to measure longer-term career and responsible citizenship outcomes of UNC degree recipients.

Action Steps:

1. Increase access to and the transparency of current student learning outcomes assessments.
 - a. Ensure all campuses report all required information to the Voluntary System of Accountability (VSA) in a timely manner.
 - b. Publish expected learning outcomes for each degree program on each campus' website.

⁵ See SACS Policy on Quality and Integrity of Undergraduate Degrees at <http://sacscoc.org/pdf/081705/Quality%20and%20Integrity%20of%20Undergraduate%20Degrees.pdf>

- c. Make licensure pass rates, currently reported annually to the Board of Governors, more accessible to prospective students and other key stakeholder groups.
 - d. Develop and regularly report on a suite of indirect student learning outcome measures, e.g., percent of students attending professional or graduate school, percent employed in field within six months of graduation, or other indicators derived from the National Survey of Student Engagement results.⁶
 - e. Publish existing Employment Security Commission employment and income data by major on publicly available web sites such as the College Foundation of North Carolina and the University of North Carolina.
2. In partnership with one or more nationally recognized higher education assessment organizations (for example, Educational Testing Service) develop and fully implement a robust competency-based general education learning outcomes assessment strategy that is integrated with current assessments of learning in the major.
- a. In the fall of 2013, pilot on five UNC campuses the use of the revised College Learning Assessment (CLA) test with a statistically valid sample of the freshman cohort admitted for fall 2013.
 - b. By January 2014, receive recommendations from the General Education Council (see B.2 above) on 1) the common core competencies and value outcomes that characterize a 21-st century undergraduate education, and 2) proposed operational definitions, tools and research design for measuring the agreed-upon core competencies at the campus-level across the system. Recommendations will be informed by a thorough evaluation of the data collected from the CLA pilot program (referred to in 2.a), an analysis of constraints that might limit the capacity to deliver the test to a more expanded set of students, and what policy or methodological changes would be required to address the recently documented shortcomings in a low-stakes testing environment.⁷
 - c. By May 2014, complete an alumni satisfaction survey to determine students' perception of educational value and quality. In support of campus-based efforts, the University will provide resources and methodological and statistical expertise to ensure a robust sample and response rate.
- Year 1: \$0.2M | Y2: \$0.2M | Y3: \$0.2M | Y4: \$0.2M | Y5: \$0.2M
- d. By fall 2014, provide seed funding to campuses to support pilot projects designed to refine the proposed quantitative measures of individual student

⁶ <http://nsse.iub.edu/html/about.cfm>

⁷ See Liu et al. (2012) for full study details.

learning and develop appropriate and cost effective test administration protocols.

- e. By May 2015, identify steps necessary to bring a comprehensive competency-based measurement approach to scale across all UNC campuses.

Year 1: \$0.6M | Y2: \$1.2M | Y3: \$1.8M | Y4: \$1.8M | Y5: \$1.8M

- f. Beginning in the 2013-14 academic year, provide resources to one or more campuses to pilot an e-portfolio approach to documenting student learning across general education and the major. E-portfolios will include learning derived from both traditional and non-traditional classroom experiences, co-curricular activities, and capstone projects or seminars. Information included in e-portfolios should help students document their ability to apply knowledge, skills, and responsibilities to complex problems and new settings in the workplace and civic life.⁸
- g. By September 2015, bring a competency-based approach to assessing general education core learning outcomes to scale across the system and determine whether or not to adopt a common e-portfolio platform and framework.

Year 1: \$1.5M | Y2: \$1.5M | Y3: \$1.5M | Y4: \$1.5M | Y5: \$1.5M

- h. As appropriate, join national efforts (currently led by the State of Massachusetts) to develop a robust database for comparing campus learning outcomes with those of their peers.
- 3. Working with campus leadership and faculty, develop and implement a system-wide Prior Learning Assessment (PLA) program (Fall 2014 – Fall 2016).
 - 4. Implement a robust strategy for measuring the longer-term career and responsible citizenship outcomes of UNC degree recipients.
 - a. Conduct alumni surveys at 1-year, 5-year, 10-year, and 20-year intervals after graduation, to include information on employment and career mobility, civic wellness (e.g. participation in voting, volunteering, service work, in children's education and development, and individual benefits (e.g. health, happiness, stress)).

D. Implement a comprehensive eLearning strategy

Building on the assets of the University, take advantage of developments in the marketplace and enhance the quality of academic programming offered to all students by creating and launching a systemwide E-Learning strategy. Facilitated and supported by the University, implementation of this strategy will be faculty-led, supportive of campus priorities, and will leverage the strengths of individual campuses and the overall system.

Action Steps

⁸ <http://www.aacu.org/meetings/annualmeeting/AM12/EPortfolioResources.cfm>

1. Eliminate distance education tuition charges for full-time students to maximize access to online courses and reduce time to degree. Ten UNC campuses charge additional tuition and fees to full-time, on-campus students who take distance education courses in excess of the full-time tuition cap (12 hours). Funds are requested to allow students enrolled full-time in traditional campus-based degree programs to take distance education classes offered by their home institution at no additional cost.

Year 1: \$4.0M | (NR)

2. In collaboration with a Chancellor's Advisory Group, identify key strategic partnerships that will enhance UNC's ability to leverage its reputation for academic excellence and its current investments in UNC Online, CFNC, UNC-TV, and UNC Health Care. Based on a careful evaluation of the quality of the product, the capacity to extend UNC's reach to new student populations, the viability of the business model, and its adaptability to a range of disciplines and institutional types, sign an MOU with one or more providers of eLearning and MOOC platforms (e.g., Coursera, EdX). (March 2013 – December 2013)
3. Through a Request for Proposal (RFP) process to UNC campuses and faculty, develop and deliver up to ten new competency-based distance-delivered general education or other bottleneck courses (including laboratory courses) and five MOOC's that meet the highest standards of instructional quality and student learning and meet lower-division general education requirements at all UNC campuses. (Beginning September 2013, develop and launch two new competency- based general education courses and one MOOC per year, in each academic year of the strategic plan).
4. Become a national leader in the use of technology-enhanced pedagogies that measurably improve student learning outcomes, decrease course non-completion rates, and reduce hours to degree.
 - a. Develop an RFP that provides incentive to faculty to leverage technology in the redesign of courses within the general education core that have high DWIF rates. (Annually, beginning September 2013)

Year 1: \$0.5M | Y2: \$0.5M | Y3: \$0.5M | Y4: \$0.5M | Y5: \$0.5M

- b. Develop an RFP that provides incentives for faculty to pilot the development of online competency-based courses that effectively utilize distance technologies to assess and track learning outcomes (Annually, beginning September 2013)

Year 1: \$0.3M | Y2: \$0.3M | Y3: \$0.3M | Y4: \$0.3M | Y5: \$0.3M

- c. Deliver faculty development that focuses on formative assessment and learning analytics in teaching and learning of general education core courses. (Begin February 2013 and ongoing)
- d. Institute a series of faculty development sessions to be hosted annually that allow for the exchange of best practices in the use of technology to deliver instruction that is affordable, accessible, and scalable. (Begin February 2013 and ongoing)

5. Initiate and implement primary market research on key target audiences and influencers of distance education opportunities including: high school students, community college students, part-way home students; military personnel and veterans, adults with an earned baccalaureate degree, and school counselors (university, community college, and high school).
 - a. Develop RFP for market research contract with a company (e.g., Noel Levitz) specializing in higher education enrollment management services to identify specific programs of greatest interest to non-traditional student populations we wish to serve as part of our degree attainment goal (March – July 2013)
 - b. Award contract with a May 2014 due date for agreed upon deliverables (November 2013)
 - c. Develop system-wide implementation plan based on results of market research (May 2014-August 2014). This plan will be based on existing campus strengths leveraged to create inter-institutional collaboration.
 - d. Through an RFP process to UNC campuses and faculty, design courses and initial degree programs responsive to results of market research (June 2014-July 2015)
 - e. Facilitate implementation of a portfolio of distance-delivered programs responsive to needs of adult learners, including military personnel and veterans, part-way home students, and transfer students. (August 2015 – June 2018)

Year 1: \$0.4M | Y2: \$0.6M | Y3: \$0.6M | Y4: \$0.6M | Y5: \$0.6M

6. Launch UNC Online marketing campaign to drive visibility of website, degree and program offerings, and other services and resources offered online (January 2014).

Year 1: \$0.6M | Y2: \$1.0M | Y3: \$1.0M | Y4: \$1.0M | Y5: \$1.0M

7. Develop and aggressively market a fully online inter-institutional undergraduate degree in Liberal or Interdisciplinary Studies that is designed with flexible delivery options specifically for adults with some college, but no degree, as well as military personnel and veterans.
 - a. Develop and deliver initial online courses that are requirements for an inter-institutional undergraduate degree in Liberal or Interdisciplinary Studies (September 2014-June 2015)
 - b. Through an RFP to UNC campuses and faculty, continue necessary course development and begin marketing and delivery to target populations (August 2015-June 2017)
 - c. Complete and deliver all required courses for the fully online inter-institutional Liberal or Interdisciplinary studies baccalaureate degree.

Year 1: \$0.0M | Y2: \$0.7M | Y3: \$0.5M | Y4: \$0.5M | Y5: \$0.5M

8. Expand the number 2+2 programs delivered via distance education.
 - a. Launch an aggressive marketing campaign to promote availability of existing 2+2 programs (September 2013, and ongoing)
 - b. Enhance existing 2+2 online degree inventory with programs identified as high-interest/high-need by market research completed in December 2013. (Through an RFP to UNC campuses and faculty beginning September 2014 and annually thereafter.)

Year 1: \$0.5M | Y2: \$0.5M | Y3: \$0.5M | Y4: \$0.5M | Y5: \$0.5M

9. Through an RFP process, pilot of a series of competency-based online post-baccalaureate certificate programs that are matched to specific economic needs within the state and based on prior market research analysis.
 - a. Plan and begin initial development of post-baccalaureate certificate programs identified through market research as in high-need by employers and in high demand by potential students. (January 2014 – August 2014)
 - b. Fully develop and launch three online competency-based post-baccalaureate programs matched to specific workforce and economic development needs. (January 2015- August 2016)

Year 1: \$0.5M | Y2: \$0.5M | Y3: \$0.5M | Y4: \$0.5M | Y5: \$0.5M

10. Explore avenues to expand access to the UNC Online Exchange for World Languages with new markets through new and existing partnerships such as the Southern Regional Education Board and the U.S. military and establish programs to enable assessment of sustainable and scalable revenue-generating models for a state, national, and international online presence that generates potential new revenue. (Beginning September 2014 and ongoing)

Year 1: \$0.0M | Y2: \$0.2M | Y3: \$0.2M | Y4: \$0.2M | Y5: \$0.2M

E. Reduce attempted hours to degree through more comprehensive advising

Implement a system of academic and career advising that will reduce undergraduate attempted hours to degree and help students and institutions better align student interests and content mastery with employer expectations and demands.

Action Steps:

1. By fall of 2015, initiate a biennial employer satisfaction survey.
 - a. Using the response categories excellent, good, fair, needs improvement, and poor, the survey must include the following items: written skills, oral communication

skills, ability to work with others, problem-solving skills, ability to understand and use technical information, work ethic, and adaptability/flexibility.

- b. Institutions should consider asking an open-ended question of employers about how they could better prepare future graduates.
- c. General Administration will work with campuses to develop an approved employer sampling procedure that will generate valid results.

Year 1: \$0.0M | Y2: \$0.3M | Y3: \$0.3M | Y4: \$0.3M | Y5: \$0.3M

- 2. Each campus will implement electronic advising support software. At a minimum, software will be used to create a comprehensive advising portfolio that documents all advising encounters, makes the record of advising available to students and advisors, and follows the student across majors in different colleges and degree programs. The technology will allow advisors to focus more exclusively on major selection and navigation of workforce options.

- a. To facilitate seamless transfer, explore scaling electronic advising solution to include the North Carolina Community College system.

Year 1: \$0.1M | Y2: \$2.5M | Y3: \$0.5M | Y4: \$0.5M | Y5: \$0.5M

- b. Hire additional professional and academic career advisors and provide staff and other resources necessary to support high-quality faculty advising.

Year 1: \$3.8M | Y2: \$5.7M | Y3: \$7.5M | Y4: \$7.5M | Y5: \$7.5M

- c. Implement strategies for assessing and improving student satisfaction with academic and career services.
- d. Through an RFP to UNC campuses and faculty, pilot a series of post-baccalaureate certificate programs that are matched to specific economic needs/employer demands within the state (based on employer surveys and prior market research analysis).
- e. See also Section on UNC Serves for additional action steps related to internships and university/employer partnerships

F. Prepare more higher-quality teachers and school leaders

Driven by a robust research agenda, UNC has made important programmatic, curricular, and policy strides that have produced measurable results in increasing the number and the effectiveness of North Carolina primary and secondary teachers and principals. These efforts must continue and be augmented by additional focused strategies designed to improve the recruitment of teachers and school leaders, their collegiate preparation, and their support in the critical early years of a teaching career or as principal. All of these initiatives will be developed from and guided by the University's nationally recognized outcome-based research on teacher quality.

The demand for new licensed teachers is driven by growth in the number of students in the state and, more critically, by the need to replace teachers who leave. Because University of North Carolina institutions produce approximately 33 percent of the new teachers in the state, they are vital in producing the new teachers needed to meet a growing population and in addressing current deficits of teachers high demand fields such as special education, science, mathematics, and middle grades.

However, given the role that high turnover rates play in driving the supply of PK-12 teachers, UNC also plays a critical role in developing the best practices that reduce turnover rates among early career teachers, improving both their retention and effectiveness. Research clearly indicates that the mentoring that reduces career dissatisfaction and attrition also increases novice teacher effectiveness. Elementary reading and mathematics teachers, middle school mathematics teachers, and all high school teachers are, on average, significantly more effective in their second year than their first. Thus, the three legs of the PK-12 Teacher and School Leader Education agenda are, producing more teachers, improving the preparation and therefore effectiveness and quality of newly licensed teachers, and initiating best practices that reduce early career attrition and are supportive of the continued professional development of mid- to later-career teachers, school principals, and other school leaders.

Action Steps

1. Calibrate the quantity of teachers

Ensure that UNC campuses are individually and collectively contributing to the State's need for high quality PK-12 teachers and school leaders.

- a. Update statewide market research and use in teacher recruitment planning to drive each campus' enrollment growth plan implementation (December 2013).

Year 1: \$0.1M | Y2: \$0.1M | Y3: \$0.1M | Y4: \$0.1M | Y5: \$0.1M

- b. Renew campus-based enrollment growth plans aimed at increasing the number of initially-licensed teachers for NC's public schools, particularly in identified high need licensure areas (mathematics, science, middle grades and special education). (December 2013)
- c. Ensure each campus preparing teachers has a recruitment plan that is aligned to current market research and system plan, is responsive to the State's supply/demand needs, and is informed by the results from UNC's teacher quality research. (May 2014)
- d. Assess and track campus productivity of initially licensed teachers contributing to the State's supply and demand: overall productivity and productivity in identified high-need licensure areas (mathematics, science, middle grades and special education). (Fall 2013 and annually thereafter)
- e. Report to the Board of Governors and the State Legislature on campus productivity of initially licensed teachers contributing to the State's supply and demand (Fall 2014)

- f. Recalibrate the number of initially licensed teachers and school leaders prepared by UNC campuses, individually and collectively, to more effectively meet the state's PK-12 teacher and school leadership needs (Fall 2014).

2. **Strengthen teacher quality**

Ensure the quality of North Carolina PK-12 teachers and school leaders prepared by UNC schools of education is evaluated and monitored regularly.

- a. Continue to expand UNC's agenda of outcome-based research on teacher and school leader preparation and ensure that the research is utilized by system and campus leadership to examine program quality and facilitate evidence based program improvements. (Annual Teacher Quality research agenda established annually in August)

- The research agenda for 2013-14 will include analysis to inform increased admissions requirements for teacher preparation, and a schedule by which the new requirements will be implemented. (Completed by June 2014)

Year 1: \$0.4M | Y2: \$0.4M | Y3: \$0.4M | Y4: \$0.4M | Y5: \$0.4M

- b. Report annually to the Board of Governors on the assessed impact(s) of teachers prepared by UNC teacher preparation programs as evidenced by analysis conducted through UNC's teacher quality research initiative (Teacher Portals report delivered February 2014; UNC Teacher Preparation Program Effectiveness report delivered February 2015. Two reports alternate annually thereafter.)

3. **Support for early-career teachers and school leaders**

Seek to improve the performance of early-career teachers by adopting practices and policies intended to improve teacher preparation through more effective student teaching internships, meaningful mentoring, and comprehensive induction experiences.

- a. Design implementation strategy for bringing NC New Teacher Support Program to full scale. (September 2013-May 2014)

- b. Begin implementation of fully scaled New Teacher Support Program (June 2014 – June 2015)

- c. Complete implementation of the fully scaled program (May 2018)

Year 1: \$0.1M | Y2: \$2.0M | Y3: \$4.0M | Y4: \$5.0M | Y5: \$6.0M

- d. Initiate development of a school leadership support program (September 2014 – ongoing).

Year 1: \$0.0M | Y2: \$1.0M | Y3: \$3.0M | Y4: \$3.0M | Y5: \$3.0M

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Serve the People of North Carolina

JOBS AND GROWTH

Since North Carolina's economy bottomed out in February 2010, the state has begun a recovery. While an average of 4,400 net new jobs per month have been created, those jobs haven't replaced the jobs lost during the downturn. At the end of 2012, there were still 181,000 fewer North Carolinians going to jobs every day than there were in December 2007, when the national recession first struck, and North Carolina's unemployment rate continues to hover above the national average (1).

Job growth throughout the United States faces obstacles for the foreseeable future, as workers have become more productive, as machines have replaced people in many work environments, particularly in manufacturing, and as low-cost competitors in other parts of the world perform work historically done in the U.S. In manufacturing-rich North Carolina, the challenge of job growth is even more acute.

North Carolina's future success will hinge less on our ability to make things than to think things—to relentlessly create new knowledge, new technologies, new products, new processes, and new ways of organizing and doing work.

The University of North Carolina must play a key role in that future. UNC connects campuses to companies and communities, forming bonds between the University, the state, and the world that create value, in the form of art and science, new products and processes, and new innovations.

Now more than ever, UNC must embrace its mission to *serve North Carolina*. As our global economy creates and destroys jobs at lightning speed, UNC must look for ways to serve as an innovation hub, making the discoveries and growing the discoverers who can lead and shape our state and its economy going forward. UNC should be a destination and a home for entrepreneurial faculty, students, and staff, while building on its historic strengths to become an even more trusted partner for the state's business, nonprofit, and governmental leaders.

RESEARCH INVESTMENT

Our public University system has always been an incubator for world-class thinkers and discoverers. Evidence of that comes in part from an analysis of the growth over time of external investment in our research. Over the past 15 years, that investment has continued and accelerated—with sponsored research grants more than doubling during that period.

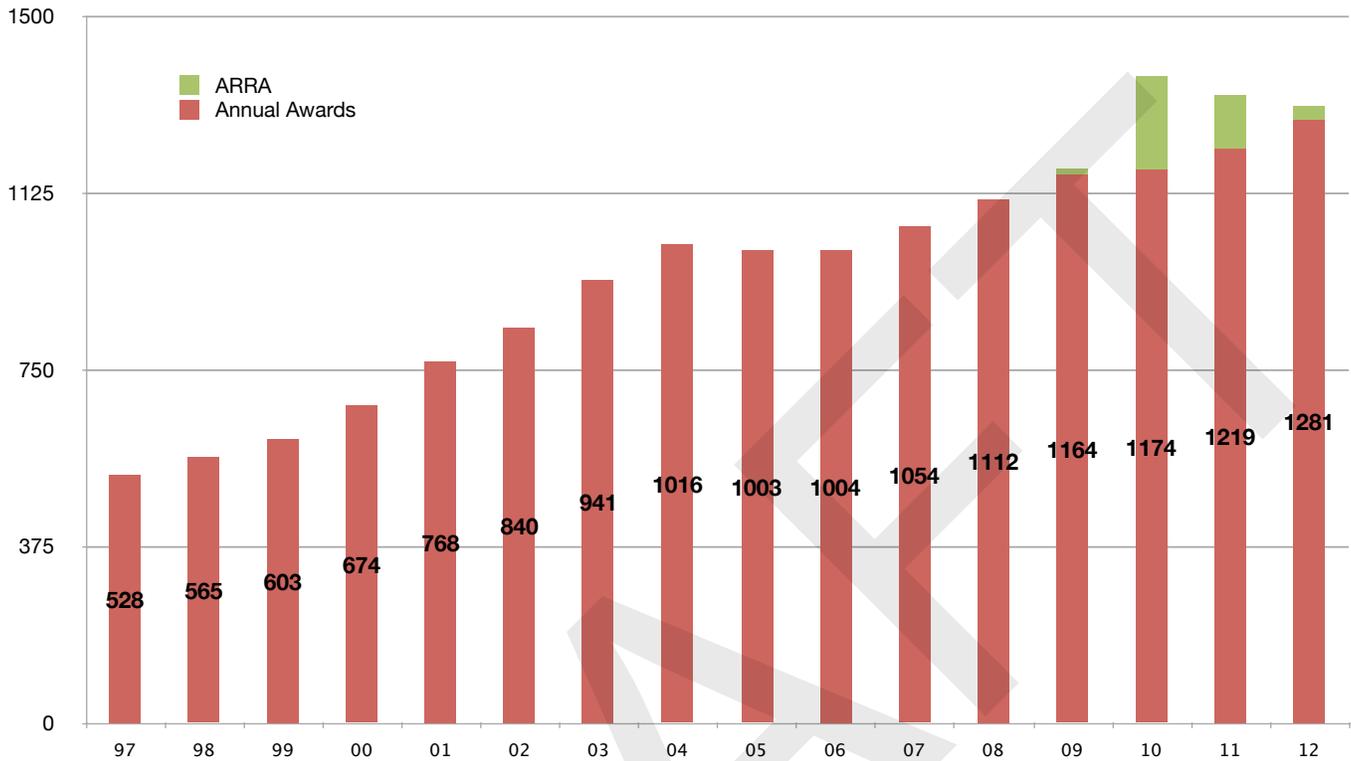


Figure 3a. Awards to UNC from FY 97 through FY 12. Amounts are in \$ millions. For FY 09 through FY 12, the green bar indicates the amount received through the American Reinvestment and Recovery Act (ARRA). The amount indicated above each bar does NOT include ARRA funding.

This impressive growth has helped move North Carolina into an enviable position: the state ranks 5th nationally in academic R&D performed per \$1,000 of Gross State Product (2).

We must continue to build on this success going forward, with faculty conducting cutting-edge research that will continue to attract investment from federal agencies, which provide 69% of support for sponsored research throughout the UNC system (Figure 3b), as well as finding ways to increase sponsorship from state and local government, the private sector, and international investors.

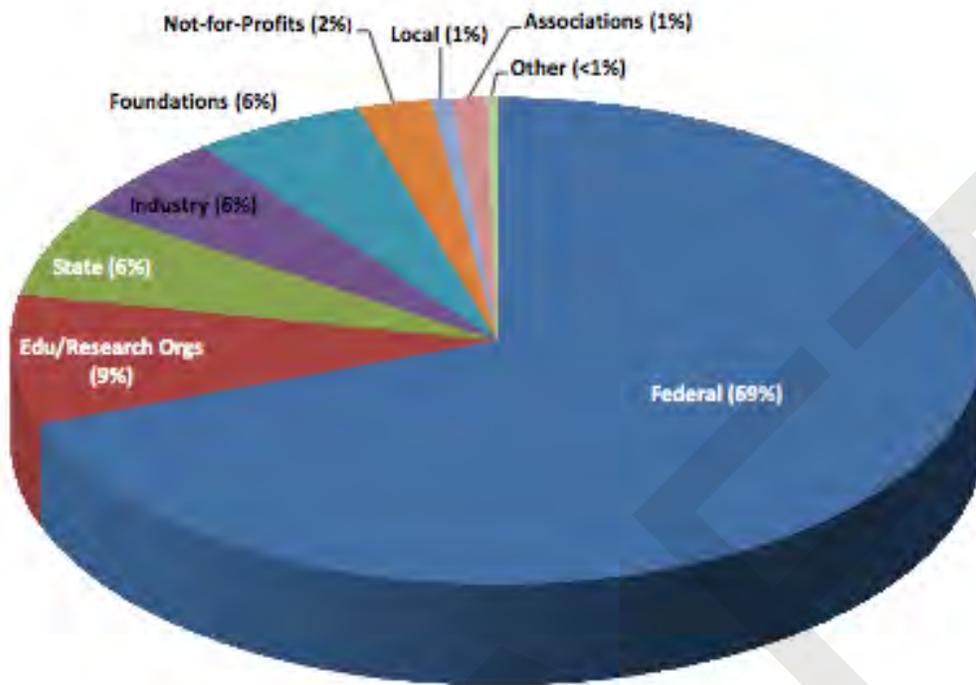


Figure 3b. Percentages of sponsored funding from ALL sources for FY 11.

Every \$1 million investment in sponsored research supports an average of 17.25 new jobs—meaning that more than 22,000 jobs were supported through UNC research funding last year (3). But research also plays a critical role in the entrepreneurial infrastructure of a state, enabling it to relentlessly turn out new ideas and companies, create new ways of targeting drug treatments, run efficient production lines, manage public policy challenges, or finance and deliver health care.

UNC must provide resources, space, permission, and responsibility to skilled problem-solvers working to solve complex challenges on regional, state and global levels. The big ideas they develop can change the world as we know it. Their strategies and focus can provide a clear road map toward the jobs of the future and the actionable policy ideas that will help the state function successfully in the decades ahead.

Across the region and state, economic and business leaders face challenges and opportunities for which UNC faculty can help find solutions: discovering new energy solutions; improving security for the nation and the world; recreating manufacturing products and processes; making sense of the vast array of data that we produce; discovering jobs and value in our scenic beauty and cultural heritage; creating the public policies needed to keep the state strong; and connecting to economies and thinkers across the world.

We must commit to being both globally and locally connected so that we can better understand and draw on the world’s knowledge and resources in order to create new knowledge that works for North Carolina.

In late 2012, UNC General Administration staff and campus leaders conducted a statewide listening tour involving business leaders and economic developers across North Carolina. Participants in all regions of the state spoke clearly about the important role UNC can play in helping to shape the future growth of the state.

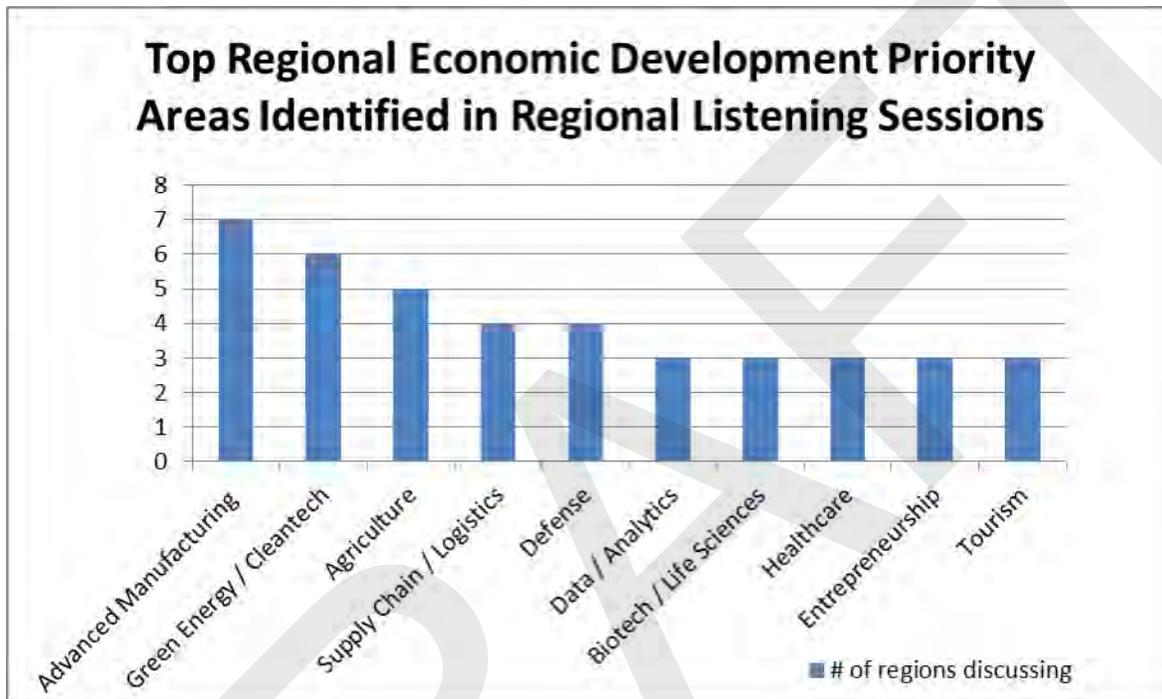


Figure 3c: Based on eight regional listening sessions conducted between Nov-Dec 2012 in eight regions across North Carolina.

These business leaders encouraged UNC administration, faculty and staff to focus attention on critical and growing sectors of the economy; to figure out ways to translate faculty research into new products, new processes, and new policies; and to pay particular attention to the state’s fastest growing economic sector—health care—which affects every citizen’s life and every business’ bottom line, and is the fastest-growing line item in the state budget.

STRATEGIES

UNC can't solve all of these challenges, but there are some areas where with targeted investment the University can make a meaningful difference. In a resource-limited environment, we recommend strategic investments in four major areas:

- A. Support game-changing research and scholarship that creates big ideas to solve big problems.
- B. Translate our discoveries and insights into action, policy and products.
- C. Serve the needs of our state, regions and communities through active engagement of key stakeholders
- D. Meet healthcare needs through innovative research, training and outreach.

A. **Game-changing research and scholarship that solves the problems of North Carolina – and the world.**

UNC cannot be good at everything, but there are some areas where, working in partnership with each other and with businesses, foundations, nonprofits, and other partners, the University can “move the needle,” making new discoveries and helping to create new jobs and opportunities. Investments must have a high probability of yielding game-changing results and return on investment.

Capitalizing on the strengths and potential of current UNC researchers to make breakthroughs, recognizing the areas with potential for new external funding, drawing on conversations from those eight listening sessions across the state, and building off of sectors of interest in multiple regions of the state, we recommend focused investment over the next five years in six sectors: advanced manufacturing; data sciences; defense, military, and homeland security; energy; marine and coastal sciences; and pharmacoengineering. Our greatest opportunities for game-changing excellence come at the intersection of UNC's research strengths and the priorities of the private sector, the economic development community, and regional and state governments.

These areas targeted for focused investment should not preclude campus-specific areas; instead they lift up a few areas where a multi-campus approach seems to have particular potential for research and economic success.

Advanced manufacturing integrates information technology, design methodology, rapid prototyping, automation, computation, software, sensing, networking, and new materials in the production of products, as well as the systems that support and enable them – e.g. robotics and other automation; additive and traditional machining; exotic and mundane materials; computation and visualization equipment – to produce factory environments, industrial processes, and supply chains that can respond to customer needs, adapt to changes in production technology, and sustain energy and material resources. Advanced Manufacturing approaches and techniques can apply to cutting-edge technical fields such

as aerospace, nanotechnology and biopharmaceuticals as well as to more traditional industries such as furniture, textiles and motor vehicles, all of which are part of the North Carolina manufacturing economy – past, present, and future.

Expertise and education in Advanced Manufacturing within the UNC system includes advanced engineering applications in additive manufacturing, automation and materials and the Biomanufacturing Training and Education Center (BTEC) at NCSU, cutting-edge materials science at UNC-Chapel Hill, NC State, and NCCU, composite materials at NCA&T, precision metrology at UNC-Charlotte, rapid prototyping at WCU, 3D imaging in the Center for Design Innovation at WSSU and the UNC School of the Arts, industrial design and engineering at ECU and ASU, and mechatronics at UNC-Asheville. Focused investment in programs and technology supporting Advanced Manufacturing will result in the discovery of new materials and processes through research, will help ensure a better-prepared workforce for North Carolina industry, and will provide extension services in lean production and other techniques to manufacturing companies, all of which should enable North Carolina businesses to produce high-quality goods that comply with industry-specific certification standards and compete favorably against national and international peers. A strong system-wide emphasis on Advanced Manufacturing can also place North Carolina in the forefront of the strategy laid out in the National Science and Technology Council's February 2012 report, *A National Strategic Plan for Advanced Manufacturing*, making us more competitive for the anticipated increase in federal funds allocated to this sector (4).

Coastal and Marine Science: With hundreds of miles of ocean beaches, thousands of miles of estuarine coastline, and millions of acres of sounds, creeks, and marshes, the coast is extremely important to North Carolina. For example:

- Economically — Tourism accounted for \$2.5 billion in the 21 coastal counties in 2007;
- Scientifically — UNCW and ECU researchers are exploring the pharmacological applications of brevetoxins from marine dinoflagellates;
- Environmentally — An endangered red wolf repopulation resides in the Alligator National Wildlife Refuge; critical fisheries up and down the coast; and
- Culturally — Hundreds of vessels and countless artifacts sunk throughout the state's history just miles off the coast

For these reasons and many more, it is incumbent on UNC to be at the forefront of understanding our coast. Our coastal and marine resources are varied and as such we need a variety of academic, research and outreach programs to understand and intelligently utilize these resources.

In addition to several academic departments across the system in Marine Sciences, UNC has several centers and activities related to the research, teaching and outreach, including:

- UNC Coastal Studies Institute
- North Carolina Sea Grant
- UNCW Center for Marine Science

- UNC-CH Institute for Marine Science
- NC State Center for Marine Science and Technology
- ECU Institute for Coastal Science and Policy
- ECSU Program in Marine Sciences
- WCU Program for the Study of Developed Shorelines

A system-wide assessment of UNC's coastal and marine science activities, to be completed in the Spring of 2013, will provide the information needed to develop a blueprint for the strategic investments the University and the state must make to support this critical sector.

Data science: The volume of data available for making decisions has increased exponentially over the past ten years, creating a corresponding need to make sense of and take advantage of that vast data to inform decision-making in fields including scientific research, homeland security, defense, energy management, and many more. Nearly every sector of the U.S. economy is struggling with growing data volumes, resulting in “big data” becoming an increasingly important research field. Big data has become so essential that every federal agency is now mandated to have a “big data plan,” and the President of the United States has launched a cross-agency federal research program in data science.

Big data is a big market, too. The data management and data analytics sector alone is worth over \$100 billion and is growing at a rate of almost 10% per year, and there are other big data markets (health care genomics, financial, emergency management, climate, agribusiness) (5). UNC has strengths in big data that, if collectively harnessed, can provide national leadership in this important sector. UNC-Chapel Hill has deep technical talent in data management and platform technologies; NC State has great strengths in structured and unstructured data analysis, statistics, and computer science; UNC Charlotte has engaged a broad spectrum of partners from various business sectors in discussions of the need for employees to manage big data including leadership in cyber- and network security; and ECU is using big data to incorporate weather and climate information into emergency management decisions. By strengthening the interactions among these programs, local industry, and national needs, the state of North Carolina will be well-positioned to become the national leader in big data research.

Defense, military, and homeland security: North Carolina has a robust and growing military community, with the third-largest military population in the United States distributed among six military installations, including Ft. Bragg and Camp Lejeune. North Carolina also is home to more than half of all U.S. Special Operations Forces, including three of the five subordinate commands of the U.S. Special Operations Command: the U.S. Army Special Operations Command (USASOC), U.S. Marines Corps Forces Special Operations Command (MARSOC), and Joint Special Operations Command (JSOC).

UNC has established unique partnerships with these North Carolina-based military entities, which have a range of science, technology, and educational needs. UNC's strong relationships with these operational end users — and with the U.S. Army Research Office (ARO), an important extramural basic research organization, located in Research Triangle

Park — offer a distinct advantage: face-to-face interactions with military customers, combat developers, and program managers to better understand DOD and Homeland Security research & development needs, programs, and processes. The most important factors in “breaking the code” to DOD research are relationships, knowledge of requirements, and understanding of funding pathways and opportunities.

UNC has distinct talents and cutting-edge technology that can benefit the military, particularly in areas such as biomedical and health sciences, engineering and material science, and data science. In addition, UNCC has the ability to conduct classified research. FSU has established the Center for Defense and Homeland Security focusing on cyber security: command, control, communication, computers, intelligence, surveillance, reconnaissance (C4ISR); chemical and biological countermeasures; and critical infrastructure protection and disaster management preparedness. The University can leverage its scientific capacity and existing partnerships with the military commands, ARO, and local defense businesses to expand the level and diversity of UNC research in areas impacting defense and homeland security and bring more extramural funding to the state.

Energy touches the lives of every person every day. Critical activities ranging from transportation to operation of factories and offices to heating and cooling our homes hinge on our ability to produce and consume energy. Recognizing that most sources of easily accessible energy are limited and many are non-renewable, UNC must be at the forefront in making discoveries that will fuel our state and the world in the future, and we have a robust foundation on which to build.

For example, UNC-Chapel Hill’s Center for Solar Fuels (with participating faculty from NCCU) focuses on capturing the power of sunlight to drive solar fuel reactions and help create a more sustainable energy future. NC State’s FREEDM (Future Renewable Electric Energy Distribution and Management) Systems Engineering Research Center is leading the nation in developing a smart-grid paradigm shift that will enable the U.S. to take advantage of advances in renewable energy. NC A&T’s Center for Energy Research and Technology (CERT) serves as the epicenter for energy analysis, research, instruction and outreach skills in the Triad area. UNCC’s Energy Production and Infrastructure Center (EPIC) is supplying a highly trained technical workforce and making advancements in technology for the global energy industry, while supporting the Carolinas’ multi-state economic and energy security. ASU’s North Carolina Small Wind Initiative, a collaborative research and demonstration project, is providing advice and information about small wind technology, wind resource assessment, potential energy production, and the economics of wind energy.

Investment in a comprehensive effort to take full advantage of the wide array of energy research, development, outreach, and training provided by these and other programs, in collaboration with both private and nonprofit organizations, such as utilities and the Biofuels Center of North Carolina, will yield scientific advances in the field and economic advances for the state.

Pharmacoengineering: Potential solutions to the world’s biggest challenges increasingly are hidden in the space between disciplines (such as medicine and engineering, or material science and biochemistry), and discovering the answers that will enable us to make breakthroughs must come through cross-disciplinary and cross-institutional work.

Pharmacoengineering is the science behind the development of materials and technologies to improve the delivery of therapeutic and diagnostic agents and lives in that interdisciplinary space. Targeted investment in pharmacoengineering within the UNC system will build on the success of medicine and life science at UNC-Chapel Hill and engineering at NC State, and leverage the success of the existing joint Department of Biomedical Engineering between those institutions. The focus of this investment will be on building collaborations between UNC-Chapel Hill's Schools of Medicine, Pharmacy, and College of Arts and Sciences, and NC State's Colleges of Engineering, Agriculture and Life Sciences, Science, and Veterinary Medicine, as well as with private companies and nonprofits such as the NC Biotechnology.

The pharmacoengineering effort will lead to new generations of drugs, drug delivery systems, and novel means to assess drug safety and efficacy through imaging and biosensing and will take over a critical role that the big pharmaceutical companies have been shedding. Investments in these programs will yield a highly trained workforce for North Carolina's pharmaceutical and biotechnology industries, as well as partnerships with the pharmaceutical industry that will yield significant economic benefits to the state.

Return on Investment

Investments in these areas will result in a variety of benefits to the state and to UNC, ranging from increased attraction of sponsored research from external sources to new discoveries to patents to new company startups. By Year 5 the state can expect to see about 30 patents generated in these areas of excellence, about \$70M in new grant funding, and approximately 40 new companies with nearly \$70M in external startup funding, activities generating more than 4,300 jobs.

The real payoff for the investment comes over time. By 2025, projections show revenues of \$1.45B (more than \$900M in new grants and contracts, \$14M in revenue from approximately 375 patents and more than \$500M in investment in about 200 new companies) from a total state investment of \$453M, a ratio of 3.5:1, with nearly 23,000 jobs being created. And returns continue to escalate: by 2028, projections show the state's ROI increasing to 5:1, with more than 33,000 jobs created through a combination of new company startup, research funding and construction.

Action Steps

1. Form six consortia in areas of excellence and develop plans to identify opportunities, recruit and retain talent, and assess infrastructural needs

Research funding is increasingly going to a small number of institutions that can show an aggregation of expertise and success. If UNC campuses can draw on their collective expertise from across the system, they will increase their probability of success in attracting investment and, more importantly, in making breakthrough discoveries. In each of these priority research areas, UNC should form consortia, modeled on the existing UNC Defense Applications Group (or DAG; see box below), to identify opportunities, focus staff and expertise around promising areas, identify strengths and gaps in faculty and staff expertise, and develop hiring plans to propel UNC institutions

to national prominence in these areas. UNC's efforts must be closely connected to the state's overall economic development goals and priorities. Through such consortia and other initiatives, UNC should coordinate campus efforts to connect research and student training to regional and statewide economies, and it should ensure that every campus has an economic development strategy that is responsive to regional and state needs.

The President of UNC should establish and regularly convene an Industry Advisory Board to advise the President of the University on the research, education, and partnership needs of the state's business community. UNC General Administration and campus economic development leaders should work with state and regional leaders to develop an actionable five-year economic development plan that connects UNC resources and capacities to regional and state entities.

Investment: Year 1: \$2.2M | Y2: \$10.6M | Y3: \$18.6M | Y4: \$26.7M | Y5: \$28.6M

The UNC Defense Applications Group (DAG) brings together a multidisciplinary group of UNC faculty and staff, including a core group of subject-matter experts with technical expertise in fields of critical importance to defense. The DAG is a cross-disciplinary team of scientists from various UNC campuses who have expertise ranging from electronics to analytics, biometrics, nanomaterials, chemical-biological defense, countering explosive devices, etc. In close cooperation with the Army Research Office, the DAG supports U.S. Special Operations Forces and the broader Department of Defense community and seeks to hasten the transition of basic research to practical applications for the military.

The group leverages the scientific talent and state-of-the-art capabilities of the entire UNC system—as well as other academic and industry organizations—to address these gaps through basic and applied research. This involves mobilizing UNC researchers and engaging local defense industry partners to deliver effective solutions. The DAG also coordinates student internships at military bases and projects whereby UNC students design and fabricate prototypes such as vehicle components and medical technology for military applications. The DAG also hosts technical discussions and workshops focused on military challenges in areas such as human performance and computational analytics to better understand human dynamics and behavior.

2. Hire, reward and retain critical faculty in areas of excellence

Top faculty are critical to the successful growth of these areas of excellence. While consortia will develop recommendations for strategic hiring of new junior and mid-level faculty as part of their strategies for the areas of excellence, we must invest in three other key areas to make the programs successful:

- a. Hire key faculty — UNC’s growth in areas of excellence will hinge on its ability to attract and retain faculty recognized nationally and globally for their excellence in our priority areas. These key researchers bring with them external funding and the ability to garner more, connections to important sources of research investment, and well as the ability to attract other talented researchers to join their labs or research areas. Over the next five years, UNC should hire 24 such faculty members in priority areas to help “move the needle” on research.
- b. Reward and retain existing faculty — Existing faculty members working in areas of excellence are critical to the success of the initiatives and UNC needs to invest in these faculty. UNC should establish a competitive UNC Faculty Scholars program, modeled after the similarly named program at NCSU, to recognize and reward early- and mid-career faculty who will receive \$10,000 annually for five years to support their academic endeavors. Additionally, UNC needs to match offers from other universities to hire our best faculty members.
- c. Professional development and proposal support — Ongoing funding to support continued mentoring and professional development of key faculty members increases the probability that faculty will achieve excellence. Proposal development support will allow faculty to develop successful applications for federal and industrial extramural funding

Investment: Year 1: \$2.0M | Y2: \$5.3M | Y3: 8.7M | Y4: \$12.0M | Y5: \$15.4M

- 3. Provide competitive start-up funding, shared equipment, and core facilities, and develop or lease laboratory and research space

Faculty at all levels in areas of research excellence require start-up support, laboratory and office space, and specialized equipment to conduct their work. Start-up packages range from \$300K to \$2M and will be expended over a three-year period. High-end shared equipment will be provided in shared, core facilities. Space needs should be met through a combination of leased space and new construction, and through a coordinated effort to cross-utilize existing space.

Investment: Year 1: \$1.0M | Y2: \$15.6M | Y3: \$30.0M | Y4: \$42.5M | Y5: \$51.6M

- 4. Connect campuses throughout the world

In a globally connected world, game-changing researchers and innovative faculty and students must be aware of and linked with regions critical to the state’s economic and strategic future. UNC should therefore build international beachheads in key areas, deepening student, faculty, staff, and institutional connections to innovators and colleagues in China, India, Brazil, Mexico and Africa, bringing in top international students from these and other countries and enhancing the global “brand” of North Carolina and UNC. These connections will help prepare students to succeed in the global economy and connect our institutions to key colleagues and resources important to future discovery and development. UNC should coordinate support for expansion in these key countries and provide support to facilitate the spread of innovative campus-based programs to other UNC campuses.

Year 1: \$0.4M | Y2: \$0.4M | Y3: \$0.4M | Y4: \$0.4M | Y5: \$0.4M

5. Expand Professional Science Master's degree programs

UNC campuses have been working with industry groups to create Professional Science Master's degree programs, which equip graduate students with industry-specific skills in key areas related to science technology, engineering and math (STEM). UNC General Administration should move more rapidly to coordinate future growth in this key area, consistent with measurable success (see also Section 1F).

Year 1: \$0.3M | Y2: \$0.3M | Y3: \$0.5M | Y4: \$0.5M | Y5: \$0.5M

6. Recruit highly-entrepreneurial graduate students and post docs

As Lew Ebert has noted, in today's business environment, "Talent is the coin of the realm" (6). Since the future will be fueled by a need for continuous innovation, North Carolina must identify and grow a cadre of highly talented, entrepreneurial students. Eleven UNC campuses are already offering undergraduate and graduate majors, minors and certificate programs, for both business and non-business majors.

UNC should encourage additional efforts in three areas:

- a. To better prepare more UNC undergraduate students for our fast-changing world, where they will need to be prepared to create or work in "jobs that don't yet exist, using technology that hasn't yet been invented in order to solve problems we don't even know are problems yet,"(7) UNC should create a focused, time-limited competitive fund to encourage campuses to develop new undergraduate entrepreneurship initiatives for non-business majors, with a particular focus on startup campuses.
- b. UNC should support 60 President's Graduate Fellows, applicants identified through their applications as "highly entrepreneurial," who would receive two years of support to attend UNC campuses and pursue their interests.
- c. UNC should provide support for ten President's Postdoctoral Fellows each year, who would receive one year of support to further develop promising ideas or technologies. These ideas will help us to both recruit and retain top students and help them begin the process of turning ideas into reality (see also Section 1F).

Year 1: \$1.8M | Y2: \$2.8M | Y3: \$4.3M | Y4: \$4.0M | Y5: \$4.0M

7. Grow the number of superstar STEM students

Students at the North Carolina School of Science and Mathematics, who represent the best and brightest from every county in North Carolina, receive an excellent education to help them maximize their talents. They graduate with many options. To expand service by the school and to increase the number of NCSSM students who enroll at UNC institutions following graduation, NCSSM should increase its residential capacity by 70 students.

Year 1: \$0.0M | Y2: \$0.0M | Y3: \$2.1M | Y4: \$2.1M | Y5: \$2.1M

B. Convert discovery into innovation

Great minds can work on great problems to develop great ideas with great potential. But as Thomas Edison noted, “Vision without execution is hallucination.” It is in translating those ideas into action that change happens. Theory becomes policy; technologies become products. Ideas and discoveries need real, tangible support to bring them to fruition. Tangible support can come via acquisition of specialized tools and equipment to carry out cutting-edge research, technology to connect researchers with colleagues, and new funding sources, both inside and external to the university. We need these new tools and resources to translate ideas into action.

Since a public-private task force jointly convened by UNC and IBM issued its paper “Innovate, Collaborate, Accelerate” in 2009, UNC campuses have taken a number of steps to improve their ability to move discoveries, ideas, and technologies from the lab or academic journals into the marketplace (8). But there is more work to be done if we are to most effectively respond to the needs of the state.

Action Steps

1. Establish Collaboration Seed Fund

UNC should establish a fund to support multi-campus collaborative projects with high potential for securing external funding from federal or industry sources. This type of seed funding will support such projects early in the scientific life cycle, enabling them to collect preliminary data, form strategic partnerships, host workshops and conferences, and craft winning grant proposals.

Year 1: \$2.1M | Y2: \$4.2M | Y3: \$4.2M | Y4: \$4.2M | Y5: \$4.2M

2. Develop new Innovation Discovery Teams

UNC institutions have widely varying capacity to assess, protect, develop, and commercialize intellectual property. UNC should establish and support a “scout team” and core support staff that any campus could utilize for market assessment, legal assistance, new venture services, and other operational support for commercialization.

Year 1: \$1.9M | Y2: \$3.4M | Y3: \$4.9M | Y4: \$4.9M | Y5: \$4.9M

3. Move forward promising early stage ideas through proof-of-concept fund

Promising ideas and technologies often struggle to find the support they need to determine whether they can be developed from concept to reality. UNC should provide competitive funding to assist campuses in moving promising technologies and strategies from theory into reality by facilitating proof-of-concept work.

Year 1: \$1.5M | Y2: \$3.0M | Y3: \$3.0M | Y4: \$3.0M | Y5: \$3.0M

4. Advance ideas ready for commercialization through investment

Translating a developed idea or technology into a product with commercial impact requires additional investment. UNC should provide funding for promising ideas with potential commercial impact, including patenting costs and matching funds for UNC-generated Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) companies.

Year 1: \$2.0M | Y2: \$4.0M | Y3: \$4.0M | Y4: \$4.0M | Y5: \$4.0M

5. Increase effectiveness of REACH-NC as a portal to our campuses

REACH NC is a systemwide portal that improves the effectiveness of all partners by connecting agencies, business, and industry to UNC faculty and capabilities; connecting university experts to one another; and providing a clear window into the collective capabilities of the University. UNC should expand and support the capacities and services of REACH NC to network researchers from across departments and institutions to industry partners and more diverse governmental funding agencies.

Year 1: \$0.5M | Y2: \$1.0M | Y3: \$1.0M | Y4: \$1.0M | Y5: \$1.0M

C. Serve the needs of our state, regions and communities through active engagement

Since the original North Carolina Constitution's call for the University to deliver "useful" learning, UNC has worked to engage with the state's business, government and nonprofit communities to ensure that it meets their needs and serves the people of North Carolina.

By the formation of the University system in 1971, "public service" was included in the legislation officially establishing the new structure: the new system would be "accomplished in part through public service, which contributes to the solution of societal problems and enriches the quality of life in the state" (9).

The University's public service has taken a variety of forms:

- N.C. State and UNC-Chapel Hill worked together with Duke and regional business and government leaders to create the Research Triangle Park, and since then through millennial campuses and participation in community and economic development projects, campuses have built regional successes throughout the state.
- University-based institutions, including the UNC-Chapel Hill School of Government and Area Health Education Centers (AHEC), the Cooperative Extension Service at NCA&T State and N.C. State, the NC State-based Industrial Extension Service and the Small Business Technology Development Center (based at NC State but with offices on most UNC campuses), have provided the UNC System with agencies dedicated to extending the work of the University into the community with hands-on capacity throughout the state. Throughout the system, there are organizations and centers providing ongoing service or conferences on a regional and statewide level,

including NC State's Emerging Issues Forum and UNC Greensboro's conference on Southern Entrepreneurship in the Arts, on valuable public policy or development issues.

- Campus-based centers at every university provide regional services to the state, responding to local needs by making university capacity — faculty, staff and students — available to address community needs. All campuses carry out smaller projects through particular classes as part of coursework or through voluntary service organizations. Individuals at our universities volunteer on boards, contribute to charities and serve in public office, among other activities.
- UNC campuses serve as meccas for cultural and activities that contribute to the vibrancy and social life of their communities, offering art, music, theater, and other forms of community engagement. UNC artists and historians help us understand the past, make sense of the present, and shape the future.

Public service and engagement with community partners is not one-way. As the Faculty Advisory Committee of the UNC Strategic Directions Council has noted, public service informs teaching and research, and research links engagement of students in outreach and service-learning activities can improve outcomes ranging from classroom learning to post-graduation job placement to citizenship (10).

Since the mid-2000's, UNC campuses have begun more intentional efforts to increase public service. Eleven campuses, including Appalachian State, East Carolina, Elizabeth City State, North Carolina Central, N.C. State, UNC Charlotte, UNC-Chapel Hill, UNC Greensboro, UNC Pembroke, UNC Wilmington and Western Carolina, have been classified as Carnegie Community Engaged Institutions, in recognition of their efforts to connect their campuses to community needs. In response to the "UNC Tomorrow" report in 2007, UNC campuses have developed new efforts to connect public service even more closely to teaching and research, through credit-bearing and continuing education courses as well as co-curricular and extra curricular clubs and ongoing volunteer activity.

As the needs of our state evolve, UNC must continue and enhance these efforts.

Action Steps

1. Develop Annual Engagement Report

UNC General Administration should develop an annual report for the Board of Governors summarizing key engagement activities by UNC students, faculty and staff, including an analysis of student undergraduate research, coops, internships and service learning activities, continuing education and post-baccalaureate efforts, and community-based outreach and engagement efforts. Each campus should develop a strategic plan for engagement and public service.

No additional cost

2. Prepare "job-ready" students through experiential internships

Responding to employer demands for graduates with more applied experiences, UNC should form a partnership with businesses across the state to support growth in experiential learning opportunities for students (internships, coops, student teaching, clinical experiences, service learning, collaborative research) prior to their graduation and should incent development of increased campus-based experiential learning opportunities. The system should also work with campuses to create a statewide portal for industry-sponsored internships and co-ops and better integrate career counseling and academic advising. This effort should provide valuable assistance to the private, public and nonprofit sectors and better prepare students for the workplace.

Year 1: \$0.5M | Y2: \$0.5M | Y3: \$0.5M | Y4: \$0.5M | Y5: \$0.5M

3. Encourage development of innovative continuing education and post-baccalaureate programs

As the state, national and global economy change quickly, adults in our communities increasingly find themselves in need of new skills and abilities –opportunities for focused, short-term courses and programs that enable equip them with new skills needed to make them more competitive. North Carolina’s community colleges do an excellent job of providing many of these courses; others can be most effectively delivered by universities. UNC should create a competitive fund to assist campuses in developing new responsive courses that meet key community needs.

Year 1: \$0.5M | Y2: \$0.5M | Y3: \$0.5M | Y4: \$0.5M | Y5: \$0.5M

4. Support UNC research and scholarship on culture, tourism and the creative economy

In 2011, visitors to North Carolina spent more than \$18 billion, supporting more than 40,000 businesses, directly supporting 200,000 jobs, and providing \$1.5 billion in state and local tax revenue (11). UNC institutions in all regions of the state can enhance this important facet of our state’s economy by identifying new ways of documenting, describing, presenting, and displaying the state’s cultural heritage and scenic beauty.

Many research centers, such as ASU’s Center for Mountain Winegrowing, contribute to sustaining and growing local economies through attention to cultural and natural assets. ECU’s Center for Sustainable Tourism offers solutions for the tourism industry in North Carolina and beyond as it strives to balance economic vitality with environmental and socio-cultural stewardship. NC State’s Tourism Extension initiative aims to help rural North Carolina communities develop vibrant, prosperous, and enduring tourism enterprises. UNCP’s Native American Resource Center educates the public about the prehistory, history, culture, art, and contemporary issues of American Indians, with special emphasis on the Robeson County Native American community.

UNC should form a consortium of faculty members from across the system to determine how we could most effectively increase collaboration with public and private entities to take full advantage of our state’s rich and varied tourism and cultural heritage resources and to make our communities better places to live and work.

The state’s “creative economy” includes architects, dancers, musicians, fashion designers and photographers, but also engineers, scientists, teachers, marketers and others. A 2010 study by the Institute for Emerging Issues looked at the percentage of creative occupations in every county and found that these jobs are an important part of the economy throughout the state, ranging from a low of 2.7% to a high of 12%, that creative jobs are growing more quickly than other North Carolina jobs and that the average wage of these jobs is \$59,200 compared to \$36,697 for all jobs (12). A separate analysis by the NC Department of Cultural Resources and the NC Department of Commerce found that the creative economy contributed \$41.4B to the state’s economy, or 5.86% of the Gross State Product, and sustained 293,000 jobs (13). UNC should work with the N.C. Center for the Creative Economy and others to determine how we can most effectively support these important jobs.

Year 1: \$0.4M | Y2: \$1.2M | Y3: \$1.9M | Y4: \$2.5M | Y5: \$3.0M

5. Create new center for applied public policy

Faced with ongoing funding challenges, state and local governments need new ways of thinking about how they deliver and organize a broad range of services. At the same time, government agencies have downsized their capacity for strategic thinking and long-range planning. UNC should create organized capacity to respond quickly to policymakers’ need for easily-understandable and objective public policy options by conducting, facilitating, and supporting high-quality, thorough, responsive, neutral, and timely research related to important policy issues facing North Carolina. Through a new Center for Applied Public Policy, faculty experts drawn from multiple universities and multiple disciplines will work on important regional and statewide issues, including conducting research in partnership with or on behalf of nonprofit and public sector organizations.

Year 1: \$1.0M | Y2: \$2.0M | Y3: \$2.5M | Y4: \$2.5M | Y5: \$2.5M

D. Help meet the growing healthcare needs of the state through innovative research, training, and outreach

Preparing for the future of health care in North Carolina requires a comprehensive strategy for educating a variety of health care workers to navigate health care delivery for the next generation.

Chronic disease is a growing burden. North Carolina ranks 32nd nationally in overall health outcomes, 36th in diabetes and smoking, and 30th in obesity rates (14). Preventive medicine and wellness care will play an increasingly important role. In 2008, the leading causes of death in North Carolina were heart disease, cancer, chronic lower respiratory disease, and stroke (15).

The rise in chronic disease and the implementation of new models of care have highlighted the need for an adequate supply, distribution, and skill set among health professionals in North Carolina.

Health trends providing context for the future include:

- An estimated 30% increase in the population over age 65 during the next decade, requiring increased medical care for longer periods. Approximately 13% of North Carolina residents were beyond the age of 65 in 2011, and that number will almost double to 26% by 2021. Rural areas present particular challenges.
- The population of North Carolina increased 18% between 2000 and 2010, double the national rate. The state's population is expected to grow from 9.7 million in 2011 to 13.7 million by 2030.
- One-third of all physicians currently in the U.S. are expected to retire by 2020. There will be a national physician shortage of more than 60,000 doctors by 2015, according to the American Association of Medical Colleges.
- Between 1990 and 2009, the number of nurse practitioners in North Carolina increased by 357%, and the number of physician assistants increased by 202%. Over the same period, the use of physicians increased by only 32%.
- Shortages of behavioral health professionals are particularly acute in North Carolina. The North Carolina Institute of Medicine reports there are 17 counties without a psychiatrist, 24 counties without a psychologist, and 73 counties with fewer than one psychiatrist per 10,000 residents (16).

UNC has an opportunity, through its health education and health delivery entities, to play a critical role in helping North Carolina to respond to these challenges. North Carolina has a tremendous opportunity to transform the health care system and bring about changes that are needed to provide seamless, quality, team-based patient care.

There are significant deficiencies in the way care is currently delivered, including a lack of coordination, variations in quality, and an inability to integrate team-based approaches—all of which impact the quality of care and significantly inflate costs. This is especially true in caring for individuals and populations living with chronic illness and with multiple illnesses, including older adults, the uninsured, and Medicaid recipients. Those with multiple illnesses (e.g., Medicare beneficiaries) are also using multiple medications and account for 60% of all potentially preventable hospitalizations. The financial strains on Medicare and Medicaid are enormous (17, 18).

Accountable Care Organizations (ACOs) and Patient-Centered Medical Homes (PCMH) are among the most promising approaches for delivering higher-quality, more cost-effective care. ACOs are healthcare organizations centered around coordinated care and characterized by a payment model that seeks to tie provider and practice reimbursements to quality metrics and reductions in the total cost of care for a population of patients. The coordination of care within and across these systems is absolutely essential.

Community Care of North Carolina (CCNC) has been a primary vehicle for developing these new approaches to coordinated care for chronically ill Medicaid and Medicare recipients. Teams of primary care physicians, pharmacists, nurses, physician assistants, and other health care workers have approached the care of these patients in a coordinated fashion by

providing a single “medical home” for patients. Patients in need of care have better health at a lower expense through a medical home because care is delivered in a medical office located in the patient’s own community rather than in an emergency room. It was estimated that CCNC saved the state of North Carolina nearly \$1 billion over four years, while Medicaid was projected to spend almost \$13 billion in federal and state funds in 2012. It is critical that new approaches to delivering higher-quality care are identified and implemented to address unmet patient care needs (19, 20).

Experiences in other states have shown that primary care delivered as part of a well-organized system can lead to hospitalization cost savings of as much as 7% (21). Without the appropriate practitioners capable of providing medical care, however, the savings anticipated in health care redesign will not be achieved.

The recommendations included in this plan build upon lessons from research and development of primary health care in North Carolina and set the stage for improved health outcomes for all North Carolinians.

Action Steps

1. Establish a Health Care Redesign Task Force

The University of North Carolina should play a leading role in helping redesign the state’s health care delivery system and educating the next generation of health care professionals.

To achieve this goal, we recommend establishing a health care redesign task force, reaching across the entire system, with a charge of:

- Helping the state redesign health care delivery to address ongoing changes in the design, delivery, and funding of health care;
- Evaluating the health status and care needs of North Carolina residents;
- Anticipating the changing needs of health care professionals at all levels of health care delivery;
- Matching those needs with the resources and capacities of educational programs across UNC, coordinating existing resources and identifying expansion opportunities; and
- Collaborating with other agencies and resources, including government departments, community colleges, private universities, and other health care providers.

No additional cost

2. Expand AHEC to support community-based training of physicians, dentists, and other health professionals

For 40 years, the Area Health Education Centers (AHEC) has delivered health care education in communities across the state. This recommendation provides for 40 new

physician residency slots, primarily in rural areas of the state, in primary care, general surgery, and psychiatry specialties—all specialties in short supply and critical to the proper functioning of local health care delivery. The recommendation also provides AHEC with funds to recruit new community preceptors and part-time faculty to train and supervise the additional health care students who will be stepping into these novel roles in a refashioned health care delivery system. In addition, funds will be provided to house ECU dental students in their placements across the state and to create a center focused on health care delivery innovation in rural areas.

- a. New residencies — This plan calls for funding 40 new physician residencies at the level of \$100,000 per position, with the remaining cost required as a match by the teaching hospital. This recommendation was included in the 2008 UNC Plan for Medical Education approved by the UNC Board of Governors. AHEC conducted extensive research on its past experience and demonstrated that students trained in local communities are the most likely to remain in practice in the state, often in the same community where they were trained. In 2011, 63% of AHEC physician residents remained in North Carolina to practice medicine. The average economic impact of one family physician is \$904,696 (22, 23).
- b. Additional community-based training —The plan recommends making additional funding available for AHEC to expand its community education opportunities. AHECs will work in partnership with community institutions such as community health centers, hospitals, health departments, and other agencies to develop innovative community-based training sites. In these community and rural teaching sites, students will be exposed to high-quality health care delivery and to preceptors and mentors who are prepared and motivated to teach.

For the health system of the future, when there is likely to be even greater emphasis on higher quality and reduced costs, it is clear that health care professionals must be trained differently. Health care will be delivered in a community setting by inter-professional teams of providers. There will be new types of health professionals needed, including those working in information technology, community outreach, case management, and other skilled areas that are not part of the traditional health professions.

- c. Dental housing — AHEC made a commitment to house the students from the new School of Dental Medicine at ECU during fourth-year rotations at community learning centers across the state, beginning in 2014. AHEC already provides housing in some 50 sites around the state, but does not have housing available in the sites where the ECU learning centers will be located. Initial sites are in Ahoskie, Elizabeth City, and Sylva, but there will be a total of ten centers by 2014. AHEC will add a housing unit for 4-6 students at these ten sites across the state. This investment will also add housing capacity for additional students from UNC campuses and other schools while they participate in off-campus clinical training across North Carolina.
- d. Center for Rural Health Innovations — There is a critical need to better understand and address persistent health disparities in rural North Carolina. AHEC will create

the Center for Rural Health Innovations, designed to prepare students to work in a broad array of health fields in rural North Carolina, with a particular focus on northeastern North Carolina and providing inter-professional, community-based teaching sites for students.

Year 1: \$6.2M | Y2: \$7.2M | Y3: \$7.9M | Y4: \$7.9M | Y5: \$7.9M

3. Pharmacy practice and educating and training the next generation of pharmacists

UNC-Chapel Hill, through the Eshelman School of Pharmacy, is strategically positioned to work collaboratively in both redefining the practice of pharmacy in North Carolina and the education of health care professionals. These efforts will improve the quality of patient care for the citizens of North Carolina and position students, as integral members of the health care team, to help develop significant reforms of the health care system.

The appropriate use of medications and a comprehensive, coordinated approach to managing drug therapy is critical to ensuring high quality care. This remains one of the greatest unmet needs in the delivery of care and one that we simply cannot continue to ignore. This issue not only exists in North Carolina's Medicaid population, but also in chronically ill, medically complex older adults and the uninsured. Among the most widely cited studies is an economic analysis conducted in 1997 in which the authors concluded that delivering pharmaceutical care (also known as medication management) could save over \$105 billion annually if universally available (24).

- a. Expand the clinical preceptor base to support early student immersion in the patient care environment and increase the time devoted to immersion in patient care.
- b. Add 20 new pharmacy residency positions to increase the workforce contributing to the delivery of direct patient care services.
- c. Recruit leadership and expand core teaching faculty and teaching assistants to support curricular transformation efforts and expand the number of faculty specifically devoted to the School's educational mission. Recruit a tenure-track faculty member to lead the planned Center of Excellence in Pharmacy Practice (CEPP).

Year 1: \$2.4M | Y2: \$4.8M | Y3: \$4.8M | Y4: \$4.8M | Y5: \$4.8M

4. Doctor of Nursing Practice (DNP) Programs in UNC

As health care provision becomes more complex and fast-paced, the nursing profession is recognizing the need for more and more advanced education for providers, including nurse practitioners, clinical nurse specialists, certified registered nurse anesthetists and certified nurse midwives. As with pharmacy, physical therapy, psychology, medicine and audiology, nursing is adopting a practice-focused doctorate as the appropriate level of graduate education for many advanced-practice registered nurses. The Doctor of Nursing Practice (DNP) prepares nurses for direct clinical practice and for executive roles in areas that support clinical practice, such as administration,

organizational leadership, and health policy. At this time, no UNC institutions offer the DNP.

- a. Six UNC institutions have submitted five proposals for new DNP degree programs; these proposals are currently in the external review phase of the academic program planning process. Campuses proposing to offer the degree are ECU, UNC Chapel Hill, UNC Greensboro, Winston-Salem State University, and a consortia proposal from UNC Charlotte and Western Carolina University. Each UNC institution proposing the DNP will shift some existing resources from MSN programs towards the DNP, but new resources are still needed to implement the proposed programs.

Year 1: \$0.6M | Y2: \$1.6M | Y3: \$2.7M | Y4: \$3.7M | Y5: \$3.7M

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Maximize Efficiencies

Over two centuries, the University of North Carolina has proven its ability to adapt to changing times and to excel under dynamic and demanding circumstances. Today, in an era of constrained financial resources and amid growing public demand for greater productivity and accountability, UNC continues to seek out ways to operate more efficiently and effectively, without sacrificing academic quality.

In 2006—two years before the Great Recession and state economic downturn—UNC President Erskine Bowles appointed the President’s Advisory Committee on Efficiency and Effectiveness (PACE). The state business leaders and other North Carolinians in this blue-ribbon group were asked to examine the administrative costs of the University system and to make recommendations for where costs might be avoided and savings incurred. Some PACE recommendations, such as eliminating duplicative and unnecessary reporting, were simple to implement, while others, such as the installation of a University-wide e-procurement system, have taken substantial time and effort to put into effect.

As a result of PACE, the University has realized more than \$32 million in annual cost savings, but more importantly, best practices and improvements proposed by the Committee have to date enabled the UNC system to avoid another \$170 million in projected expenditures. With PACE and subsequent budget reductions, UNC General Administration’s state-funded employee count was reduced by 40% during the Bowles administration. University-wide, State budget reductions have been targeted first and foremost on operations, resulting in the elimination of over 900 administrative positions in a single year.

The PACE initiative has fostered a culture that continues to focus on streamlining administration and implementing improvements that generate cost savings. A 2008 operational assessment conducted by Ernst and Young identified high-risk operations and proposed improvements in key areas. Those recommendations are being implemented University-wide through the UNC Finance Improvement & Transformation (UNC FIT) initiative. UNC-Chapel Hill launched a Bain & Company study that resulted in Carolina Counts, a campus-wide effort to reduce overlap in administrative functions, streamline operations, and simplify unnecessary bureaucracy, thereby refocusing resources on the academic mission of the university. The Bain report was shared with all campuses so that each campus could review the recommendations and implement those parts that were applicable.

Through UNC FIT, the system has implemented several measures that collectively are saving an estimated \$15 million annually. They include reducing administrative and operational personnel costs (\$6.9M), procuring goods and services at lower cost (\$3.9M), improving business processes and implementing shared services (\$3.2M), and eliminating redundant processes (\$1.0M).

Given the continued strains on State and federal budgets and economic uncertainties, President Ross has asked and General Administration staff continue to identify other potential savings opportunities. In February 2012, General Administration staff approached the Office of State Budget and Management (OSBM) and asked for its assistance in analyzing additional efficiency areas. Collaborative

brainstorming sessions and interviews with subject-matter experts within General Administration, with inter-agency councils, and with campus officials helped frame how prospective shared services and other initiatives would be evaluated for future implementation.

Potential efficiencies were examined in terms of burden reduction, process simplification, increased effectiveness, cost savings and avoidance, and improved access to specialized capabilities. Other factors, such as the complexity and difficulty of implementing changes and achieving the value proposition, were taken into account. Based on these comprehensive analyses, a number of new areas of potential efficiency savings were identified.

STRATEGIES

A. Operational and administrative savings

A number of administrative and logistical tasks currently overseen by individual UNC institutions can be more efficiently and effectively accomplished on a system level, alleviating burdens on campus staff, creating opportunities for specialization, and leveraging the purchasing power of the entire University.

Action Steps

1. Maintain or implement shared services in the following areas:
 - a. Residency Determination — Under the current system, applicants to UNC-system schools are evaluated for North Carolina residency status by staff located on each campus. If an applicant applies to more than one UNC institution the residency status is determined by each individual institution. With many students applying to more than one UNC institution, more than 25% of all residency reviews performed across the system are duplicates. Of these duplications, 6% are inconsistently classified, creating justifiable confusion for the applicants and often leading to administrative appeals that are time-consuming for prospective students and for campuses. A single, system-wide evaluation of residency status would not only eliminate redundant reviews but also ensure a consistent result for students applying to more than one UNC campus.
 - b. Internal Audit — Each UNC institution operates its own internal audit unit. The fragmentation of these units impedes the spread of best business practices between campuses and prevents the University from realizing economies of scale in audit reviews. A shared auditing service would not only reduce audit expenditures across the system, but also allow smaller campuses to access specialist skill sets and expertise that might otherwise be unavailable.
 - c. Financial Aid Information Review — Before a student can be considered for financial aid or have a financial aid package prepared, a review and verification of student-submitted family financial information must occur. This task is performed for each new applicant to an institution that seeks financial aid and is repeated annually for all students re-applying for financial assistance. Since some students apply to more than one UNC institution, there are duplicate reviews conducted by multiple UNC campuses. Establishing a shared service center to verify student-submitted family financial information will create economies of scale, particularly benefitting smaller institutions and will avoid multiple reviews of information provided by the same student.

- d. Information Technology Infrastructure — Continue hosted services that allow smaller institutions access to specialist skill sets and provide the technical redundancy necessary for data backup and disaster recovery plans.

Banner Hosting offers multi-site hardware and software infrastructure to operate and manage campus ERP systems. The service is offered (at cost) to all interested institutions. Currently six campuses participate, one additional is being installed, and three others are preparing business case analyses to determine if they will join the cooperative.

Dynamic critical file backup and disaster/recovery services are offered to all institutions with Banner ERP systems. The service is duplicated at two locations to offer a maximum level of disaster/recovery protection. Services are currently provided to nine institutions with several more under consideration.

A central human resource pool of quality technicians, including Oracle Data Base Administrators and UNIX/Linux Operating System Administrators, are provided to ten UNC institutions that have difficulty recruiting and retaining high skilled IT personnel.

Expanded implementation of these services going forward will enable campuses to continue streamlining IT operations.

2. Strategic sourcing — The University can extend its savings and considerably strengthen buying power by purchasing common commodities in cooperation with state government. Eight commodities, including laboratory supplies, basic maintenance items, copier paper, mattresses, audio/visual equipment, print services and bulk scanning, and personal computers, are being purchased through state government as of FY 2012-13. Office supplies will join the strategic sourcing initiative in early FY 2013-14.

Over the last three years, thirteen UNC campuses have implemented NC-based company SciQuest's E-Procurement tool that enables fully integrated business-to-business electronic commerce transactions. Immediate cost avoidance savings have been realized as campuses leverage common maintenance contracts and reduce transaction processing times. Going forward, significant catalog enablement and vendor rebate savings will be achieved as the initiative becomes fully operational.

3. Non-instructional personnel costs — The University conducts ongoing span-of-control evaluations to reduce excess layers of management. The UNC GA and Office State Budget and Management project team benchmarked staffing ratios of information technology, human resources, budget and finance and education administrator personnel across the system. All benchmarks also evaluate UNC institutions with external organizations of similar size. The current analysis does not compare organizational performance (as measured by outputs or outcomes) and, therefore does not recommend whether a staffing group performs more efficiently than another. Going forward, GA will work with the campuses to evaluate this information more closely to determine whether efficiencies may be implemented.
4. Improve business practices and eliminate redundant processes — Through regular benchmarking reviews, the University will continue to consolidate administrative and student support functions. Launched in 2008, the UNC FIT Business Process Improvement Initiative creates tools for the President and Chancellors to monitor financial processes and detect and fix potential fiscal challenges early, rather than relying on audits to reveal them after the fact. Savings and value-added efficiencies to be implemented in the future include expanding standardization practices in student accounts and capital assets; greater alignment and

compliance with the state's Internal Control Act; and improving University-specific control environments through the development of more comprehensive self-assessments.

The UNC Human Resources Data Mart has been established to manage and standardize all personnel information and eliminate duplicative processing with the State Personnel System. Efficiency measures expected over the next several years include eliminating the annual Personnel Data File submission, retiring additional redundant forms processing activities and building a more robust reporting infrastructure to meet Board of Governor, executive and legislative requests for information.

5. Secure energy savings — All campuses are actively pursuing the 30% reduction in energy and water usage mandated by the General Assembly in 2007. Currently, fourteen campuses, UNC GA and UNC-TV have energy performance contracts totaling \$188 million underway with a projected annual savings of just over \$11 million. In the future, expanding the university's ability to manage energy projects (where there is sufficient capacity) as well developing new public/private partnerships will allow the system to reap additional utility savings.

The University will be able to achieve an additional 2% recurring savings (each 1% equals \$10M) over the next five years through continued efforts in these areas. Year one will produce 1% savings (\$10M); year two, 1.5% savings (\$15M); and years three through five, 2.0% savings (\$20M).

B. Active portfolio management

The University continues to implement system-wide academic programming measures designed to enhance the ability of our institutions to further excel in their teaching, research and service missions; raise instructional efficiency; and strategically position the system and its campuses.

To these ends, there have been focused efforts to develop an objective and robust fact base regarding the current portfolio of programs, courses, and campus missions across the UNC System and to formulate strategies for the active management of program portfolios across the system, building from existing efforts.

The fact base was built by gathering and reviewing: i) programs and missions by campus (both graduate and undergraduate); ii) patterns of student demand for these programs; iii) available data on student outcomes; and iv) campus financial information.

Having reviewed extensive data on the system's current portfolio of academic programs and strategic priorities, options for more active portfolio management are recommended and summarized below.

Action Steps

1. In consultation with campus leadership, adopt system-wide guidelines for instructional productivity in each program

The first step of this effort is to work with campus administrators and faculty to create section-size guidelines for lower-division, upper-division, and graduate-level courses in a given major, with adjustments for variation in institutional size and mission. Section sizes vary significantly within and across campuses. For instance, Psychology — a program offered at nearly every campus — has lower division section sizes that range from 26 to 126 students per section.¹

¹ Psychology sections across the system range from 77 – 374 student credit hours per section; figures converted to student count assuming 3 credit hours per student

Additional emphasis needs to be placed on managing the frequency of offerings for more specialized courses, reducing overall frequency through increasing section size, while ensuring that student access and program progress remain at desired levels. Section size targets should be implemented in a way that generates savings while continuing to respect campus and program prerogatives to set course schedules, use physical classroom capacity, and maintain high-quality instruction. Campuses and programs should retain the ability to teach in small sections where appropriate, making explicit investments of incremental instructional resources for priority academic programming.

2. In partnership with campus administrators and faculty, develop a framework of coursework and student learning outcomes, especially within General Education requirements, designed to enhance transferability of credits between and among UNC and North Carolina Community Colleges and minimize the disruptive impact on time to degree when students opt to change majors.

Campuses vary both in number of General Education credits required — ranging from 36 to 64 credits — as well as the structure of requirements, with some institutions focusing on disciplines (e.g., English, Social Sciences), and others aligning requirements around academic themes. Setting more consistent expectations regarding learning objectives and the assessment of student learning outcomes offers a host of potential benefits, including: i) increasing portability of student credits for transfer students into the UNC system (as in articulation agreements) and within the system; ii) allowing for greater stewardship and leverage of common instructional resources among similar course offerings across the system; iii) supporting efforts to increase quality and consistency of instructional outcomes throughout the system over time; and iv) creating an important precondition for scaled use of online instruction across the system. More clearly defined expectations for student learning outcomes typically associated with the general education core can be implemented in several ways, including but not limited to a standardized General Education framework across all system campuses (as articulated in the Academic Quality section of this strategic plan), plus more consistently defined learning objectives across campuses for popular (non-General Education) courses that comprise a large volume of student credit hours. While near-term alignment will need to be implemented at the level of specific courses, over the longer-term there should develop a set of common student competencies at the level of course modules and multi-course blocs.

It will take four years to fully implement these recommendations. The University will be able to achieve recurring savings of \$15.8M in year one; \$21.1M in year two; \$26.4M in year three, and; \$31.6M in years four and five.

3. Defragment select program islands and satellites through consolidation

Of the UNC System's over 1,700 unique degree programs, 468 enroll fewer than 20 students.² In some cases, multiple campuses host a low enrollment degree program that is offered on another campus at a substantially larger scale. In other cases, campuses may offer the same degree program at an individually small level, offering the opportunity for a collective program at scale. Among these small programs, there may be opportunities for consolidation using new delivery technologies to produce financial benefits and, in many cases, compelling improvements to program quality by virtue of greater combined scale and scope. Conversely, there are likely small programs whose ongoing independent operation (rather than consolidation with like programs) may constitute a strategic priority for the system or a specific campus. The

² Program counts at 6-digit CIP-level, breaking down to 212 undergraduate and 256 graduate programs.

University should, through a dedicated period of investigation involving campus leaders and faculty, identify those specific small programs that are most suitable for consolidation and those most suitable for ongoing independent operation.

It will take five years to fully implement this recommendation. The University will be able to achieve a recurring savings of \$1.9M in year two, \$3.0M in year three, \$4.6M in year four, and \$7.5M in year five.

4. Pursuing broader and more fundamental uses of online instruction

Compelling evidence from both UNC-specific and national case studies suggests that a more fully developed UNC e-learning portfolio has the possibility of significant cost-savings and the generation of possible new funding streams. With respect to savings, for example, estimates are that UNCG online delivery of College Algebra, Precalculus I and II generated a 35% reduction in instructional costs. Similar estimates for UNC-CH online precalculus offering is a reduction of 22%. On the revenue enhancement side, the University of Southern California estimates earnings this year of \$115M from its online graduate programs, while Arizona State generates upwards of \$60M per year from online tuition.

Given the magnitude of opportunity, the system should formulate and implement a holistic approach to the use of e-learning. Potential elements of a comprehensive strategy may include i) further centralizing online support infrastructure; ii) using hybrid delivery to transform efficiency and effectiveness of lower division undergraduate courses, building upon the several successful examples already present within the UNC System; and iii) dramatically increasing the amount of programming offered online and expanding student access to this programming.

The plan should also include an analysis of the net cost savings likely to be generated by a more robust distance, online, and hybrid course and degree portfolio (where full cost impact includes cost avoidance for initial and ongoing capital outlays, the costs associated with a full 2 to 3 year instructional equipment replacement cycle, upfront investments in faculty development, salary savings associated with improved instructional efficiencies), the opportunities for reducing costs to both students and the state from the use of new instructional technologies, to improve student success rates in key gateway and bottleneck courses, and a comprehensive assessment of the niche markets that could be generate new revenues for individual campuses and inter-institutional/system-wide efforts. Analyses should be completed no later than July 2014 for implementation beginning in fall 2014.

It will take four years to fully implement this recommendation. The University will be able to achieve a recurring savings of \$1.8M in year two, \$4.2M in year three, and \$6.5M in years four and five.

C. Incentivize savings practices (carry-forward reform)

The current statutes governing the carry forward of General Fund appropriations provide little direct incentive for individual campuses to conserve state funds. Carry-forward funds are limited to a maximum of 2.5% of General Fund appropriations, and any amount that is carried forward is required to be deposited in the General Fund, making it subject to future carry-forward restrictions. These restrictions tend to cause a noticeable uptick in the rate of campus spending during the fourth quarter of the fiscal year. Campuses and state government agencies are not incentivized to operate efficiently and conserve funds. Instead, the incentive is, in effect, to “use it or lose it,” as agency heads and budget managers fear they will lose funds going forward if they fail to expend the full amount appropriated.

This issue has been well-noted in public policy scholarship. The International Monetary Fund, in a 2009 policy brief, concluded that carry-over authority can be highly effective in promoting efficiency gains.³ “Carry-over provisions can promote more active and durable cost saving initiatives,” the IMF found. “Only when budget managers are given discretion to use the resources that have been carried over in the manner which they see fit are the incentives for realizing savings maximized.”

Action Steps

1. Amend carry-forward statutes to create a Savings Incentive program

To incentivize good stewardship of state resources, the carry-forward statutes should be amended to allow savings to be deposited in a special institutional trust fund where the monies can be retained and not be subject to future carry-forward restrictions. These retained savings would be reinvested and used to implement efficiency initiatives, faculty retention strategies, student success programs, academic quality improvements, and maintain critical infrastructure.

The University would propose that each year, 100% of savings up to 2.5% of General Fund appropriations would be deposited in a special institutional trust fund. Any additional savings above 2.5%, up to a maximum of 5.0%, would be divided between the state (25%) and the campus (75%). The 25% state portion would be taken as a budget reduction annually, based on prior year’s actual savings and the campus 75% would be added to the institutional trust fund. All yearly savings over 5.0% would be returned fully to the General Fund. Carry forward trust fund balances would also be capped at 5.0% and any funds above this threshold as of June 30 of any year would be returned to the General Fund.

It is hoped that the statutory changes required to implement this recommendation would be effective July 1, 2013, thereby allowing savings to occur in year two. The University will be able to achieve a recurring reduction of \$7.8M for years two through five. This Savings Incentive Program will be reviewed each year and re-calibrated appropriately based on actual annual savings at the end of the fiscal year.

D. Enhanced data analytics

Analytics allow for the development of new insights and understanding of both program and financial performance, ultimately allowing for more data-driven and effective decision-making. Two initiatives that will greatly assist the university in this area include the Student Data Mart (SDM) and UNC Wilmington’s Predicative Analytics Project.

Action Steps

1. Create the Student Data Mart

The Student Data Mart (SDM) will provide access to UNC-system data related to students, employees, programs, and courses. Key benefits include ease of access for data consumers, increased analysis capability system-wide and more efficient processes for data suppliers. The efficient processes will generate savings through reduced data entry time. The SDM will provide efficient access to a single, agreed set of university data available to General Administration, campus leaders, analysts, and policymakers.

³ “Carry-Over of Budget Authority.” Public Financial Management Technical Guidance Note. Fiscal Affairs Department, the International Monetary Fund. 2009. <http://blog-pfm.imf.org/files/carry-over-budget-authority.pdf>

The SDM will accomplish the following objectives:

- a. Provide a business intelligence (BI) tool with dashboard for simple and immediate access to General Administration and campus leaders. Examples of data categories that would be included in a BI tool are student applications, admissions, enrollments, freshmen academic profile, and degrees awarded.
- b. Streamline the production of official files used in state and federal reporting.
- c. Create a common, scalable foundation that other data exchange projects such as electronic transcripts and the Statewide Longitudinal Data Set (SLDS) can leverage.

The cost to implement over two years is \$3M. GA has identified \$1M internally for this effort, thereby requiring a nonrecurring investment of \$1M in each of the two fiscal years 2013-14 and 2014-15. A recurring investment of \$200,000 is recommended to collect, manage, and analyze the data beginning in FY 2015-16.

2. Implement UNC Wilmington's Predictive Analytics Project across other UNC campuses

UNCW is currently designing and constructing a predictive model that supports strategic planning and management activities in a scalable form adaptable for use by other UNC campuses. The analytics are based on several enterprise management systems including Banner, SciQuest, and AiM systems. The three specific components of the project are:

- a. Cost Allocation Analytics — This tool tracks expenditures, revenues, student credit hours, and other pertinent information at the division, department, and program level, allowing for more detailed evaluation of organizational efficiency and effectiveness.
- b. Enrollment Management Analytics — The system organizes student applicants by various characteristics, demographics, and other variables to predict likely outcomes of success under different circumstances. This resource will allow for improved student outcomes and an enhanced effort to meet targets for diversity and quality.
- c. Business Analytics — The system provides a resource to monitor and manage budget/cash position, identify patterns and anomalies in data, conduct deep trend analyses using statistical and financial management, and produce accurate and timely regulatory reports for planning and budgeting.

A nonrecurring investment totaling \$1M for UNCW and \$500,000 in each of the fiscal years 2013-14 and 2014-15 is required to finish building the system. A one-time investment of \$1M in those same fiscal years is also recommended to seed and scale similar analytics' capacity projects at other UNC campuses.

E. Program monitoring, evaluation and implementation

Additional UNC GA staff are needed in several key program areas to ensure Strategic Plan recommendations are implemented in a timely and effective manner. Any additions to the GA staff would still leave the overall staff size substantially smaller than the staff in place five years ago.

Action Steps

1. Expand the capacity of UNC FIT

In 2008, UNC FIT was established to oversee the standardization of business processes and centralization of some services that enhance system efficiency and effectiveness. This office, working with UNC campuses, has developed compliance checklists, key performance indicators and monitoring programs in five financial areas, and a shared service center for payroll operations for nine campuses. Additional capacity will allow General Administration to:

- a. Develop and implement the shared service centers for internal audit, financial aid, and student residency verification.
- b. Create a joint UNC and State government strategic sourcing function.
- c. Establish a North Carolina education transcript exchange service where public schools, community colleges and universities can electronically share student transcript data to meet degree attainment requirements.

An additional recurring investment of \$800,000 annually will secure the functional and technical expertise needed to accomplish these objectives.

2. Bolster the Office of Institutional Research

The Office of Institutional Research will have a significant role in implementing several initiatives set forth in this Strategic Plan. The plan specifically requires program evaluation, development and evaluation of RFP's, the development and reevaluation of performance funding models, expanded data collection and analysis, and greatly expanded reporting responsibilities. All of these engage the IR staff in a significant way.

Additional programming, data analytics and other analytical staff, as well as further training for existing staff, will be crucial to all stages of planning, implementation, and ex-post evaluation of progress.

An initial investment of \$200,000 in fiscal year 2013-14 and \$400,000 thereafter will strengthen the system's response and analytical capacity to ensure initiatives are carried out in a timely and effective manner, protecting the other investments made under this plan.

Ensure an Accessible and Financially Stable University

In keeping with its mission, a fundamental goal of the University of North Carolina is to place a world-class education within reach of every qualified resident. If the University is to serve as an engine of growth for the state and a beacon of opportunity for North Carolinians, it must remain accessible to all those who earn admission. That has been our charge since 1789, when legislators proclaimed that the benefits of a University education “be rendered as diffusive and universal as possible” (1). It remains our charge today, with a constitutional mandate that “higher education, as far as practicable, be extended to the people of the State free of expense” (2).

Just how practicable will depend on our ability to earn and steward the support of taxpayers, private donors, and our students. Through a balance of state investment, robust fundraising, and modest tuition revenue, our campuses can continue to serve the state and provide a low-cost, rigorous education to the people of North Carolina.

After several years of constrained public resources and an accompanying drive for increased efficiency, the University is emerging from the Great Recession with a stable financial profile and unshaken confidence in the value of public higher education. There is no doubt that UNC, like all public entities, will be tested by the slow recovery of state revenues. It is a challenge we are prepared to meet by making smart, targeted investments, carefully guarding and redeploying our own resources, and working harder to cultivate philanthropic support for our campuses. UNC remains a strong and competitively funded institution, fortunate to have earned the support and trust of the state. We mean to honor it.

In addition to the strategic initiatives set forth in this plan, we will carefully conserve our resources to support the longstanding priorities of the University: recruiting, developing, and retaining the best faculty and staff in the world, and opening our doors to qualified students from every corner of the state. Success will require that we continue to advocate on behalf of the University faculty, researchers, and staff who have seen only one modest pay adjustment in the past four years. And we must also balance those needs and other campus priorities against the imperative of an affordable, high-quality education for our students.

CONTEXT

The University of North Carolina is a complex organization that encompasses 16 university campuses, two specialty high schools, and several affiliated organizations including the UNC Health Care System, UNC-TV, and the North Carolina Arboretum. With more than 220,000 students and nearly 50,000 employees, its university and high school campuses are, in many ways, similar to mid-sized cities. Like cities, campuses operate year-round and are required to maintain buildings, indoor and outdoor facilities, and infrastructure, including roads, utilities, and water and sewer. Each campus also provides an array of services that includes classroom instruction, libraries, student support, public safety, housing, recreation, dining, and health care.

Multiple revenue streams allow the University to support its three-part mission of teaching, research, and public service, while also providing the auxiliary services needed to operate residential

communities. Over the past five years, the University, like all entities, has managed through a difficult financial environment. Despite fiscal challenges that have included substantial cuts in State appropriations, UNC remains funded in a manner that is competitive when compared to other state systems of higher education. To provide important context about its financial stability, the following five-year analysis examines the University's revenues by funding source and its expenditures by function. And to illuminate how spending relates to outcomes, the analysis also examines spending related to the University's academic mission relative to the number of degrees UNC has produced over time.

REVENUE

The University is supported by a diverse mixture of revenue streams, many of which are restricted to use for specific purposes. The following chart shows the University's collective operating revenues by source over the past five fiscal years (2007-08 to 2011-12). It is important to note that the following figures are completed on the accrual basis of accounting, as governed by the Governmental Accounting Standards Board (GASB), and are consistent with audited financial statements of system components. This basis of accounting includes the recording of receivables and payables. Revenues have been adjusted to remove unrealized gains and losses from investments.

UNC System Total Operating Revenues 2007-08 to 2011-12

Categories of Revenue	2007-08	% of Total	2008-09	% of Total	2009-10	% of Total	2010-11	% of Total	Unaudited 2011-12	% of Total
State Appropriations	2,690,627,910	35.7%	2,471,243,029	32.3%	2,582,836,194	31.7%	2,572,784,599	29.6%	2,533,255,029	28.7%
Tuition and Fees Net of Discounts and Allowances	1,013,942,506	13.4%	1,063,780,878	13.9%	1,068,507,025	13.1%	1,197,041,976	13.8%	1,323,599,214	15.0%
Federal Appropriations, Contracts and Grants	943,211,989	12.5%	1,020,196,011	13.3%	1,219,540,616	14.9%	1,336,288,311	15.4%	1,305,001,355	14.8%
State and Local Contracts and Grants	419,626,426	5.6%	467,197,069	6.1%	560,277,837	6.9%	647,891,963	7.4%	572,371,755	6.5%
Gifts and Investment Income ¹	377,844,123	5.0%	311,227,672	4.1%	257,522,516	3.2%	294,985,889	3.4%	306,392,600	3.5%
Hospital Sales and Services	797,950,877	10.6%	890,151,458	11.6%	954,107,542	11.7%	1,047,922,914	12.0%	1,163,838,514	13.2%
Auxiliaries	1,149,118,767	15.2%	1,199,550,499	15.7%	1,223,473,968	15.0%	1,248,288,106	14.4%	1,355,952,938	15.4%
Other Revenue	152,722,356	2.0%	221,189,932	2.9%	292,839,139	3.6%	352,002,777	4.0%	254,409,324	2.9%
Total	7,545,044,954	100.0%	7,644,536,548	100.0%	8,159,104,837	100.0%	8,697,206,535	100.0%	8,814,820,729	100.0%

¹Does not include unrealized capital gains / losses or additions to permanent endowments

ANALYSIS

Total operating revenues for the University were approximately \$8.8 billion in 2011-12, an increase of 16.8% over 2007-08, for a compound annual growth rate (CAGR) of 3.2%.

State appropriations and tuition revenues support the teaching mission of the university. These two sources totaled \$3.9 billion, or 43.8% of total operating revenues in 2011-12. These revenues increased by 4.1% over 2007-08, for a CAGR of 0.81%. While growth in these two important sources of revenue has been relatively flat, the proportional split between appropriations and tuition

and fees has shifted during this period, from 72.6% appropriations / 27.4% tuition and fees to 65.7% appropriations / 34.3% tuition and fees.

[NOTE: Revenues from many fees paid by students are restricted for specific purposes and do not support the teaching mission of the University. Fees are a relatively small portion of the revenue in this category, and their inclusion here does not materially change the percent of total revenue or the shift between appropriations and tuition.]

Contracts and grants from federal, state, and local governments typically support research activities and provide significant portions of all student financial aid. These sources generated \$1.9 billion in 2011-12, or 21.3% of total revenue, and have increased by 37.8% since 2007-08, for a CAGR of 6.6%.

UNC Health Care revenues totaled nearly \$1.2 billion and represented 13.2% of total revenues. Hospital revenues increased by 45.9%, for a CAGR of 7.8% over five years, a far greater increase than any other revenue source.

Auxiliary enterprises include entities such as dormitories, dining facilities, and bookstores. The revenues generated by these enterprises are restricted for use in supporting the particular activity involved. Revenue generated by auxiliary enterprises totaled \$1.4 billion in 2011-12, for a CAGR of 3.4% over the past five years.

Finally, gifts from donors and investment income from endowment gifts totaled \$300 million in 2011-12, representing 3.5% of the University's total revenue. Revenue from this source decreased by 18.9% as compared to 2007-08, for a CAGR of negative 4.1%. This is not surprising, given the difficult economic environment and the resulting poor investment returns during the five-year period.

SPENDING

The University accounts for the expenditure of its funds in standard functional areas. The following chart shows a history of total expenditures by function over the past five fiscal years (2007-08 to 2011-12). As with revenues, expenditures are completed on an accrual basis in accordance with GASB rules. The figures presented are consistent with the audited financial statements of system components.

UNC System Total Expenditures 2007-08 to 2011-12

Categories of Expenditure	2007-08	% of Total	2008-09	% of Total	2009-10	% of Total	2010-11	% of Total	Unaudited 2011-12	% of Total
<i>Instruction</i>	2,056,667,281	27.9%	2,106,713,385	27.1%	2,150,339,944	26.8%	2,241,943,681	26.4%	2,197,432,225	25.7%
<i>Research</i>	680,090,434	9.2%	730,617,007	9.4%	767,014,830	9.6%	812,984,398	9.6%	822,315,908	9.6%
<i>Public Service</i>	345,679,605	4.7%	370,150,438	4.8%	358,190,376	4.5%	368,172,734	4.3%	348,637,002	4.1%
<i>Academic Support</i>	414,296,265	5.6%	415,467,996	5.4%	431,089,715	5.4%	437,534,667	5.1%	441,789,794	5.2%
<i>Student Services</i>	149,793,897	2.0%	154,307,306	2.0%	154,790,403	1.9%	167,147,253	2.0%	159,206,253	1.9%
<i>Institutional Support</i>	436,259,923	5.9%	441,475,400	5.7%	452,731,386	5.7%	478,456,521	5.6%	453,504,865	5.3%
<i>Operations and Maintenance of Physical Plant</i>	501,966,787	6.8%	500,489,595	6.4%	508,145,202	6.3%	504,548,228	5.9%	488,612,415	5.7%
<i>Scholarships/Fellowships</i>	220,704,743	3.0%	234,250,826	3.0%	316,156,853	3.9%	407,355,526	4.8%	379,097,493	4.4%
<i>Auxiliaries</i>	1,169,894,802	15.9%	1,250,737,341	16.1%	1,230,286,235	15.4%	1,346,657,986	15.8%	1,394,164,893	16.3%
<i>Hospitals</i>	744,423,321	10.1%	808,134,414	10.4%	834,946,529	10.4%	950,278,008	11.2%	1,063,337,108	12.4%
<i>Depreciation</i>	284,197,546	3.9%	304,896,697	3.9%	329,462,357	4.1%	292,223,820	3.4%	316,668,660	3.7%
<i>Other</i>	369,553,961	5.0%	442,489,741	5.7%	476,114,527	5.9%	495,666,297	5.8%	492,668,992	5.8%
Total	7,373,528,565	100.0%	7,759,730,146	100.0%	8,009,268,357	100.0%	8,502,969,119	100.0%	8,557,435,608	100.0%

ANALYSIS BY FUNCTION

Total University expenditures for all functions totaled \$8.56 billion in 2011-12, an increase of 16.1% over 2007-08, representing a CAGR of 3.0% over the five-year period. The most significant increases in expenses occurred in the area of hospitals, where expenses rose by 42.9%, for a CAGR of 7.4%. Hospital expenses totaled approximately \$1.1 billion in 2011-12. It should be noted that hospital revenues were among the fastest growing during the same time period, so one would expect expenses to have risen significantly, as well.

The largest expenditure category for the UNC system—supporting instructional activities—totaled nearly \$2.2 billion in 2011-12. The instructional function is at the core of the University's mission and represented 25.7% of all expenses. These expenses have increased by 6.8% over the past five years, for a CAGR of 1.3%.

Last fiscal year, expenses for research totaled approximately \$800 million, representing just under 10% of all University expenditures. These expenses have grown by 20.9% since 2007-08, for a CAGR of 3.9%.

Taken together, expenses for academic and institutional support amounted to \$895 million in 2011-2012 and represented just over 10% of all system expenditures. Collectively, expenditures for both functions have increased at a CAGR of about 1% over the past five years.

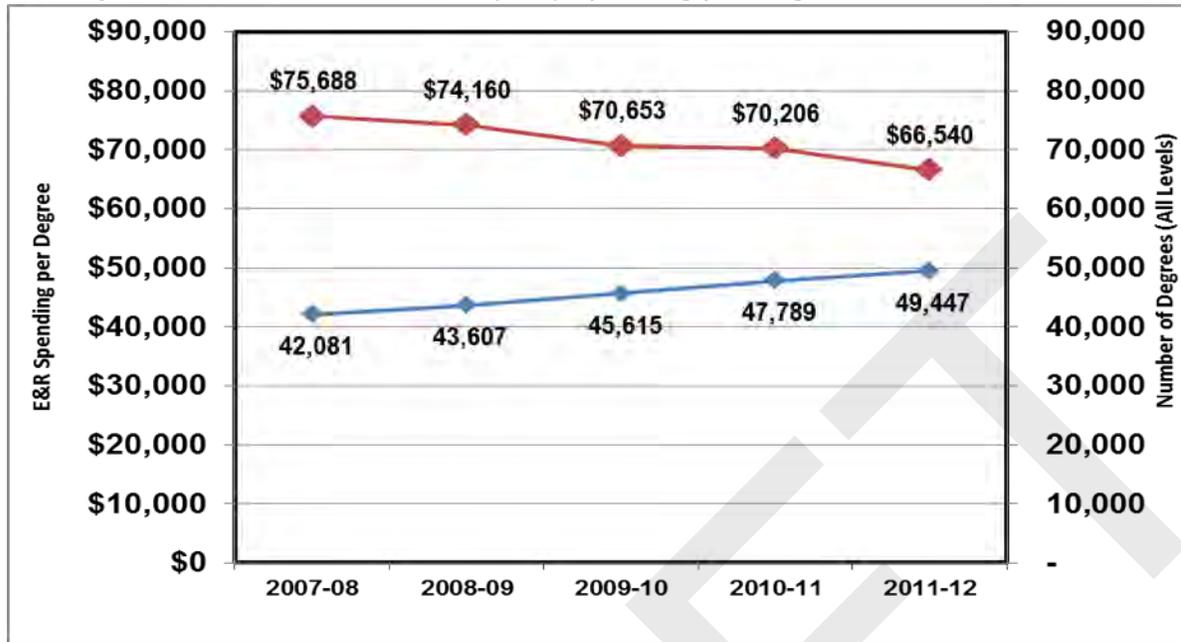
The \$488 million spent on operations and maintenance of facilities in 2011-12 reflected a decrease of approximately \$13 million, or 2.7%, over the five-year period. Auxiliary spending was \$1.4 billion in 2011-12, an increase of 19.1% over 2007-08, for a CAGR of 3.6%.

Finally, expenditures for student services and public service represented 1.9% and 4.1%, respectively, of all expenses. Student services expenses grew by less than \$10 million over 2007-08, for a CAGR of 1.2%. Expenditures for public service activities grew by only \$3 million (0.9%) during the five-year period, for a CAGR of 0.2%.

EDUCATION AND RELATED SPENDING PER DEGREE

The Delta Cost Project has developed a metric called Education and Related (E&R) Spending, which groups the functional areas of expenditures that are related to educational mission. This methodology incorporates 100% of spending on instruction and student services and a proportional amount of spending on academic support, institutional support, and operation and maintenance of the physical plant. Using this formula for E&R, it is possible to estimate the average cost for each degree awarded by the University, a strong measure of efficiency. In this analysis, E&R spending for a given year is divided by the number of degrees at all levels awarded by the University in that same year. The following chart shows E&R spending per degree in the UNC system over the past five fiscal years.

UNC System Education and Related (E&R) Spending per Degree 2007-08 to 2011



As the chart reflects, E&R spending per degree in the UNC system has decreased by 12.1% over the five-year period, with a CAGR of negative 2.5%. During the same period, the number of UNC degrees produced annually at all levels has increased by 7,366 (17.5%), with a CAGR of 3.3%. In other words, as compared to five years ago, the University is producing substantially more degrees relative to the amount of money it is spending on the academic mission.

The following two charts show, respectively, the five-year history of E&R spending per degree and the total number of degrees produced by UNC campus.

5 Year History E & R Spending per Degree						
Institution Name	2007-08	2008-09	2009-10	2010-11	2011-12	5-yr % Chg
Appalachian State University	55,376	51,629	50,191	52,905	45,630	-17.6%
East Carolina University	70,059	66,978	66,648	64,914	61,024	-12.9%
Elizabeth City State University	101,747	117,067	97,796	92,335	114,652	12.7%
Fayetteville State University	76,747	75,341	65,578	67,965	59,370	-22.6%
North Carolina A&T State University	77,425	70,443	74,359	80,573	78,160	0.9%
North Carolina Central University	89,589	90,921	86,235	84,491	82,547	-7.9%
North Carolina State University	68,882	66,384	65,546	63,905	59,408	-13.8%
University of North Carolina at Asheville	61,208	74,622	66,081	67,172	66,898	9.3%
University of North Carolina at Chapel Hill	123,764	125,545	118,695	115,892	115,376	-6.8%
University of North Carolina at Charlotte	55,139	56,776	51,841	52,135	50,609	-8.2%
University of North Carolina at Greensboro	61,256	61,881	60,815	60,002	55,593	-9.2%
University of North Carolina at Pembroke	83,979	75,746	66,310	64,330	61,475	-26.8%
University of North Carolina at Wilmington	51,679	49,972	47,434	47,003	44,854	-13.2%
UNC School of the Arts ¹	125,043	114,505	116,619	112,758	115,840	-7.4%
Western Carolina University	50,056	48,107	45,767	46,783	44,383	-11.3%
Winston Salem State University	87,748	77,823	65,859	67,433	61,797	-29.6%
UNC System Total	75,688	74,160	70,653	70,206	66,540	-12.1%

¹ Includes high school diplomas awarded by UNC SA

5 Year History Degrees Produced						
Institution Name	2007-08	2008-09	2009-10	2010-11	2011-12	5-yr % Chg
Appalachian State University	3,301	3,513	3,778	3,814	4,246	28.6%
East Carolina University	4,986	5,262	5,420	5,730	6,009	20.5%
Elizabeth City State University	411	418	444	510	429	4.4%
Fayetteville State University	948	927	1,039	1,025	1,151	21.4%
North Carolina A&T State University	1,641	1,782	1,726	1,677	1,665	1.5%
North Carolina Central University	1,385	1,373	1,430	1,568	1,521	9.8%
North Carolina State University	6,576	6,999	7,253	7,859	8,347	26.9%
University of North Carolina at Asheville	715	610	677	691	723	1.1%
University of North Carolina at Chapel Hill	7,171	7,162	7,388	7,750	7,630	6.4%
University of North Carolina at Charlotte	4,478	4,559	4,821	5,067	5,294	18.2%
University of North Carolina at Greensboro	3,448	3,533	3,612	3,837	3,977	15.3%
University of North Carolina at Pembroke	866	933	1,035	1,079	1,119	29.2%
University of North Carolina at Wilmington	2,856	2,919	3,071	3,134	3,189	11.7%
UNC School of the Arts ¹	290	298	307	317	300	3.4%
Western Carolina University	2,011	2,180	2,289	2,339	2,375	18.1%
Winston Salem State University	998	1,139	1,325	1,392	1,472	47.5%
UNC System Total	42,081	43,607	45,615	47,789	49,447	17.5%

¹ Includes high school diplomas awarded by UNCSA

CONCLUSION

A five-year financial analysis of the University shows that despite a fiscally challenging environment, our system continues to function effectively and is funded at levels competitive with other state systems of higher education. Both revenues and expenditures have increased over the five-year period from 2007-08 to 2011-12. Areas that have experienced the largest increases include hospitals, research, and auxiliary enterprises (self-supporting activities such as dormitories, dining facilities, and bookstores). Revenues and expenditures for academic functions have increased over this period, as well, but at much lower rates. Total revenues from state appropriations and tuition and fees rose modestly over this timeframe (4.1%), with a CAGR of 0.8%. The analysis also reveals that the University is producing more graduates relative to the amount spends on the academic mission.. Education and related spending per degree has declined by 12.1% over the past five years, with a CAGR of negative2.5%.

When evaluating the financial information provided here, it is important to note than the data has not been adjusted for inflation. As measured by the Consumer Price Index for all Urban Consumers (CPI-U), inflation increased by 4.9% from 2007-08 to 2011-12. Thus, combined revenues from state appropriations and tuition and fees have not kept pace with inflation, while expenses have grown at a rate significantly higher than inflation. This growth in expenditures has been driven in large part by increased health care and retirement benefit expenses, coupled with increased expenditures for utilities and technology.

STRATEGIES

A. Honor North Carolina's constitutional mandate of low tuition and fees.

In November 2010, the Board of Governors approved a revised four-year tuition plan that set guidelines for campuses to follow when submitting annual tuition and fee proposals. This plan became effective in fiscal year 2011-12 and runs through fiscal year 2014-15. Specific requirements of the plan include:

1. Maximum annual rate of increase for both campus-initiated tuition and general fees for resident undergraduate students is 6.5%.
2. Combined tuition and fee rates for resident undergraduates must remain in the bottom quartile of each campus' public peers.
3. Combined rates for non-resident undergraduate students should be market driven and reflect the full cost of providing non-residents with a quality education.

All state-supported agencies and institutions have been adversely affected by the Great Recession. The UNC system's low cost relative to its peers has allowed greater flexibility for campus tuition and fee increases that have softened the impact of reduced state appropriations on classroom instruction. From fiscal year 2008-09 through 2012-13, average resident undergraduate tuition rose by 47.0%, or approximately 9.4% annually.

Given the somewhat more stable state budget outlook, it is imperative that UNC work to hold student cost increases to a minimum. Even during a prolonged economic downturn, our campuses have maintained their commitment to accessibility, keeping their tuition and fee rates at or near the bottom of their national public peers.

Ensuring that a UNC education remains within reach of all North Carolina residents who earn admission, regardless of their financial circumstances, will also require an adequate and sustained source of need-based financial aid. Given the uncertainty surrounding federal grant programs, the importance of state grant aid and campus-based set-asides is likely to grow.

Action Steps

1. The current tuition and fees plan is effective through fiscal year 2014-15. The President, in consultation with the Chancellors of the constituent institutions, should develop a revised tuition and fee plan to be presented to the Board of Governors for consideration by November 2013. A major goal of the proposed new plan is to reduce the current 6.5% cap.

Factors to be considered in the development of the revised plan include:

- i. The desire to limit cost increases to the Higher Education Price Index;
- ii. Recent changes in enrollment growth rates;
- iii. Projected state support, as determined by the General Assembly;
- iv. The potential to stretch existing tuition receipts based on savings that that may result from implementing the efficiency measures outlined in this plan; and
- v. The need to sustain robust support for need-based financial aid.

B. Sustain the College Foundation of North Carolina

The College Foundation of North Carolina (CFNC) is regarded as a national model for collaboration among state agencies, nonprofit organizations, and private institutions around a single issue. Through a comprehensive website and call center, CFNC provides a single clearinghouse for the information North Carolina students and families need to plan, apply, and pay for college.

This cooperative effort involves the UNC system, the North Carolina Community College System, North Carolina Independent Colleges and Universities, the Department of Public Instruction, College Foundation, Inc., and the State Education Assistance Authority.

By establishing a single brand identity around an important but often fractured public policy goal, CFNC has increased the number of North Carolina students who take advantage of state and federal grant aid, as well as the state's tax-advantaged 529 college savings program. A 2010 report by the national College Board praised CFNC as an example of how "multiple state-level organizations can combine resources to offer comprehensive, free information to help the state's citizens" (3).

Surveys have shown that more than 80% of high school and middle school parents know about CFNC (4), and the site has steadily attracted a broad user base among North Carolina students and families. A 2009 review conducted by UNC General Administration found that the majority of first-time freshmen on UNC campuses had established online accounts with CFNC (5). "The success of College Foundation of North Carolina has been demonstrated through significant growth in its activity levels: numbers of accounts, site visits, admission applications submitted, and electronic high school transcripts requested," the UNC analysis found. "More importantly, in the last ten years North Carolina has seen significant increases in the college participation rate for students from low-income families."

Students and families can find information tailored to all stages of the college planning process, from elementary school through college, and even into the years of debt repayment that might follow. Services include: guidance for young people in seeking to understand different career opportunities and the education required to reach them; management of the state's 529 college savings plan; assistance in planning pre-college high school coursework; advice on selecting a post-secondary institution that matches a student's ambition and talents; online application tutorials and direct assistance with applications and financial aid; outreach to underserved communities through College Application Week and FAFSA Day; college transfer guides; and a comprehensive guide for families seeking financial aid and working to manage college expenses and debt (6). CFNC provides information on both state and federal student aid programs to offer students and their families a comprehensive picture of available resources.

All of these offerings, united under the CFNC brand, are designed to convey a straightforward message to the people of North Carolina: college is within reach. The College Foundation plays an enormous role in helping the University fulfill and communicate its core commitment to accessibility.

These services have been funded largely through receipts from the federal guaranteed student loan program to the College Foundation, Inc. and the State Education Assistance Authority. The federalization of the student loan program in 2010 ended any new loan originations through the guaranteed loan program, effectively eliminating a key source of support for CFNC's many programs.

Action Steps

1. An appropriation of \$1.0 million in year one, \$2.5 million in year two and \$5.0 million in years three and beyond would maintain CFNC's services and its great value to North Carolina students and families. This investment would sustain CFNC through a 50%-50% division between state appropriations and federal support.

C. Enhance Private Fundraising

The idea of private support for our public University is as old as the institution itself. The bill William R. Davie introduced in 1789 to establish the University of North Carolina included a call for "six persons" to contribute large sums toward the nascent school in exchange for having the first six buildings named after them. He promised that "posterity may be informed to whome they are indebted for the Measure of learning and good morals that may prevail in the State."

Today, the University is indebted to well more than a half-dozen benefactors. The development offices on the University's 17 campuses are focused on building relationships with donors and alumni to cultivate financial support for specific priorities and for the overall well-being of the institutions. As the University contemplates a future of uncertain state appropriations, private philanthropy will become even more critical to maintaining high quality at low cost.

Through annual fund gifts, major donations, planned giving, and corporate and foundation support, our development efforts help to meet immediate funding needs and produce long-term endowment returns that solidify the financial future of the University. A robust culture of philanthropy serves to broaden our base of funding, increase the flexibility of campus leaders in meeting institutional needs, and establish closer links between students, faculty, and the ever-widening community of UNC alumni.

Levels of development staffing, experience, expertise, and investment vary enormously among UNC campuses, leading to uneven results in fundraising. According to a survey conducted in August 2012 by the N.C. Office of State Budget and Management, a number of system schools significantly underperform their institutional peers in key fundraising metrics, including planned giving prospects, major gift pledges, outreach to major gift prospects, and annual fund participation. For example:

- Only seven UNC campuses produce annual gifts that are in the 50th percentile or greater as compared to their institutional peers;
- Thirteen UNC campuses have one or fewer staff members engaged in cultivating planned gifts;
- Only eight UNC campuses have endowments with market values that are in the 50th percentile or greater as compared to their institutional peers;
- Seven UNC campuses report alumni contact rates that are lower than 75 percent of their institutional peers;
- Twelve different vendors provide direct mail services to UNC institutions, but only 60 percent of all University alumni receive direct mail solicitations each year; and
- The return on development investment (dollars raised per dollar invested) at UNC campuses ranges from \$2 to \$14.

Through targeted deployment of a common pool of fundraising resources, we can assist underperforming campuses and enhance the overall development profile of every UNC

institution. Over the next five years, the University will increase gifts, improve campus fundraising performance in comparison to our academic peers, and ensure the most efficient use of personnel and vendors to increase the return on investment in private fundraising.

In order to meet the growing needs of our University and continue the standard of excellence demanded by our students, faculty and staff, we must:

- Increase UNC total gifts by a minimum of 25% or \$125 million over the next five years; and
- Move all UNC campuses to at least the 50th percentile in key metrics as compared to their academic peers.

The following campus program areas will benefit from enhanced focus and resources:

- (1) **Annual Funds** will produce 10%-30% of fundraising revenue by cultivating ongoing support, engaging new donors whose level of giving can be grown over time, and developing a broad culture of alumni investment by increasing the percentage of graduates who give back to their *alma mater*;
- (2) **Major Gifts** will produce 70%-90% of gift revenues through intensive, relationship-based fundraising with the most engaged and financially capable prospects; and
- (3) **Planned Giving** will bring to the table our University's largest gifts by cultivating and soliciting contributions made through a donor's estate (bequests, trusts, annuities, etc.) and realized by the University at the time of the donor's passing.

Action Steps

Accomplishing these goals will require an investment of \$6.2 million over five years. Funds will be used to:

1. Develop top-quality, centralized shared staffing

An appropriation of \$600,000 per year (\$300,000 in year one; \$2.7 million total over five years) will enable the UNC system to add a Director of Planned Giving, two Planned Giving Officers and three Prospect Researcher positions.

2. Augment campus-based Major Gifts staffing

An appropriation of \$1.4 million per year for three years (\$700,000 in year one; \$3.5 million total), matched by the campuses, will enable us to add much-needed major gifts staffing on several campuses. After the initial three-year period, campuses will assume the total costs of the new positions.

- Adding two Major Gifts staff on each of ten smaller campuses — the first position would be funded 100% centrally, and the second position would be contingent on a 50% campus match.
- Adding one Major Gifts staff on each of five regional campuses — position would be funded 50% centrally and with a 50% campus match.

D. Address Repair and Renovation Needs

The state of North Carolina has no recurring source of funding to effectively manage the \$4.4 billion backlog of repair and renovation (R&R) needs. This backlog is split evenly (\$2.2 billion each) between the UNC system and other state agencies. Over the past five years, the state has

provided \$139 million for repair and renovation needs across all state government. A 2004 Legislative analysis suggested a funding goal based on 3% of the current replacement value of state government General Fund-supported facilities. Comparing the \$139 million provided for this purpose over five years to the estimated \$652-million annual goal underscores that the state's R&R needs are growing at an accelerating rate. Existing problems become far more expensive to fix as repairs are deferred.

Action Steps

1. Create a consistent and affordable funding stream to better manage the state's capital assets. Specifically, establish an annual revolving borrowing capacity evenly divided between the UNC system and other state agencies. General parameters include:
 - Using FY 2012-13 as the base level for future debt service appropriations;
 - Growing debt appropriations annually by an amount not to exceed 80% (.8) of the projected growth in personal income; and
 - Net new appropriations available annually support borrowing capacity on a \$1 to \$10 basis.

Given the state's low debt levels, we believe this proposal would be viewed favorably by the bond rating agencies. North Carolina's general obligation and limited obligation bonds continue to receive the highest marks (7). Capping new borrowing capacity at 80% of estimated personal income ensures structural integrity and budget flexibility. In addition, funding for repair and renovation is strong economic development policy, since infrastructure investment is recognized as one of the most effective engines of job creation (8).

Based on Global Insight's forecast of economic growth for North Carolina, it is estimated that debt service would grow \$20 million to \$25 million annually over the next five years. This would create an annual borrowing capacity of \$200 million to \$250 million (about 1% of the replacement value of all state buildings) and would be deposited in the Repair and Renovations Reserve Account.

It is anticipated that this recommendation could be implemented over the next five years without any additional state appropriations. This is a result of two actions: savings the Department of the State Treasurer will incur as existing debt is refinanced at lower interest rates and the retiring of several existing bond obligations.

Additionally, it is recommended that new capital projects funded in the future shall include in the total project cost a reserve equal to 3% of the building value. This reserve would be held in a restricted account and used only to repair and maintain the building in the out years.

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UNC Strategic Plan
Investment and Savings Recommendations for 2013-18

FRAMEWORK

In September 2012, staff at UNC General Administration developed a five-year budget forecasting model to assist in predicting how much, if any, additional state resources may be available to implement the strategies and action steps contained within this plan. This forecasting model included detailed economic assumptions from Global Insight of estimated growth in state revenues, based on the current tax structure; anticipated public school, community college, and university enrollment requirements; healthcare coverage and treatment cost increases for Medicaid recipients and for active and retired state employees; contributions necessary to ensure the State Retirement System continues to be actuarially sound; and recurring compensation increases for state employees that would be required to keep up with Consumer Price Index changes.

The model also assumed that the University's proportion of the total state budget would remain constant at 13%, approximately where it has been over the past decade. The final analysis projected that the UNC system could expect to receive an additional \$200 million-\$250 million over the next five years; incrementally, this would equate to \$40 million to \$50 million being available for expansion investments each year. This estimate closely tracks, but is less than, the Office of State Budget and Management's 2% cap on expansion requests included in the Governor's 2013-15 State Budget Instructions guidelines. Two percent of the University's budget equals approximately \$53 million.

RETURN ON INVESTMENT

If implemented, the investments identified in this document will help position North Carolina as one of the most educated and economically innovative states in the nation. Specifically, by 2025, these targeted investments are projected to:

- ▶ Generate over \$1.46 billion in total economic activity statewide, including:
 - Leveraging \$934 million in new grants and contracts.
 - Spawning 125 new companies that generate \$59 million in revenues.
 - Producing 374 new patents and \$14 million in revenues that can be reinvested back in the UNC system.
- ▶ Create 22,909 jobs.
- ▶ Produce 92,884 net new degrees, making North Carolina a top-ten educated state.
- ▶ Make the UNC system a leader in academic quality, transformative learning, and accountability.

SUMMARY OF BUDGET RECOMMENDATIONS

While the strategic investments required to reach the goals outlined in this plan incrementally grow to \$266 million annually in year five, they are offset by a series of savings measures that generate \$67 million annually over the same period. Thus, 34% of the recommended expansion investments proposed in this Plan are made possible by administrative, operational, and academic efficiencies realized in the first two years of the Plan, and 25% of the investments are covered through efficiencies over the five-year horizon. **Net investments required over the five-year period total \$199 million, for an average annual increase of 1.5%.** A brief summary of the major investments and savings measures is outlined below.

REACH THE STATE'S EDUCATION GOAL

This Plan recommends increasing our state's bachelor's degree or higher educational attainment rate to 32% by 2018 and to 37% by 2025, making North Carolina a top-ten educated state. This significant increase in educational attainment is needed to meet projected workforce needs of current North Carolina businesses, while also ensuring that the state has the talent required to attract new businesses and more and better jobs.

To meet these degree attainment goals, the Plan proposes investments of \$93 million annually by year five in several key areas. Specifically, \$48 million annually is included for the Performance Fund, which incentivizes and rewards campuses for improving student retention and graduation rates, as well operating more efficiently and effectively. An additional \$25 million annually is proposed to expand summer school opportunities for up to 25,000 students each year. This investment will enable UNC campuses to use existing infrastructure more effectively, ultimately reduce student time-to-degree and student debt rates, and enable significant cost avoidance for both students and the state. Finally, \$19 million annually is earmarked for programs that promote greater access and success for community college transfers, military-affiliated and veteran students, and part-way home students.

STRENGTHEN ACADEMIC QUALITY

The University is committed to achieving the highest levels of student success and academic rigor. These goals can be accomplished through \$23 million in annual investments in new instructional technologies that foster student access and success, greater assessment of student learning outcomes, and producing high-quality K-12 teachers. Specifically, this Plan recommends \$4 million in recurring funds to enhance E-Learning strategies, including the development of flexible and condensed courses for nontraditional students, growing 2+2 delivery methods, and eliminating the distance education tuition charge for full-time on-campus students to maximize access.

An additional \$12 million annually focuses on becoming a national leader in assessing and improving student learning, as well as reducing time-to-degree and improving graduation rates through more comprehensive advising and career counseling. Finally, over \$7 million annually is earmarked to strengthen teacher and school leader quantity and quality and to improve teacher retention.

SERVE THE PEOPLE OF NORTH CAROLINA

As indicated in Section 3 of this Plan, “North Carolina’s future success will hinge less on our ability to make things than to think things – to tirelessly create new knowledge, technologies, products, processes and ways of organizing and doing work. As our global economy creates and destroys jobs at lightning speed, the University must invest in new areas to serve as an innovation hub, creating the discoveries and growing the discoverers who will lead and shape our state going forward.” By year five, this Plan would provide \$143 million for game-changing research, recruiting and retaining key faculty and innovative students, converting more discovery into commercialization, and meeting the state’s growing healthcare needs.

Of this amount, \$29 million would be invested annually in seven “needle-moving” areas, including pharmacoengineering; data sciences; advanced manufacturing; energy; defense, military and homeland security; marine and coastal sciences; and applied public policy. Another \$74 million annually would be targeted to hire and retain key faculty and recruit entrepreneurial graduate and post doctoral students. Next, the Plan includes \$17 million annually to support multi-campus collaborative projects with high potential for securing external funding, move forward promising early-stage ideas through a proof-of-concept fund, and advance proven projects to the marketplace. It also earmarks \$16 million annually to expand physician residency positions, improve training for the next generation of pharmacists, and grow doctor of nursing programs. Finally, the Plan invests \$6.5 million annually to serve our communities by investing in tourism and cultural research, developing innovative local continuing education courses, and expanding applied public policy services.

MAXIMIZE EFFICIENCIES

This Plan also reinforces the University’s commitment to be more efficient, accountable and transparent. Specifically, it realizes \$67 million in savings by year five through implementation of several administrative, operational, and academic efficiency initiatives. This includes \$20 million in annual savings through expansion of shared service centers, strategic purchasing with state government, reducing excess layers of management, and improving business practices. Active portfolio management strategies will save over \$38 million annually when fully implemented by creating section-size guidelines, increasing consistency of course offerings, and defragmenting program islands and satellites. Finally, incentivizing savings practices through carry-forward reform is estimated to save approximately \$8 million annually by year two.

The investment and savings are summarized in the table that follows.

V. UNC System Strategic Plan Budget Recommendations for 2013-18

(\$ in millions)

#	Description	Cumulative Recommendations Each Year				
		13-14	14-15	15-16	16-17	17-18
1	Meeting State's Education Attainment Goal					
2	Improving Student Success					
3	Performance Fund	9.5	19.0	28.5	38.0	48.0
4	Incentivizing Summer School Enrollment	5.0	10.0	15.0	20.0	25.0
5	Early Warning System	1.0	1.0	1.0	1.0	1.0
6	Graduate Student Support	0.3	0.3	0.3	0.3	0.3
7	Strategic Initiatives for Nontraditional Students					
8	Ensuring Success of Transfer and Part Way Home Students	4.0	8.0	8.0	8.0	8.0
9	Veterans and Active Military Personnel	1.0	1.5	2.0	2.5	3.0
10	Charge Military and Veterans Resident Tuition Rate	3.0	-	-	-	-
11	K-12 Pipeline Initiatives					
12	Summer Bridge and Retention Program	2.5	3.5	4.5	5.5	6.5
13	College Application Week/Minority Male Mentoring/Evaluation	1.2	1.2	1.2	1.2	1.2
14	Subtotal	27.5	44.5	60.5	76.5	93.0
15						
16	Strengthening Academic Quality					
17	E-Learning Strategies					
18	Develop Comprehensive Distance Education Plan for Student Pipelines	1.0	2.0	2.0	2.0	2.0
19	Platform for Adult Students	0.5	1.0	1.0	1.0	1.0
20	Post Baccalaureate Competency-Based Certificate Programs	0.5	0.5	0.5	0.5	0.5
21	Enhanced 2+2 Delivery	0.5	0.5	0.5	0.5	0.5
22	Eliminate Distance Education Tuition Charge for Full-Time Students	4.0	-	-	-	-
23	Assessment and Accountability					
24	Academic Advising and Career Counseling Staff	3.8	5.7	7.5	7.5	7.5
25	E-Advisor Initiative	0.1	2.5	0.5	0.5	0.5
26	E-portfolio Assessment	1.5	1.5	1.5	1.5	1.5
27	Competency Based Assessment	0.6	1.2	1.8	1.8	1.8
28	System wide Alumni and Employer Survey	0.2	0.5	0.5	0.5	0.5
29	Public Education					
30	Teacher Quality Research	0.5	0.5	0.5	0.5	0.5
31	Beginning Teacher and School Leader Support	0.1	3.0	5.0	6.0	7.0
32	Subtotal	13.3	18.9	21.3	22.3	23.3
33						
34	Serve the People of North Carolina					
35	Game Changing Research - Consortia of Excellence					
36	<i>Advanced Manufacturing</i>					
37	Faculty and Professional Staff	0.2	1.0	1.8	2.7	3.5
38	Operations and Support	0.2	0.5	0.6	0.7	0.8
39	<i>Data Sciences</i>					
40	Faculty and Professional Staff	0.2	0.9	1.6	2.3	3.0
41	Operations and Support	0.2	0.4	0.5	0.6	0.7
42	<i>Defense, Military and Homeland Security</i>					
43	Faculty and Professional Staff	0.2	1.0	1.8	2.7	3.5
44	Operations and Support	0.2	0.5	0.6	0.7	0.8
45	<i>Energy</i>					
46	Faculty and Professional Staff	0.2	1.0	1.8	2.7	3.5
47	Operations and Support	0.2	0.5	0.6	0.7	0.8
48	<i>Marine and Coastal Sciences</i>					
49	Faculty and Professional Staff	0.2	0.8	1.4	2.0	2.5
50	Operations and Support	0.2	0.4	0.5	0.5	0.5
51	<i>Pharmaco-engineering</i>					
52	Faculty and Professional Staff	0.2	3.4	6.8	10.3	8.2
53	Graduate Fellowships and Support	-	0.2	0.6	0.8	0.8
54	Subtotal	2.2	10.6	18.6	26.7	28.6
55	Game Changing Research - Support Recommendations					
56	<i>Faculty in Areas of Excellence</i>					
57	Rainmaker Faculty	-	1.3	2.7	4.0	5.4
58	Faculty Retention and Professional Development	2.0	4.0	6.0	8.0	10.0
59	<i>System Investments</i>					
60	Start-up and Infrastructure	-	8.5	15.5	23.0	28.5
61	Shared Research Equipment	1.0	3.0	5.0	5.0	5.0
62	Capital Facilities Lease Costs	-	1.6	4.0	6.5	8.1
63	Capital Facilities Construction Costs	-	2.5	5.5	8.0	10.0

V. UNC System Strategic Plan Budget Recommendations for 2013-18

(\$ in millions)

#	Description	Cumulative Recommendations Each Year				
		13-14	14-15	15-16	16-17	17-18
64	<i>Innovative Students</i>					
65	Globally Connected Campuses	0.4	0.4	0.4	0.4	0.4
66	Expand Professional Science Master's	0.3	0.3	0.5	0.5	0.5
67	Entrepreneurial Graduate Student Fellows	0.5	1.5	3.0	3.0	3.0
68	Postdoctoral Fellows	1.0	1.0	1.0	1.0	1.0
69	Grow Superstar STEM Students in NC	-	-	2.1	2.1	2.1
70	Subtotal Research Support Recommendations	5.2	24.1	45.7	61.5	74.0
71	<i>Convert More Discovery Into Innovation</i>					
72	Seed Fund for Collaborative Projects	2.1	4.2	4.2	4.2	4.2
73	Innovation Discovery Team for UNC System	1.9	3.4	4.9	4.9	4.9
74	Proof-of-Concept Fund for UNC System	1.5	3.0	3.0	3.0	3.0
75	Commercialization Fund for UNC System	2.0	4.0	4.0	4.0	4.0
76	Expand REACH NC Networking	0.5	1.0	1.0	1.0	1.0
77	Subtotal Convert More Discovery Into Innovation	8.0	15.6	17.1	17.1	17.1
78	Meet Growing Community Healthcare Needs					
79	Expand Physician Residency Capacity	4.0	4.0	4.0	4.0	4.0
80	ECU Dental Students Housing	0.3	0.3	0.0	0.0	0.0
81	Community-Based Student Training	0.9	0.9	0.9	0.9	0.9
82	Rural Health Collaborative	1.0	2.0	3.0	3.0	3.0
83	Improve Training of Next Generation Pharmacists	2.4	4.8	4.8	4.8	4.8
84	Grow Doctor of Nursing Programs	0.6	1.6	2.7	3.7	3.7
85	Subtotal Meet Growing Community Healthcare Needs	9.2	13.6	15.4	16.4	16.4
86	Engage Community Stakeholders					
87	Prepare Job-Ready Students Through Experiential Internships	0.5	0.5	0.5	0.5	0.5
88	Develop Innovative Continuing Education Programs	0.5	0.5	0.5	0.5	0.5
89	Tourism and Culture	0.4	1.2	1.9	2.5	3.0
90	Create New Center for Applied Public Policy	1.0	2.0	2.5	2.5	2.5
91	Subtotal Engage Community Stakeholders	2.4	4.2	5.4	6.0	6.5
92						
93	Total Serve the People of North Carolina	27.0	68.1	102.2	127.7	142.6
94						
95	<u>Maximize Efficiencies; Financially Stable and Accessible University</u>					
96	Enhanced Data Analytics	2.5	2.5	0.2	0.2	0.2
97	Program Monitoring, Evaluation and Implementation	1.0	1.2	1.2	1.2	1.2
98	Enhance Private Development	1.0	2.0	2.0	0.6	0.6
99	CFNC Support	1.0	2.5	5.0	5.0	5.0
100	Subtotal	5.5	8.2	8.4	7.0	7.0
101						
102	Subtotal Cumulative Expansion Investments (Over Base Year 2012-13)	73.3	139.7	192.4	233.5	265.9
103	Incremental Expansion Investments (Over Prior Year)	73.3	66.4	52.7	41.1	32.4
104						
105	<u>Implementation of Savings Measures</u>					
106	Administrative & Operational Savings	(10.0)	(15.0)	(20.0)	(20.0)	(20.0)
107	<i>Active Portfolio Management Recommendations</i>					
108	Instructional Efficiencies	(15.8)	(21.1)	(26.4)	(31.6)	(31.6)
109	Program Reviews	0.0	(1.9)	(3.0)	(4.6)	(7.5)
110	Incentivize Savings Practices (Carry Forward Reform)	0.0	(7.8)	(7.8)	(7.8)	(7.8)
111	Subtotal Cumulative Savings Measures (Over Base Year 2012-13)	(25.8)	(45.8)	(57.2)	(64.0)	(66.9)
112	Incremental Savings (Over Prior Year)	(25.8)	(20.0)	(11.4)	(6.8)	(2.9)
113						
114	Net Cumulative Investments (Over Base Year 2012-13)	47.5	93.9	135.2	169.5	199.0
115	Cumulative Percent Change (Over Base Year 2012-13)	1.8%	3.5%	5.1%	6.4%	7.5%
116						
117	Net Incremental Investments (Over Prior Year)	47.5	46.4	41.3	34.3	29.5
118	Annual Percent Change (Over Prior Year)	1.8%	1.8%	1.6%	1.3%	1.1%
119						
120	Portion of Investments Covered by Savings Measures		33.6%			25.2%