
The Position of Greatest Potential

College of Natural Resources and Environment Strategic Plan
2012-2018

October 2012

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The current context and direction of the College of Natural Resources and Environment reflect the many changes made within the college during the period 2009-2012. An introduction to the college and its current context is therefore provided as background to the strategic plan. The college leadership team, faculty and staff believe strongly that the position of greatest potential lies in our future; we aspire to an even greater contribution to our students, the University, the Commonwealth and the world. This document, The Position of Greatest Potential, reflects our vision of the future.

Introduction

The year 2012 marks the twentieth anniversary of the College of Natural Resources and Environment at Virginia Tech. With faculty roots in forestry tracing back to 1925, the college was formerly a group of faculty, a department, and then a School of Forestry and Wildlife Resources in the College of Agriculture and Life Sciences. The College of Forestry and Wildlife Resources emerged from Agriculture and Life Sciences in 1992. Renamed the College of Natural Resources in 2000, the college was again renamed in 2010 as the College of Natural Resources and Environment to better reflect the broadened faculty expertise, programmatic additions and evolving learning, discovery, and engagement activities of the college. The college is one of the most widely known and respected programs of its kind in North America, and its faculty and reputation are recognized globally.

Today the college is comprised of four academic departments, numerous research centers and cooperatives, and is host to research scientists from several federal agencies.

Undergraduate enrollment is nearly at a 30-year high with 700 students registered for fall semester 2012. Graduate enrollment in Blacksburg is slightly over 200, with an additional 100 students enrolled in the Master of Natural Resources degree program in the National Capital Region. Original research and discovery activities of the college continue to flourish, with more than \$14 million in research expenditures for two of the last three years. As measured by research expenditures, college faculty are among the most productive

researchers at Virginia Tech. College faculty continue to be recognized within the Commonwealth and nationally and for their engagement work that impacts citizens, communities, and businesses, but also impacts the management and utilization of our natural resources. The Land Grant philosophy of service and engagement to the Commonwealth flourishes in the fabric of the college.

The portfolio of departments, centers, academic degrees and majors, and research and engagement activities uniquely position the college among peers in North America. For example, we are only one of two colleges of Natural Resources and Environment in the nation that hosts a Department of Geography, and this department offers the only Bachelor of Science in Meteorology in the commonwealth. Faculty in the geography department have significant expertise in geospatial technologies, and in synergy with faculty from the Department of Forest Resources and Environment Conservation form a nucleus of geospatial sciences and technology expertise on the Virginia Tech campus. The Virginia Water Resources Research Center is housed in the college and serves a state-mandated mission in water education, research and stewardship to the college. Our Department of Sustainable Biomaterials is unique in the landscape with faculty expertise in using natural, renewable resources to produce traditional wood-based products, but also with expertise that spans nanotechnology, drug delivery, and new biomaterials development. Our Department of Forest Resources and Environmental Conservation is widely considered to be the North American leader among forestry programs. The doctorate in forestry was the highest-ranked doctoral program at Virginia Tech as measured by the 2010 National Research Council rankings. The Department of Fish and Wildlife Conservation ranked fourth on the Virginia Tech campus in sponsored research expenditures among all academic departments for the 2011-2012 fiscal year, with more than \$7 million in research expenditures. The Conservation Management Institute, a college research and outreach center has a decade of history in generating more than \$30 million in sponsored research. In 2012 the college began offering an executive version of the Master of Natural Resources degree in the National Capital Region to reach corporate executives seeking additional graduate education. Just recently, the college created the Center for Leadership in Global Sustainability in the National Capital Region (NCR) to strengthen its global reach, and also

to engage key stakeholders in the NCR. Our extension and engagement activities continue to serve the citizens, communities, and businesses of the commonwealth with timely and relevant programs. For example, the recent development of the 'Real Trees for Real Estate' extension program seeks to educate real estate professionals, who often are in the middle of land transactions and generational transfer of privately held forestlands, about biodiversity, watersheds, land fragmentations, forest valuation, market conditions and forest management . The Center for Human-Wildlife Conflict Resolution assists with or guides the development of cost-effective solutions, bringing together representatives from key state and federal agencies and private sector service providers, thereby fostering substantial savings in time and capital to the entities involved. There are many other examples of the unique and successful programs of the college that have enabled the leading status of the college among North American peers.

Based on the accomplishment and reputation of the faculty, students, alumni and the college, it is legitimate for the college to aspire to even greater contributions to Virginia Tech, our students, stakeholders, the Commonwealth of Virginia, and the global community. Hence, this 2012 - 2018 strategic plan is named 'the Position of Greatest Potential' as we look forward.

Leading Three Years of Change to Position the College for the Future 2009-2012

Well ahead of the schedule for development of a new strategic plan for the 2012-2018 period, the college embarked on strategic goals and actions beginning in 2009 to position the college for the future; we are now in the execution phase of these strategic actions that will contribute significantly toward our progress in meeting our goals for the coming decade.

These actions followed many conversations on the Virginia Tech campus and with various stakeholder groups by Dean Winistorfer to assess perceptions of the college. While widely known for its traditionally strong forestry, fisheries and wildlife, geography and wood

science programs, we found that the depth, breadth and contemporary contributions of the college were not reflected in the perceptions of many key stakeholders. A branding/perception study was then undertaken to assess perceptions of the college by these many stakeholder groups, including our own faculty, staff and students of the college, senior administrative leadership across the campus, alumni, state agency and association stakeholders in the commonwealth, and freshman university studies students (i.e., students who had not yet declared a major). A survey was administered to these stakeholder groups along with opportunity for open-ended input. Eighty-two pages of open-ended feedback were received to confirm the belief of the college leadership team that the breadth, depth, and contemporary contributions of the college and its programs were little understood today. The college was well perceived mostly for its traditional programs in forestry and wildlife, but there was a lack of recognition of the diversification of faculty expertise that has occurred over the past decade, and of the addition of significant programming elements to the college portfolio. There was a broad lack of awareness and understanding of the contemporary contributions that college faculty were making in the areas of climate, meteorology, water, geospatial science and remote sensing, genomics, ecotoxicology, biomaterials development, nanotechnology, drug delivery, infectious diseases, biodiversity, and sustainability. This brand/perception information was analyzed and consolidated into definitive statements that anchor the college for the future. Position statements were developed for each of the three mission areas (learning, discovery and engagement) and for the college overall (shown below).

These brand position statements then were used to craft a contemporary mission statement for the college:

College of Natural Resources and Environment Mission Statement

The mission of the College of Natural Resources and Environment is to prepare the future generation of leaders to address the complex natural resources issues facing our planet, primarily through a world-class faculty who conduct transformational research that complements the student learning experience and impacts citizens and communities across the state and around the world on issues of sustainability, natural resources management, and the environment.

College of Natural Resources and Environment Brand Position Statements*

College Brand – Advancing the Science of Sustainability

The College of Natural Resources and Environment prepares the future generation of leaders to address the complex natural resources issues facing our planet. World-class faculty lead transformational research that complements the student learning experience and impacts citizens and communities across the state and around the world on issues of sustainability, natural resources management, and the environment.

Learning – Students Inventing a Sustainable Future

The College of Natural Resources and Environment is nationally and internationally recognized for its undergraduate and graduate education. Programs focus on managing natural resources and preserving the diversity of Earth's physical and cultural environments. The college's world-class faculty is dedicated to mentoring students through experiential learning toward the development of sustainable solutions to society's natural resources-related problems.

Discovery – Research for Environmental Sustainability

The College of Natural Resources and Environment is a global leader in transformational research impacting environmental sustainability. World-class faculty lead interdisciplinary teams that utilize the latest technologies to explore, investigate, and create solutions for the natural resources and environmental problems facing the world. This research creates the knowledge that future generations can build upon to help develop solutions to the world's complex environmental issues.

Engagement –Partnering for Sustainable Solutions

The College of Natural Resources and Environment's engagement program partners with landowners and communities to provide science-based solutions to natural resources and environmental issues facing the world. Its goal is to improve the lives of the citizens of Virginia and beyond by providing information to make better decisions to sustainably manage and utilize natural resources.

*These brand position statements were developed following an 18-month study.
The final brand/perception study document is available from the college.

Programmatic Changes 2009-2012

Beginning in 2009, the college embarked on strategic goals and actions to position the college for the future; we are now in the execution phase of our decision-making and actions. We intend to augment our traditional programmatic strengths with these new names, emphases, degrees and majors, and initiatives in order to move toward our goal of becoming a more holistic College of Natural Resources and Environment that will leverage

synergism within the college and on our campus to address the most pressing global challenges and to educate our students for future careers. While our past accomplishments have established our reputation as one of the leading academic programs in North America, it is our vision to focus on the future challenges facing the globe via progressive and innovative initiatives in our learning, discovery, and engagement portfolios. Programmatic changes over the past three years have included:

- College name changed to College of Natural Resources and Environment (CNRE)
- Department of Forestry name changed to Forest Resources and Environmental Conservation (FREC)
- Department of Fisheries and Wildlife Sciences name changed to Fish and Wildlife Conservation (FWC)
- Department of Wood Science and Forest Products name changed to Department of Sustainable Biomaterials (SBIO)
- Meteorology B.S. degree approved effective January 2012; 80 students enrolled for fall 2012
- Meteorology minor approved
- Sustainability minor in Geography approved
- Marine Fisheries Undergraduate Option approved in Department of Fish and Wildlife Conservation
- Watershed Management and Environmental Resource Management are new Options/Majors in the Department of Forest Resources and Environmental Conservation
- Graduate Certificate in Quantitative Resource Assessment Approved
- Executive Master of Natural Resources M.S. degree program established in National Capital Region
- Undergraduate Student Leadership Institute established
- Undergraduate 'concept-to-market' experiential learning environment established with formal two-semester course offering named the Wood Enterprise Institute
- Center for Leadership in Global Sustainability established in National Capital Region

- Environmental Informatics major created and moved into university governance for approval
- Sustainable Materials and Innovation degree created and moved into university governance for approval
- Packaging Science and Design degree created and moved into university governance for approval
- Biomaterials and Bioenergy degree proposal pending submission into university governance
- Creation of a new college website to express to external audiences the contemporary programming of the college and our vision of the future

Changing Faculty Demographics

During the period 2012-2018, approximately 25 tenure-track faculty will become retirement eligible; this is more than one-third of our existing tenure/tenure-track faculty FTEs of the college. During this period, the entire college leadership team also will become retirement eligible. Succession planning is important to the future of the college. As personnel transitions begin, the college must ensure that existing and successful learning, discovery, and engagement emphases are maintained. At the same time, it will be important to recognize those expertise areas that may not be as relevant as in the past and make strategic decisions about continuity in these areas. Professional accreditations of several degree programs must be ensured as faculty expertise changes over time.

We also must look toward new and emerging areas of learning, discovery, and engagement as we fill faculty vacancies. We must use this opportunity to further diversify our faculty to better meet the needs of our students and society. We must recruit new faculty who bring the latest knowledge and skills to bear on future challenges, and, as importantly, faculty who are willing and collegial collaborators. Interdisciplinary opportunities - that include supporting the research mission of the established Virginia Tech institutes, participating in collaborative and interdisciplinary degree programming, sharing physical facilities and

infrastructure, and bringing expertise together to support our engagement mission in the Commonwealth and across the globe - will require working collaboratively with faculty from all disciplines. At times, it will be important for CNRE faculty to lead collaborative initiatives; leadership attributes will be needed. At other times CNRE faculty must be willing collaborators with other leadership; collaboration skills will be needed. Finally, with retirements of senior faculty, an opportunity will exist to grow faculty numbers in the college by strategic repurposing of salary dollars to entry-level positions in emerging new strategic areas of faculty expertise.

A Path Forward to the Position of Greatest Potential: 2012-2018

In addition to the established and productive slate of ongoing learning, discovery, and engagement activities of the college, we establish the following strategic goals and actions as the basis for college planning and execution for the period 2012-2018.

Goal 1: Support the faculty endeavor; grow the size and quality of the college faculty and staff

The faculty are the foundation of our college programming and our success. We want to demonstrate our support of the faculty, via increased and competitive compensation; to centralized support monies for travel, equipment, and graduate students support, and recognition to the faculty with awards and visibility through our communication efforts of our expertise and accomplishments before the campus community. As the smallest college at Virginia Tech, only limited faculty investment capital is available to undertake new initiatives. At the same time, we are a small, nimble organization willing to assume a leadership and/or convening role for new campus learning, discovery and engagement initiatives in climate, water, renewable energy, coastal ecology and management, sustainability, biodiversity, biomaterials, and other initiatives. A proven investment by all university metrics, the college aspires to innovate by adding new programs to help meet the goals of the Plan for a New Horizon. Growing the size of the college faculty in strategic

learning, discovery, and engagement areas will help Virginia Tech achieve its goals and objectives in key areas. Growing the size of the college faculty by 20 per cent over the life of the plan also will help the college from a business perspective by having a larger resource pool available for innovation and new program development. Growing the college faculty also will allow for enrollment growth to better distribute the student demand for courses and degrees, especially new and emerging STEM-focused degree areas currently being proposed by the college. A critical staff shortage in technical areas of the college must be addressed to augment the faculty effort; we have suffered reductions in staff support over the past decade coincident with budget reductions.

Strategic Actions:

1.1 Initiate a faculty salary compensation study of comparable national programs, as well as campus programs, as a basis for future faculty salary actions, with the awareness that our traditional peers of the past may not be our peers in the future and that recent and future faculty hires will work in new and emerging areas of scholarship that align with the Plan for a New Horizon.

1.2. Increase faculty awareness of the University Long Range Plan and communicate that alignment of faculty resources with the Plan for a New Horizon will create resource opportunities. Allocate a centralized pool of monies to support faculty travel and involvement associated with exploring new learning, discovery, and engagement initiatives, strategically focused on those goals for the university as described in the Plan for a New Horizon.

1.3. Develop a plan for increased graduate student support, especially doctoral and international student support, from the Virginia Tech Graduate School and other centralized resources.

1.4. Develop an expertise and business plan regarding future faculty retirements.

1.5. Revitalize the college honorifics committee and actively pursue honorifics nominations for campus, professional society, national, and international recognition.

1.6. Continue to seek endowed development monies to add additional named professorships in the college.

Goal 2: Strategically enhance our undergraduate portfolio and increase undergraduate enrollment and retention in the college

We want to increase our undergraduate enrollment from its current level of 700 students to 1,000-1,200 students by 2018. Not all degree programs in the college have capacity for increased enrollment; we desire strategic growth in new degree programs recently approved, new degree programs that are currently in university governance, or degree programs that are planned for submission into governance in the near future in the following areas: meteorology, environmental informatics, packaging science and design, sustainable materials and innovation, biomaterials and bioenergy, coastal ecology and management, and sustainable natural resources and environments. Our desire to grow is predicated on educating the next generation of students who will be equipped to address mounting global challenges. We recognize that not all colleges and degree programs at Virginia Tech have capacity for increased enrollment and we desire to create new opportunities for STEM oriented students who have not identified a career path or who are unable to gain access to established STEM program on campus. Increasing our undergraduate enrollment will also help create a larger pool of graduate school-oriented and graduate school-qualified students who may matriculate into graduate programs at Virginia Tech, helping to address the goal of increasing Virginia Tech graduate enrollment by 1,000 students.

Strategic Actions:

2.1. Execute our current plan to bring to fruition new degree programs, majors and options currently in university governance. These proposed new offerings include: water: resources, policy and management; environmental informatics; sustainable natural resources and environment; packaging science and design; sustainable materials; biomaterials and bioenergy; minor in sustainability; and coastal ecology and management.

2.2. Work with the Office of Admissions and the University Registrar's office on active recruiting and retention strategies. Increase the college yield on offers and accepts, as well as for transfer students. Institute an active program of communication to all applicants to the college.

2.3. Increase the diversity of college undergraduates, to include females, racial and ethnic minorities, and first-generation college students.

2.4. Explore college participation in the Summer Academy, as well in the proposed winter Session, as viable pathways to gain increased exposure to college degree offerings. Develop additional online course offerings; explore possible linkages to community colleges and high schools.

2.5. Secure external revenues to leverage faculty and student involvement in the Summer Undergraduate Research Experience (SURF).

Goal 3: Strategically advance our graduate education and research portfolio

Strategic actions:

3.1. Explore creation of new collaborative research endeavors, originating from within the college, but with campus-wide involvement in the areas of global change, climate, biodiversity, biomaterials and bioenergy, water, geospatial sciences, and sustainability.

3.2. Explore creation of the Center for Natural Resources Assessment and Decision Support, utilizing geospatial and remote sensing technologies as tools to develop data and models for landscape scale decision-making.

3.3. Increase college participation, involvement, and continued support of the existing Virginia Tech research institutes.

3.4. Build stronger college linkages to federal research programs and opportunities.

3.5. Build stronger college linkages to the private sector in emerging research areas.

3.6. Provide seed grants and extra support for faculty in the pre-award phase of discovery.

Goal 4: Strengthen the college's global leadership

The college is uniquely poised to contribute to the global conversation about natural resources, biodiversity, renewable energy, materials, water, sustainability, urbanization, and a host of other strategic topics. The college has recently created the Center for Leadership in Global Sustainability in the National Capital Region as one avenue to advance the college's global programming aspirations. The executive Master of Natural Resources program delivered in the National Capital Region also focuses on leadership for sustainability with a significant global perspective and required externship by executive students. We also strive to gain recognition for the current programs and impacts of our existing global footprint; faculty are working in many countries on numerous continents,

and we need to bring attention to what we are already contributing to the global strategies of Virginia Tech. Instructor John Boyer's World Regions geography class already exposes over 3,000 students per year to the rest of the world with documented positive results. This course is, without question, the most powerful single global awareness tool on the Virginia Tech campus.

Strategic Actions:

4.1. Develop a strategic web presence to reflect the diversity and quality of our global programming.

4.2. Actively pursue new international research and engagement partnerships with strategic institutions in strategic locations to advance our mission.

4.3. Work in concert with the Office of Outreach and International Affairs, the institutes and colleges at Virginia Tech to leverage our efforts in the global arena.

4.4. Develop a comprehensive slate of programs in concert with our new Center for Leadership in Global Sustainability in the National Capital Region.

4.5. Create additional faculty recognition for learning, discovery, and engagement work on a global scale.

4.6. Develop a college-level distinguished lecture series featuring international speakers.

4.7. Advance our college study abroad activities in concert with a centralized college plan to enhance our global recognition and standing.

4.8. Increase our presence in international scholarly journals, international scholarly conferences, and international research collaboration.

4.9. Increase our recruitment of international graduate students, in part by seeking new ways to support their tuition and living expenses for their residence while in the United States.

Goal 5: Improve and Create innovative learning environments

In addition to a strong curriculum and excellent in-class learning environments, the college will continue to explore innovative learning opportunities for our students. The recent development of the Wood Enterprise Institute and Student Leadership Institute in the college have met with great success and are ideal models to duplicate across the curriculum.

Strategic actions:

5.1. Explore establishment of the student-oriented Institute for Collaboration and Decision-Making; seek private development support.

5.2. Explore establishment of the student-centered Sustainable Futures Institute; seek private development support.

5.3. Seek strategic learning environments and innovative collaborations with other colleges and departments at Virginia Tech.

5.4. Explore new opportunities for service-learning, experiential-learning, and undergraduate research opportunities for our students.

5.5. With a focus on sustainability, consider creating a faculty coordinator to bridge the sustainability domains across our college curricula.

Goal 6: Address constrained and aging physical facilities and infrastructure

The college is housed in three principal buildings on the campus; Cheatham Hall, Latham Hall, and Major Williams Hall, with some faculty laboratories and offices in Fralin. Faculty, staff and students in the Department of Sustainable Biomaterials also occupy space at the Brooks Forest Products Center located in the Corporate Research Center adjacent to campus. The Conservation Management Institute leases space in the Corporate Research Center for its activities. The Department of Fish and Wildlife Conservation operates the aquaculture research center and large mammal research center near Plantation Road adjacent to campus. A new aviary is being constructed next to the Aquaculture Center in 2013 for research and teaching purposes in Fish and Wildlife Conservation. A number of faculty also participate in interdisciplinary research and utilize lab space in ICTAS I. In addition to the buildings named above, graduate students are assigned office space in Litton Reeves. Additionally, the college administers the Master of Natural Resources M.S. degree program in the National Capital Region through the Falls Church Center and the new VT facility in Ballston, Virginia.

College facilities, both quantity and quality of space, are falling farther behind other programs in North America; CNRE's facilities are not considered in the top 10 in North America among like programs. While the college enjoys a leading status among North American programs, our facilities will constrain us moving forward. Our desire to grow the size of our faculty, our student enrollment and quality of our programs is constrained by existing facilities.

The functionality, safety, and working conditions of laboratories in Cheatham Hall must be addressed if we are to remain competitive in areas of basic research conducted in Cheatham Hall. The long-term functionality of the Brooks Forest Products Center is recognized as a liability for the Department of Sustainable Biomaterials and an effort is underway to raise private monies to replace this facility.

As our enrollment has grown, classroom space for teaching has become an issue across the college. Field-based laboratory courses also will experience constraints due to logistics of transporting students to field exercises.

Bringing the programs of the college together in closer proximity on the campus would be desirable to enable synergy, efficiency, and identity of programs. The long term vision for our college must be to consolidate all college programs into a new facility on the campus where maximum synergy and quality can be attained.

Strategic Actions:

6.1. Utilize the established six-year capital project process to bring attention to college facility constraints.

6.2. Make investments in aging Cheatham Hall laboratories and classrooms of all college occupied buildings.

6.3. Continue to upgrade graduate student office space.

6.3. Actively evaluate safety and housekeeping of college laboratories.

6.4. Pursue development support for facilities renovation and new construction.

Goal 7: Increase development support for all college activities

Private support will be more important in the future as state and federal support languishes. To meet our expectations for our learning, discovery, and engagement missions, we must seek private support to augment our resource base.

Strategic actions:

7.1. Pursue addition of development staff for the college

7.2. Pursue development support for facilities enhancement.

7.2. Pursue development support for innovative learning environments, such as the Wood Enterprise Institute and the Student Leadership Institute.

7.3. Pursue development support for endowed named professorships.

7.4. Pursue development support for discretionary activities.

Summary - CNRE to Address Changing World

The coming decades will bring many changes stemming from a projected growth in global population to 9+ billion by 2050. The world of the future will be impacted by population growth, intense urbanization, global interconnectedness, climate change, a huge new global middle class and the associated resource scarcities, multi-polar geopolitics (how will the US remain competitive in the face of other global powers?), and increasing security challenges (water, energy, and food). The world is changing, and CNRE is changing in anticipation of future needs in our learning, discovery, and engagement missions.

The College of Natural Resources and Environment can help meet these challenges by:

- Growing our faculty capacity, faculty expertise, and faculty diversity to meet these challenges
- Growing our student enrollment to meet these challenges
- Educating students with a global awareness

- Employing experiential learning opportunities in the classroom to help students be career ready upon graduation; employing new classroom technologies and online opportunities to expand our traditional learning boundaries (subject, geographic location, and content)
- Encouraging and facilitating interdisciplinary learning and research at the intersections of traditional scholarship and disciplines
- Enhancing leadership and collaboration awareness and skills across all of our programs
- Establishing a more recognized and engaged global presence to address mounting global challenges, while at the same time securing our engagement foundation in the commonwealth as a testament to our Land Grant heritage
- Developing cross-sector partnerships and service learning opportunities (among government, private sector, civil society, and other pertinent groups)
- Innovating in learning, discovery, and engagement programming; bringing new initiatives and programs quickly into university governance for approval; being willing to collaborate on campus with others for desired, strategic outcomes; bridging gaps, crossing boundaries, bringing solutions forward together

The CNRE is not only relevant to meeting these 2050 challenges, the college is critical to producing leaders, problem solvers, and solutions to meet them. With additional investment in the college, Virginia Tech could become a global leader in meeting these challenges. This perspective couches the CNRE in terms of meeting a global need as per The Plan for a New Horizon, highlights the college's relevance, and justifies investments and shifts in priorities to accomplish our strategic vision.

APPENDIX:

Linkages between the College of Natural Resources and Environment strategic plan and the University's Plan for a New Horizon:

***University plan:** We are poised to grow our undergraduate enrollment when appropriate and will pursue significant and strategic growth in graduate enrollment. Focusing on growth in graduate enrollment in science, technology, engineering, computational sciences, health sciences, and business- and policy-oriented subjects will provide additional teaching resources, sustain and expand our research portfolio, and provide a broad range of student research experiences. This growth will also facilitate the pursuit of our mission to address significant science, technology, economic, and social issues.*

CNRE Plan: We want to increase our undergraduate enrollment from its current level of 700 students to 1,000-1,200 students by 2018. Not all degree programs in the college have capacity for increased enrollment; we desire strategic growth in new degree programs recently approved, new degree programs that are currently in university governance, or degree programs that are planned for submission into governance in the near future in the following areas: meteorology, environmental informatics, packaging science and design, sustainable materials and innovation, biomaterials and bioenergy, coastal ecology and management, and sustainable natural resources and environments. Our desire to grow is predicated on educating the next generation of students who will be equipped to address mounting global challenges. We recognize that not all colleges and degree programs at Virginia Tech have capacity for increased enrollment and we desire to create new opportunities for STEM oriented students who have not identified a career path or who are unable to gain access to established STEM program on campus. Increasing our undergraduate enrollment will also help create a larger pool of graduate school-oriented and graduate school-qualified students who may matriculate into graduate programs at Virginia Tech, helping to address the goal of increasing Virginia Tech graduate enrollment by 1,000 students.

University Plan: *International engagement is becoming an imperative for higher education, given the pace of globalization and the flow of people and ideas across geographical borders...We will seek opportunities for international engagement...*

CNRE PLAN: The College is uniquely poised to contribute to the global conversation about natural resources, biodiversity, renewable energy, materials, water, sustainability, urbanization, and a host of other strategic topics. The college has recently created the Center for Leadership in Global Sustainability in the National Capital Region as one avenue to advance the college's global programming aspirations. The executive Master of Natural Resources program delivered in the National Capital Region also focuses on leadership for sustainability with a significant global perspective and required externship by executive students. The college seeks to raise its international profile through various actions.

University Plan: *We will empower our students to be knowledgeable, wise, and effective participants in an increasingly digital age in areas ranging from art to science to civic discourse...Being effective in this environment means being able to apply and manage information technology while taking advantage of networking, collective intelligence, simulation, data mining, and modeling.*

CNRE Plan: CNRE will bring forth a new degree program in environmental informatics, while supporting new learning and discovery areas in climate, meteorology and sustainability. Quantitative data skills will be a central theme of these initiatives. The college brand position statement revolved around 'putting science behind sustainability'.

University Plan: *To excel in a competitive research environment, we will continue to focus resources on a selected number of strategically important fields that offer significant growth potential, enable us to capitalize on the strengths of our faculty, and best position us to build the resources essential to developing world-class expertise beyond our current domains of scholarship.*

CNRE Plan: CNRE aspires to grow its faculty and student enrollment, in emerging areas of scholarship and discovery. New initiatives in climate, meteorology, water, geospatial science and remote sensing, genomics, ecotoxicology, biomaterials development, nanotechnology, drug delivery, infectious diseases, biodiversity, coastal ecology and

management, and sustainability will afford the university unique opportunities to excel. The integration of these initiatives into the existing disciplinary domains of the college will create unique opportunities for Virginia Tech to excel.

University Plan: *Additionally, Virginia Tech will leverage existing and emerging strengths in the following areas: energy, materials, and technology; water science, policy, and management; transportation and communication infrastructures; natural resources, ecosystems, and environmental quality; informatics and policy; food and food systems; and sustainable international development.*

CNRE Plan: CNRE is leading a new campus initiative in water: resources, policy and management, meteorology, sustainability, biomaterials and bioenergy, environmental informatics and leadership for sustainability.

University plan: *The integration of business with programs in science, engineering, and medicine creates the opportunity for radical innovation. In the spirit of our mission, we will contribute to business-, industry-, and policy-relevant research with a focus on multiple dimensions of security, resilience, health, and sustainability. These themes will also underpin much of our outreach activities and service learning.*

CNRE Plan: CNRE faculty have a strong history of collaboration with the \$27 billion forest industries businesses in the state. Our recent rebranding of the college with a focus on sustainability matches themes of security, resilience, health and sustainability of the Plan for a New Horizon.

University plan: *Pathways to interdisciplinary success...the best way to accomplish these goals is to recruit, support, and reward outstanding faculty with strong disciplinary expertise and openness to innovation.*

CNRE Plan: We must also look toward new and emerging areas of learning, discovery, and engagement as we fill faculty vacancies. We must use this opportunity to further diversify our faculty to better meet the needs of our students and society. We must recruit new faculty who bring the latest knowledge and skills to bear on future challenges, and, as importantly, faculty who are willing and collegial collaborators. Interdisciplinary

opportunities - that include supporting the research mission of the established Virginia Tech institutes, participating in collaborative and interdisciplinary degree programming, sharing physical facilities and infrastructure, and bringing expertise together to support our engagement mission in the Commonwealth and across the globe - will require working collaboratively with faculty from all disciplines.

***University plan:** Increase undergraduate involvement in meaningful research experiences and experiential learning opportunities by adopting a “hands-on, minds-on” philosophy that promotes connecting real-life experience with academic concepts*

CNRE Plan: Recently developed programs such as the Student Leadership Institute and the Wood Enterprise Institute provide real-world opportunities for our students. The college is exploring other innovative educational initiatives such as the establishment of the student-oriented Institute for Collaboration and Decision-Making and the student-centered Sustainable Futures Institute.