# **2021 SIX-YEAR PLAN NARRATIVE (Part II)**

**INSTITUTION:**  Virginia Tech (Agency 208)

**OVERVIEW**

The totality of the six-year plan should describe the institution’s goals as they relate to state goals found in the *Pathways to Opportunity: The Virginia Plan for Higher Education*; the Higher Education Opportunity Act of 2011 (TJ21); and the Restructured Higher Education Financial and Administrative Operations Act of 2005.

The instructions under institutional mission and alignment to state goals, below, ask for specific strategies, in particular related to equity, affordability and transformative outcomes. Other sections will offer institutions the opportunity to describe additional strategies to advance institutional goals and state needs. ***Please be as concise as possible with responses and save this narrative document with your institution’s name added to the file name.***

**SECTIONS**

**Section A. Pandemic Impact:** Briefly discuss, in one to two paragraphs, how the pandemic has impacted your institution. What things did your institution already have in place that proved helpful? What lessons were learned? What short-term changes have been made? What long-term changes will be made? What are the concerns moving forward?

**RESPONSE:**

The COVID-19 pandemic created unprecedented fiscal and operating challenges which impacted every facet of the university enterprise. With only a tentative and working understanding of the potential impacts of the virus, university leaders realized quickly that the accurate collection and sharing of data would be critical not only for tracing and isolating transmission, but for key decisions on university operations. Collaboration with regional partners, including the Town of Blacksburg and the New River Valley Public Health Task Force, positioned the university to monitor community spread, trace sources of infection, coordinate case management services, and support community outreach. The rapid creation of the Fralin Biomedical Research Institute’s testing and analysis lab enabled the university to implement a comprehensive prevalence and surveillance testing regimen, providing university leadership with accurate data on disease-spread indicators. Instructional and service delivery modalities were adapted to best serve students in a way that promoted community health and safety and maintained progress towards degree. The university implemented hybrid and on-line courses, and underwent significant efforts to ensure classrooms, laboratories, and shared campus spaces were sanitized and organized for safe use.

In order to manage the financial uncertainty created by the pandemic, the university implemented a portfolio of cost-savings strategies, including a hiring freeze, travel moratorium, and limits on discretionary spending. Senior management areas also engaged in a planning exercise to develop budget reduction scenarios of 5 percent and 10 percent. University leadership ultimately settled on a 5 percent revenue hedge in its preliminary FY21 budget. As a result of continued strength in undergraduate resident enrollment in Fall 2020 combined with federal and state support, the university was able to restore 2 percent of that hedge to individual college budgets. An average 5 percent reduction in other E&G areas was maintained with a portion of these funds subject to reallocation in support of the critical needs of the university. This approach allowed the university to address the 2020-21 budget gap with minimal permanent drawdown on the university’s balance sheet.

As the public health crisis begins to recede, the university continues to assess its response and to consider the likely short-term and long-term implications for the university and more broadly, higher education. The Commonwealth’s support, including investment to address access, affordability, and unbudgeted cost increases, enhanced financial flexibility, and the modification of reporting requirements, provided the university valuable tools to mitigate revenue shortages. Prior to the pandemic, the university launched an administrative transformation initiative designed to leverage technology and automation, improve service delivery, and eliminate redundancies and inefficiencies. This process further cultivated the university’s culture of continuous improvement and problem solving, empowering university faculty and staff to maintain vital operations and services with only minimal disruption.

While undergraduate resident demand remains robust, the university will continue to monitor enrollment trends of out-of-state and international students. Speculation over the staying power of remote learning is likely to further charge the already highly competitive market for talented, out-of-state and international students. Finally, Virginia Tech, consistent with the long-range goals envisioned in its Advancing Beyond Boundaries Strategic Plan, will continue to challenge traditional assumptions and expectations about higher education with innovative programs, including inter-disciplinary pathways to degree completion and non-linear, lifelong learning.

**Section B. Institutional Mission, Vision, Goals, Strategies, and Alignment to State Goals:** Provide a statement of institutional mission and indicate if there are plans to change the mission over the six-year period.

Provide a brief description of your institutional vision and goals over the next six years, including numeric targets where appropriate. Include specific strategies (from Part 3 – Academic-Financial Plan and Part 4 – General Fund Request) related to the following state themes and goals:

* **Equitable:** Close access and completion gaps. Remove barriers to access and attainment especially for Black, Hispanic, Native American and rural students; students learning English as a second language; students from economically disadvantaged backgrounds; and students with disabilities.
* **Affordable:** Lower costs to students. Invest in and support the development of initiatives that provide cost savings to students while maintaining the effectiveness of instruction.
* **Transformative:** Expand prosperity. Increase the social, cultural and economic well-being of individuals and communities within the Commonwealth and its regions. This goal includes efforts to diversify staff and faculty pools.

Strategies also can cross several state goals, notably those related to improved two-year and four-year transfer, and should be included here. If applicable, include a short summary of strategies related to research. The description of any strategy should be one-half page or less in length. Be sure to use the same short title as used in the Part 3 and Part 4 worksheets. If federal stimulus funds will fund activities and are included in Part 3 as reallocations, please note how they will be used.

**RESPONSE:**

**Mission Statement:** *Inspired by our land-grant identity and guided by our motto, Ut Prosim (That I May Serve), Virginia Tech is an inclusive community of knowledge, discovery, and creativity dedicated to improving the quality of life and the human condition within the Commonwealth of Virginia and throughout the world.*

In the fall of 2020, Virginia Tech completed revisions to its long-term strategic plan: **The Virginia Tech Difference: Advancing Beyond Boundaries.** Based on the university’s vision, motto, and core values, the framework of the plan is centered around four strategic pillars:

1. Advance Regional, National, and Global Impact
2. Elevate the Ut Prosim (That I May Serve) Difference
3. Be a Destination for Talent
4. Ensure Institutional Excellence

The university’s Academic-Financial Plan and General Fund requests support these key areas.

Strategies: Part 3 – Academic-Financial Plan

**1) Advance Regional, National, and Global Impact**

Facilitate Recruitment of Talented and Diverse Mid-Career Faculty and Bolster Retention of Promising Early-Career Faculty

Critics of the modern university often lament the rise of disciplinary specialization, the tendency of scholars to isolate knowledge production within disciplinary boundaries and constrictive paradigms of understanding. Working with leaders spanning several academic departments, Virginia Tech launched the ‘Destination Areas’ initiative to develop a framework for transdisciplinary learning with an overarching goal of discovering holistic and novel solutions to complex problems. In 2020-21, [over 27,000 hours](https://vtx.vt.edu/articles/2021/03/destination-areas-continue-growth-impacts.html) of student credit hours were delivered in Destination Area related courses in emerging fields such as Adaptive Brain and Behavior, Data and Decisions, and Climate and Society. The Destination Areas initiative has also spawned partnerships with university Research Institutes and other prominent industry partners, providing students with externally funded experiential learning opportunities in specially equipped, advanced laboratories like the Oak Ridge National Laboratory.

The university’s commitment to transdisciplinary learning will enhance its ability to attract and retain scholars who seek the autonomy and flexibility to pursue groundbreaking scholarship beyond traditional disciplinary boundaries. While the university has been successful in the recruitment of early-career faculty, additional investment is needed to bolster early-career strength with targeted recruitment of mid-career faculty and the retention of promising early-career scholars. The university will target professional development opportunities and scholarship support to assist mid-career faculty as they ascend the promotion and tenure career ladder. Resources will be allocated to support retention packages and provide shared infrastructure.

Advance Evidence-Based, Student Centered Learning

Nourishing an active commitment to solve complex problems requires engagement with the world beyond the confines of the classroom and traditional degree pathways. VT-shaped Learning is a unique pedagogical approach which integrates practical and liberal education by complementing disciplinary depth with experiential learning, interdisciplinary collaboration, and engagement with multiple stakeholders inside and outside the university. The university continues to explore strategies that will enable students to explore career opportunities and apply skills in a professional setting while maintaining progress toward degree completion. This VT-shaped learning approach also cultivates critical values like curiosity, empathy, civility, adaptability, and resiliency which prepare students not only for meaningful careers, but also for the role of engaged citizen, neighbor, and community leader. In addition, a strong emphasis on cultural competency positions students for success in an increasingly diverse and pluralistic world. The university plans to enhance and expand VT-shaped learning opportunities in the 2022-24 biennium with nongeneral funds and the reallocation of existing resources. Support from partnerships in the public and private sector will also facilitate a robust exchange of ideas and help the university advance opportunities for life-long learning.

Expand Graduate Enrollment in High Demand Disciplines

The university aspires to increase graduate student enrollment with an emphasis on providing degrees with market demand that support the Commonwealth’s workforce needs. Key among these initiatives is achieving the strategic objectives included in the university’s Tech Talent Investment Program agreement with the Commonwealth. In the fall of 2020, Virginia Tech welcomed its inaugural class to the Innovation Campus with the launch of its new Master of Engineering in Computer Science. Recently, Boeing pledged a multi-year, $50 million commitment to provide scholarships, enhance faculty recruitment, and support STEM pathway programs at Virginia Tech’s Innovation Campus. In addition, the university is leveraging growing market demand for virtual MBA programs with a new online MBA program beginning in the summer of 2021. Graduate education is a key component of the university research mission and supports university efforts to remain a leader in innovation, technological development and entrepreneurship. Enrollment growth and externally sponsored research revenue will be utilized to support the instructional needs of this initiative.

**2) Elevate the Ut Prosim Difference**

Academic Advisement & Enhancements that Reduce Time-to-Degree

As part of a holistic approach to student advising, the university has partnered with the Education Advisory Board to utilize [Navigate](https://www.registrar.vt.edu/campus.html), a platform that brings together predictive analytics and communications to support academic advising and tutoring. Navigate helps advisors provide students with a degree roadmap designed around their unique academic strengths and past successes. This process also helps identify areas of additional support, ultimately improving retention and graduation rates. Through continued investment in jobs market analytics software, students and advisors have the ability to access data-driven information on desired skill sets, experiential learning experiences and potential earnings by discipline. This data-driven approach promotes efficacy in the advising process and empowers students to draw connections between their pathway-to-degree and potential career paths.

To accelerate degree completion, the university is developing course offerings in formats that support reduced time-to-degree and contribute to the sticky pathways that grow the state’s talent pipeline. In parallel, the university will continue its expansion of on-campus, on-line, and hybrid course offerings during summer and winter that provide students with additional opportunities to complete degree requirements and participate in experiential learning opportunities. Virginia Tech is also working with faculty to incorporate research-based approaches to course design and delivery that facilitate a personalized adaptive learning experience, allowing students to learn in ways that suit their individual strengths. This will be accomplished through the combined use of multi-modal course design (allowing multiple ways to engage learners) with learning technologies designed to help both learners and instructors more fully understand learning progress through the use of learning analytics.

Increase student financial aid for low- and middle-income state undergraduates.

As a modern land grant institution, Virginia Tech remains very sensitive to student access to higher education, including student cost and borrowing levels. As a Restructured Level III institution, the university takes seriously it’s Management Agreement commitment to mitigate tuition increases and reduce the unmet need for Virginia residents. These goals are also enshrined in the university’s *Advancing Beyond Boundaries* strategic plan which calls on the university to grow enrollment of underrepresented and underserved students. In addition, the university maintains the powerful Funds for the Future scholarship program, which protects most returning students with financial need from tuition rate increases, and the Virginia Tech Grant, which seeks to further reduce student need. Virginia Tech’s multi-faceted approach to reducing financial barriers will further enhance its status as an engine of social and economic mobility for all Virginians.

The primary goal of investment in student financial aid is to reduce the net price for Virginians in the first through third income quintiles, ensuring that financial obstacles are mitigated for low- and middle-income students. A family’s socioeconomic status should not be a constraint on a student’s educational outcomes, including enrollment decisions and progress toward degree completion. Achievement of the university’s access and affordability goals will require investment from multiple fund sources including federal, state, private, and institutional support.

**3) Be a Destination for Talent**

Enhance Recruitment Efforts of Talented, Diverse Faculty and Staff

Awakening intellectual curiosity and humility is a critical first step for nurturing understanding and recognition of racial, ethnic, religious, and socioeconomic differences, an important disposition for success in an increasingly globalized and interconnected world. While the university has experienced significant momentum in diversifying its student population, progress in recruiting a more diverse faculty and staff remains a top priority moving ahead. As part of the university’s recent administrative transformation initiative, the Division of Human Resources developed new guidelines, resources, and processes for recruiting and hiring diverse candidates for faculty positions. The university’s Future Faculty Diversity Program, an annual four-day conference designed to increase faculty representation from traditionally underrepresented populations, has enhanced the faculty pipeline by cultivating meaningful relationships with prospective scholars, particularly in high priority research areas. The university also continues to work closely with its colleges to design an incentive and partnership structure to advance faculty diversity. Additional examples of university strategies to advance hiring and retention goals for diverse faculty and staff are contained in the *ONE Virginia Strategic Plan for Inclusive Excellence in Higher Education* plan attached to this document. Undergirding all of these efforts is the ability to offer competitive compensation packages to highly sought-after faculty.

Support Faculty Startup

Establishing and setting up a research facility or lab for a newly hired faculty member typically costs millions of dollars. Investment in advanced facilities and equipment is essential for faculty to successfully compete for research funding from the federal government and other private sources. For fiscal year 2020, 14 Virginia Tech early career scientists and engineers were granted National Science Foundation Early Career Development Awards (CAREER) awards, totaling more than $4 million in research funding for a diverse range of projects. Talented early career faculty, supported by the university and the Commonwealth, can continued to facilitate the development of research platforms and enhance the foundation of the university’s overall research enterprise.

Human Resources Enhancements

In 2019, the Division of Human Resources began a comprehensive review process to improve communication and transactions with its internal and external stakeholders. This review process has led to the continued implementation of the following improvements and efficiencies:

* *Job Architecture Review* – The HR Division conducted a comprehensive review of job levels, titles, pay grades, and career paths. This development of a single job architecture framework will enable successful enterprise-wide talent engagement, consistent compensation practices, and increased accuracy in HR data reporting and strategic planning and forecasting. Ultimately, an effective job architecture will lead to increased retention and job satisfaction for the university’s talented workforce.
* *Streamlined Processes and Practices* – The HR Division continues to assess, validate, and improve its policies and procedures in alignment with university mission and vision, to clarify roles and responsibilities related to compliance, and to increase opportunities to shift to electronic workflows.
* *Technology Roadmap* – a cohesive plan to incorporate technologies consistently across campus and departments. As a result of this effort, the HR division is developing a new One-Stop Shop with enhanced functionality that will allow managers, supervisors, and employees to find answers and forms for all of their HR transactions.
* *Realignment* – to provide a more effective structure to complete work across the university, HR partners are being deployed to departments to assist with human capital decisions and the development of departmental systems and protocols. The HR partners also collaborate with the newly aligned HR Centers of Expertise designed around employee relations, total rewards, talent management, and policy and compliance.

The university’s human capital is its most vital resource. Continued implementation of these HR strategies is a university-funded initiative that will enhance the university’s ability to effectively steward Virginia Tech Talent and promote a diverse and inclusive workforce.

**4) Ensure Institutional Excellence**

Enhance Institutional Transformation and Effectiveness through Investments in Technology and Critical Support Services

While the university ranks well below most peers in terms of administrative spending per student, we continue to explore opportunities to reduce the cost of the administrative enterprise and enhance the effectiveness of support functions across campus. In April 2019, the university launched an administrative transformation initiative to more effectively align its financial and operation resources towards the achievement of the aspirational vision outlined in the university’s Advancing Beyond Boundaries strategic plan. This ambitious process began with the management consulting firm Deloitte initiating a comprehensive administrative and operations analysis, including a review of current work processes to identify opportunities for improvement. The results of the review led to the ongoing implementation of best practices to deliver services, the leveraging of technology to automate and simplify processes and reduce transaction times, the professionalization of workplaces, and the development and use of cost-effective and administrative-efficient operating principles. This initiative has bolstered the existing culture of continuous improvement, empowering employees to identify and adopt innovative approaches, systems, processes, and structures that will ensure administrative and operations work is aligned with the university’s strategic priorities. These processes are university-funded initiatives that are expected to reduce long-term costs and increase efficiencies, allowing resources to be recycled into a continuous improvement process.

Compliance

In addition to the efficiency initiative described above, the university will continue to allocate funding to ensure compliance with federal and state mandates, including obligations related to Title IX, the Americans with Disabilities Act, the Freedom of Information Act and online-security (OARC). Funding will be used to hire additional compliance officers and safety personnel, as well as enhancing accessibility both in the physical and virtual space. In addition, the university must provide resources for the phased implementation of the U.S. Department of Education’s Campus Cybersecurity Program advancing compliance with NIST800.171 Information Security Standards for Controlled Unclassified Information (CUI) to protect data used in the administration of federal student aid programs.

Strategies: Part 4 – General Fund Requests

Support Research in Frontier Areas

In partnership with the Commonwealth, Virginia Tech’s research enterprise has grown prominently compared to the most competitive Research Intensive (R1) universities in the United States over the past two decades. With total annual research expenditures of over $535 million from federal, state, private, and institutional sources, Virginia Tech currently ranks #48 nationally in the latest NSF Higher Education Research and Development (NSF HERD) survey. Sponsored research awards increased 15% in fiscal year 2020. As a leading comprehensive land-grant university, Virginia Tech has a diverse and balanced portfolio of competitively funded programs that align with its well-established strengths in engineering and technology, agriculture and life science, computational and data sciences together with its more recent growth in health sciences and technology. Virginia Tech’s portfolio includes programs that span from basic discovery-driven science to applied use-inspired research that often engages industry partners. This research has produced transformative advances in the health, well-being, safety and security of the citizens of the Commonwealth and beyond.

To advance promising areas of university research and position Virginia Tech to compete for a growing federal research allocation, direct state investment remains crucial for the strategic growth of research infrastructure and capacity as well as new partnerships with industry. The university envisions targeted opportunity for investment in the following research initiatives:

* National Security Institute – Bringing together faculty, programs, and resources from the Virginia Tech Applied Research Corporation, the Hume Center for National Security, and other related entities including the Innovation Campus, the envisioned National Security Institute (NSI) would serve both undergraduate and graduate students, including the university’s Corps of Cadets, providing research, internship, seminars and symposia, and other experiential learning opportunities within the security, defense, and intelligence communities. The NSI will also leverage growing demand for national defense related research and further catalyze the Commonwealth’s fertile start-up eco-system for defense-oriented companies and affiliates in commercial non-defense sectors, including cyber security of autonomous vehicles and remote sensing from small satellites. As a thematic research institute, the NSI will be funded primarily through federal research contracts and grants, particularly applied research grants. Additional investment will come from industry partners and individual philanthropists who support the NSI’s mission, vision, and research.
* Virginia Tech Transportation Institute – As one of the nation’s leading transportation research hubs, VTTI conducts pioneering research on roadway safety and the advancement of automated driving systems through its unique ability to conduct large-scale naturalistic driving studies. Currently, VTTI’s portfolio includes more than 300 active projects with over 100 partners in the public and private sectors. In fiscal year 2020, VTTI secured more than $50 million in externally sponsored awards, including two external awards totaling $15 million from the U.S. Department of Transportation Automated Driving Automated Driving System Demonstration. With General Assembly support, VTTI is collaborating with the City of Falls Church to develop a Smart City test bed to support autonomous vehicle, adaptive lighting, and parking garage utilization indicators. Utilizing several components of smart technology, these initiatives are designed to reduce pollution and traffic congestion and ultimately lead to improvements in public safety.
* [Center for Emerging, Zoonotic, and Arthropod-borne Pathogens](https://infectiousdisease.fralinlifesci.vt.edu/) – Housed within the Fralin Life Sciences Institute, the new Center for Emerging, Zoonotic, and Arthropod-borne Pathogens (Center) includes faculty from seven colleges and more than 25 departments on campus. The Center’s focus is on critical infectious disease issues impacting the region and state, including drinking water contamination in Appalachia, Lyme diseases, and microbe-related food safety. Consistent with the university’s land-grant mission, the Center will also educate graduate students to effectively communicate their research findings to policymakers and the general public.

As the risk assessment for the novel COVID-19 grew increasingly dire in the early spring of 2020, scientists at Virginia Tech were finalizing their vision for a new infectious disease center. The fortuitous planning efforts positioned the university to immediately contribute to critical global research on animal-to-human transmission and the development of effective countermeasures against the virus. Since its establishment in 2020, the Center has already produced a number of notable achievements.

* Working with colleagues across the state, Center virologists have [developed a promising candidate vaccine](https://vtx.vt.edu/articles/2021/03/03-22-21-Fralin-Life-Sci-Vet-Med-Meng-COVID-19-vaccine.html) that provides protection against the COVID-19 virus and other coronaviruses.
* During the early phases of the COVID-19 pandemic, Dr. Linsey Marr, an affiliated faculty member of the Center, used her extensive expertise on the spread of pathogens through aerosols to [upend the initial scientific consensus](https://www.wired.com/story/the-teeny-tiny-scientific-screwup-that-helped-covid-kill/) that the virus spread through droplets, prompting a change in World Health Organization and Center for Disease Control guidance on transmission.
* Quantum Research – Virginia Tech continues to push boundaries in quantum research with an extensive and diverse portfolio in quantum sciences and engineering and cross-cutting strengths in related disciplines and applications including computational chemistry, nanoelectronics, cryptography, neural networks, and communications across the depths of space. As the leader of the Commonwealth Cyber Initiative (CCI) Hub and its Southwest Virginia node, Virginia Tech oversees groundbreaking research in quantum sciences and its interface with security, autonomous systems, and data. In addition to its role in advancing quantum research through CCI, Virginia Tech is pursuing groundbreaking quantum research and discovery through the following:
	+ Virginia Tech Quantum Collaboratory is developing a strategic plan to advance the growth and health of quantum research and education with an emphasis on faculty collaboration, degree development in quantum disciplines, and building a pipeline for the an emerging quantum workforce.
	+ The Hume Center’s quantum workforce initiative is focused on the development of the next generation of computer scientists, physicists, and engineers to study the impacts of quantum computing on national security.
	+ Virginia Tech is a contributing member of The Quantum Economic Consortium, a diverse consortium of industry, academic, and other stakeholders working to grow the quantum industry in the United States.
	+ Students and faculty in quantum disciplines also partner with Virginia Tech’s Link: Center for Advancing Partnerships to expand and strengthen connections with industry partners across the Commonwealth to fill workforce needs, solve development challenges, promote innovation, and develop breakthrough technologies.

Continued leadership in quantum research and the development of quantum technologies remains a priority for Virginia Tech and of strategic importance for economic growth and national security.

* Fralin Biomedical Research Institute (FBRI) - During the initial stages of the COVID-19 outbreak, the dedicated team of scientists and researchers at the Virginia Tech Molecular Diagnostics Laboratory at the Fralin Biomedical Research moved quickly to repurpose laboratory space and navigate regulatory hurdles in the development of a reliable PCR-based testing process that would meet FDA certification. Earlier this year, the lab processed its 100,000th COVID-19 sample, an impressive milestone that has helped regional health departments trace and contain transmission of the virus. As one of only three certified OneLab Network Tier 2 Laboratories in the Commonwealth, FBRI’s ability to process thousands of tests per week provided confidence not only to the university, but also to K-12 schools, businesses, and assisted living facilities that the virus could be monitored and isolated. As the threat of COVID-19 pandemic recedes, the Molecular Diagnostics Lab will continue critical interdisciplinary research and education on the long-term impacts of COVID-19 and the prevention of other infectious disease.

In addition to their critical work on COVID-19, scientists at the FBRI continue to conduct groundbreaking research on brain function and brain disorders. Scientists recently received a $2.4 million grant from the National Institute of Biomedical Imaging and Bioengineering to conduct research on the rich complexity of the brain’s submagnetic signals. This cutting edge project will advance discovery on decision-making, social interactions, addition, mother-baby interactions, and neuromoter rehabilitation. Currently, the FBRI has 33 core lab teams, exploring biomaterials, body device interfaces, brain research, cancer, cardiovascular science, infectious diseases and immunity, metabolism and obesity, addiction recovery, and children's health. As its research portfolio continues to expand, significant growth in the Roanoke region’s health sciences start-up eco-system and accompanying service providers has followed, attracting both angel and institutional investment. This environment, conducive for basic research and commercialization, led to the recent emergence of five research and drug-delivery start-ups.

Provide Additional General Fund to Moderate In-State Undergraduate Tuition (From 4.9% to 2.9%)

In order to support inflationary costs and make modest progress towards university initiatives, a 4.9% annual increase to in-state undergraduate tuition and fees is assumed in this plan. This strategy will ensure that the university does not lose overall purchasing power, and provides incremental resources available to support shared state and university goals such as faculty and staff compensation. In order to hold in-state tuition and fees to inflationary levels and continue to make progress towards these goals, incremental state support is requested to fund the difference. For the purposes of this request, inflation is assumed to be 2.9%, resulting in a request for state support of the equivalent of 2% of in-state undergraduate tuition and fees.

Increase Student Financial Aid Support for Need-Based Virginia Undergraduates

The primary goal of investment in student financial aid is to reduce the net price for Virginians in the first through third income quintiles, ensuring that financial obstacles are mitigated for low- and middle-income students. Additional General Fund support of student financial aid will allow the university to make a greater impact on student access and affordability, reducing financial barriers and improving social and economic mobility for all Virginians.

Equalize Support for Unique Military Activities

Virginia Tech’s Corps of Cadets is one of six Senior Military Colleges in the United States, established by law, and one of only two within a public tier-one research university.  The mission of the Corps, established in 1872, is to develop leaders of character for the Commonwealth and the country. The Corps’ ability to fulfill its mission is predicated on an equitable population-based level of support as other military programs in the commonwealth.  As compared to VMI, Virginia Tech’s Corps has a current shortfall of $1,156,105 GF. Addressing this shortfall over three years results in an annual incremental General Fund increase of $385,368 per year. This critical request allows the Corps to address mandatory cost increases and make critical programmatic enhancements to ensure mission success.

**Section C. In-state Undergraduate Tuition and Fee Increase Plans:** Provide information about the assumptions used to develop tuition and fee information the institution provided in the Excel workbook Part 1. **The tuition and fee charges for in-state undergraduate students should reflect the institution’s estimate of reasonable and necessary charges to students based on the institution’s mission, market capacity and other factors.**

**RESPONSE:**

Providing an affordable education and predictable pricing for Virginia’s families is a fundamental component of Virginia Tech’s land grant mission. Of the Commonwealth’s 15 public four-year institutions, Virginia Tech’s total cost for in-state undergraduates ranks 10th. Virginia Tech held in-state undergraduate tuition and fee increases to no more than 2.9 percent since 2016-17, including freezes of tuition in 2019-20 and 2020-21.

As detailed on schedule 1 of the attached Six-Year Plan, the university is instructed to project future in-state tuition and fee increases assuming no new General Fund. Based on the university’s financial needs including inflationary cost increases, continued progress towards established faculty compensation goals, and the implementation of academic initiatives that will enhance the availability and quality of a Virginia Tech education, the university can reasonably expect in-state tuition and fees to increase at an annual pace of inflation plus one to two percent (an estimate of 4.9 percent is used for planning purposes). This allows the university to address fixed and inflationary costs and make modest progress on strategic initiatives and quality enhancement. Due to the university’s consistently below average tuition for Virginia residents and the statewide trend of increases, an annual increase of 4.9 percent should maintain the university’s position as a substantial value for Virginia residents.

**Section D. Tuition and Other Nongeneral Fund (NGF) Revenue:** Provide information about factors that went into the calculations of projected revenue, including how stimulus funds may mitigate tuition increases.

**RESPONSE:**

Nonresident undergraduates are not subsidized by the Commonwealth; therefore, ultimate decisions will be guided by market competition and enrollment demand. As they must cover the cost of their education, an inflationary increase of 2.9% has been used as a placeholder for planning purposes. The same 2.9% placeholder is used for graduate tuition. Federal stimulus support is one-time, and is therefore not a replacement for base revenue or tuition increases.

**Section E. Other Budget Items:** This section includes any other budget items for which the institution wishes to provide detail. Descriptions of each of these items should be one-half page or less.

**RESPONSE:**

**Other Budget Items:**

Advance Faculty Salary Competitiveness

Although compensation is only one factor that contributes to the university’s ability to attract and retain the best faculty, it remains the predominant consideration, particularly as Virginia Tech seeks to be a destination for talent. While the recently enacted 5.0% statewide compensation process should improve the university’s relative position relative to our peer institutions, a sustained annual merit program is required for Virginia Tech to achieve the state’s shared goal of reaching competitive compensation of peer institutions. The latest data shows that the university’s actual faculty salary currently ranks at the 30th percentile. The university plans to make limited progress with nongeneral funds alone, and partner with the Commonwealth when statewide programs are implemented.

Increase Staff Salaries

As the post-pandemic economic recovery continues, the pace of hiring in the local labor market continues to increase. Competitively compensating the hard-working support staff at the university is a key factor in ensuring a highly productive and innovative organization. The university implemented the state’s 5% statewide compensation process in 2021, which will help ensure competitive staff compensation. Sustained annual merit processes will support a multi-year strategy to position the university at the median of the competitive market, enabling the university to compete for talented staff that support continued university excellence.

Library Inflation

Addressing the rising costs of journals and other library materials is central to maintaining and enhancing the value of the university’s library collection to both students and researchers. Additional investment is needed to offset the increasing costs of subscription based resources and information platforms, ensuring continued access to information on cutting-edge research across a variety of subject areas. The university’s expanding research programs require access to new resources, journals and other databases outside the current collection. These costs will be managed by the university.

Utility Cost Increases

Rising costs of utility service must be addressed to maintain consistent delivery of institutional services. This is a university-funded initiative.

**Section F. Enrollment Projections:** Include in this section information about how your institution developed its enrollment projections, whether your institution is concerned about future enrollment trends, and, if so, what planning is underway to address this concern. How have enrollment plans been impacted by the pandemic? For example, does your institution plan on enrolling more online students?

**RESPONSE:**

Development of Enrollment Projections

Enrollment projections at Virginia Tech consist of two primary components: predicting continuing student enrollment and estimating new student yield. Continuing student enrollment is forecasted based on the current student body composition and the persistence and matriculation patterns of recent cohorts. The model parameters are estimated via longitudinal tracking of individual students over time and summarizing the data by cohort, tuition status, student type, and student level. This permits an analysis of sufficient granularity for informing high level institutional management strategies.

New undergraduate student and transfer enrollments are estimated after continuing student models are completed and are adjusted to support the university’s goal of 30,000 undergraduate students. The number of offers required to achieve the desired yield is determined via predictive models trained with historical data. Similarly, new graduate student enrollments are forecasted in alignment with strategic plan initiatives. Namely, the goals to increase total graduate student enrollment to 7,900 by 2024 and meet obligations for the Tech Talent Investment Program.

Impact of Pandemic and Future Planning

Virginia Tech experienced a dramatic increase in the number of undergraduate applications received for the fall of 2021 due to enhanced recruitment and marketing efforts and the adoption of an additional admission application platform. There is no immediate concern about future enrollment trends in regards to volume. The most notable enrollment challenge during the pandemic has been the recruitment of students with demonstrated financial need and out-of-state and international students. Decreases in yield for these student types required broad adaptive strategies, especially in terms of fiscal management. As we move out of the pandemic, plans have been modified and are aimed at recovering enrollments of those student types. Generally speaking, the university does not intend to use online students to augment undergraduate enrollment. However, online and hybrid programming may play a key role in increasing graduate student enrollment, particularly professionally-oriented masters programs.

**Section G. Programs and Instructional Sites:** Provide information on any new academic programs, including credentials and certificates, new instructional sites, new schools, or mergers supported by all types of funding, that the institutions will be undertaking during the six-year period. Note that as part of the revised SCHEV program approval process, institutions will be asked to indicate if a proposed new program was included in its six-year plan. Also, provide information on plans to discontinue any programs.

**RESPONSE:**

Virginia Tech will continue to provide innovative academic programming at the undergraduate and graduate levels. Undergraduate planning includes programming in the fields of behavior decision science and plant science (program merger). Graduate program planning includes the fields of data science, environmental security, neuroscience, global sustainability, human-centered technology design, and water resources science. Graduate certificate programming plans include fields such as macromolecular science and engineering, mechanical engineering, geo-energy, religion, and disaster resilience. The institution plans to discontinue academic programming in the fields of biomedical technology design, career and technical education, and educational research. Additionally, stand-alone undergraduate academic programming in horticulture and crop and soil environmental science will be discontinued as part of the aforementioned program merger. New schools are under development in the areas of environmental security and in animal science. Virginia Tech also continues to engage in plans to establish the Innovation Campus as a new instructional and research site in northern Virginia.

**Section H. Financial Aid:** Discuss plans for providing financial aid, not including stimulus funds, to help mitigate the impact of tuition and fee increases on low-income and middle-income students and their families, including the projected mix of grants and loans. Virginia’s definitions of low-income and middle-income are based on HHS Poverty Guidelines. A table that outlines the HHS guidelines and the definitions is attached.

**RESPONSE:**

Virginia Tech’s student financial aid programs are designed to support student access, enrollment, retention and graduation goals. The university provides access to low and middle income students with demonstrated financial need through multiple funding sources, including the use of unfunded scholarships as prescribed in §23.1-612 of the Code of Virginia, and as required by the university’s management agreement.

A key innovation in meeting this need is the university’s Funds for the Future program, which ensures a predictable tuition rate for returning students. Starting with the incoming class of 2005, the university has protected continuing students with financial need from tuition and fee increases with the Funds for the Future program. The program provides tuition increase protection for families with adjusted gross incomes to $100,000, capturing both low and middle-income students with need.

Additionally, the Virginia Tech Grant has been retooled to better support low and middle-income students with the greatest financial need. The university also supports other, smaller programs that assist low and middle-income students. The university’s Virginia resident graduates continue to track lower than their national peers in the percentage who take out student loans and their average debt at graduation. And, as an indicator of debt moderation and employment success of Virginia Tech graduates, the university’s 3-year Cohort Default Rate is 1.6%; the third lowest of all Virginia public four-year institutions and the fifth lowest of the university’s national SCHEV peer group.

This six-year plan includes strategies to increase the need-based financial aid for Virginia undergraduates, with the goal of reducing student indebtedness and expanding access and affordability. Making progress towards this goal will require incremental resources from a variety of sources. State support for student financial aid has been extremely helpful in supporting access and affordability for Virginia residents, and the university plans to continue to support the goal of reducing the net price for Virginia residents in the first through third income quintiles.

**Section I. Capital Outlay: Discuss the impact, if any, that the pandemic has had on capital planning, such as decreasing the need for space or other aspects. Provide information on your institution’s main Education and General Programs capital outlay projects, including new construction as well as renovations that might be proposed over the Six-Year Plan period that could have a significant impact on strategies, funding, student charges, or current square footage. Do not include projects for which construction (not planning) funding has been appropriated. Special Note: The requested information is for discussion purposes only and inclusion of this information in the plans does not signify approval of the projects.**

**RESPONSE:**

Like other institutions across the Commonwealth and the nation, Virginia Tech responded to the COVID-19 pandemic by temporarily shifting nearly all instruction and administrative functions to remote learning and work. While students, faculty, and staff adapted to and tolerated this unprecedented change, the pandemic related restrictions imposed severe compromises to learning experiences which were especially impactful for science, engineering, and other disciplines that are laboratory intensive. There are examples of academic programs that could meet expectations with a high amount of remote instruction. However, overall and for the vast majority of programs at Virginia Tech, students and faculty are not satisfied with a large portion of instruction in a remote environment. Thus, Virginia Tech’s plans call for a return to in person instruction and the use of facilities to support instruction. The university gained valuable experience and learned new ways to augment instruction with remote learning techniques. These will be woven into the instructional methods, technology infrastructure, and building designs that support the instruction program.

In recognition of the COVID-19 experience and the university’s growing engineering and science programs, the university’s top priority capital outlay plans call for a replacement and expansion of a major engineering building, Randolph Hall, and the renovation and expansion of a major chemistry and physics building, Hahn Hall, are more important than ever. A brief description of each project is listed below.

The university’s top priority request is to replace the largest, and one of the oldest, engineering buildings, Randolph Hall, with a new and expanded facility containing high quality academic and research space appropriate to the needs of the students and faculty. The proposed replacement building will house five major departments including Computer Science, Aerospace and Ocean Engineering, Chemical Engineering, Mechanical Engineering, and Engineering Education. These five departments in the college serve more than 6,106 undergraduate majors and 951 graduate students and award more than 1,200 degrees each year. The 168 tenure-track faculty who teach and perform research in these departments oversee sponsored research programs that account for $79 million in annual research expenditures. The project will also provide additional space for student team research projects, including team-based research and development competitions draw national attention to the Commonwealth’s leadership in science, technology, engineering, and math education.

The university’s second priority request includes a renovation and expansion of chemistry facilities and physics facilities. Virginia Tech leads the state in STEM-H degree production with over 5,550 degrees awarded annually. This represents 58 percent of Virginia Tech’s total degree production and 26 percent of the statewide STEM-H degree production in public universities. In addition to the Engineering Department, the Chemistry and Physics Departments contribute heavily to this. This project will help prepare Virginians for a knowledge-based economy by providing STEM-H instructional excellence, accomplished through cost efficient operation and technological and pedagogical innovation. These departments also promote university-based research that produces outside investment in the Commonwealth. In the 2019 fiscal year, the Chemistry Department had approximately $12 million in extramural research expenditures. The Physics Department’s sponsored research activity has grown to $6.4 million annually as of 2020. Hahn Hall South, constructed in 1988, is a heavily used chemistry laboratory whose program exceeds the capabilities of the existing infrastructure; and Robeson Hall, constructed in 1960 as the flagship building for the Physics Department, no longer accommodates the demand for physics instruction. This project will bring the Chemistry department and Physics department up to contemporary standards, provide sufficient research and instructional space, promote additional university-based research and outside investment in the Commonwealth, and provide additional opportunities for the College of Science.

To continue producing successful graduates and meet the expectations of students and faculty for an education from Virginia Tech, the university requires improved and expanded spaces to support in-person and hands-on learning of certain skills, techniques, and topics. The pandemic has emphasized the need for these spaces and strengthen the university’s priority to advance these capital projects. In accordance with the state’s traditional capital budget processes, the university anticipates submitting these projects as part of the 2022–2028 Capital Outlay Plan later this summer.

**Section J. Restructuring:** Provide information about any plans your institution has to seek an increased level of authority, relief from administrative or operational requirements, or renegotiation of existing management agreements.

**RESPONSE:**

In the sixteen years since the General Assembly passed the Restructured Higher Education Financial and Administrative Operations Act of 2005, Virginia Tech has experienced significant benefits through its ability to locally manage university processes and resources, which translate into benefits for the Commonwealth. Particularly in a period of constrained resources and growing fixed costs, the flexibility provided through Restructuring has allowed the university to make progress in important strategic areas. The benefits of the Restructuring Act permeate the operating culture of the university and facilitate decision-making at the ground level where the university can deploy efficient and specialized solutions to meet our management needs. More recently, enhanced flexibility on the fixed enrollment cap of non-resident undergraduates will allow the university to strengthen revenues and continue momentum on the implementation of innovative academic programs and the development of human capital to meet evolving market demand.

Ensuring the continuation of existing tenets of the Restructuring partnership, as well as opportunities for enhancements, can further bolster the operational environment and lead to greater outcomes for the Commonwealth and institutions. These include:

* Retention of E&G interest earnings: existing benefit, yet elimination of the escrow requirement can ensure that university resources can be reliably budgeted and reduce pressure on other nongeneral fund sources (i.e. tuition).
* Talent recruitment and retention: university management of compensation and benefit programs for faculty and university staff (existing benefit, occasionally limited by state compensation restrictions).
* Resource planning: Assurance that nongeneral fund balances (e.g. rate savings) will remain with Virginia Tech.
* Additional Procurement Authority: Reconsider daily eVA transactional posting, moving to an annual fee if necessary. Ability to implement and maintain university small purchase and travel Pcard program.
* Equipment Trust Fund: conduct a review of the ETF process to streamline, expedite, and loosen restrictions. This could include moving to a post-audit rather than pre-approval process, among other potential enhancements.
* Tuition and Fee Authority: Ensure Board of Visitors authority over tuition and fee decisions. Simplify the calculation of athletic fee compliance by eliminating annual increase calculation, avoiding unintended consequences of annual volatility in athletic revenue.
* Increased Flexibility over Academic Program Approval: Increased flexibility regarding academic program approval is especially critical in rapidly developing research and industry domains such as computer and data science and biomedical research. The current program approval process can be cumbersome, and in some cases, the process is derailed for seemingly minor details. Our faculty are committed to delivering academic programs that meet the needs of students and employers, and any delay in the offering of these programs risks losing Virginia’s competitive advantage in recruiting talented students and faculty as well as industry investment. To position the program approval process to more effectively meet the needs of future students, representation from SCHEV can collaborate with IPCA to work towards a mutual consensus on principles of redesign of a more responsive academic program approval process. This is an opportune time to redesign the program approval as we reconsider how higher education operates on the other side of the pandemic.

**Section K. Evaluation of Previous Six-Year Plan:** Briefly summarize progress made in strategies identified in your institution’s previous six-year plan. Note how additional general fund support and reallocations were used to further the strategies.

**RESPONSE:**

Disrupted by the pandemic, the university’s progress towards many of the goals enumerated in the 2019 six-year plan was impacted. Yet with the Commonwealth’s continued support, including the avoidance of budget reductions and the incremental support for pandemic-related costs, the university was able to make positive contributions towards several major initiatives outlined in our previous Six-Year Plan. A fundamental goal of the 2019 six-year plan was expanding affordability and access to Virginia undergraduate students, and to that end the university was able to freeze tuition and E&G fees in both 2019-20 and 2020-21. This was possible with the support of the Commonwealth and sustained enrollment demand. Enhanced flexibility to manage out-of-state enrollment, granted by the 2020 General Assembly, has also contributed to the university’s ability to address costs while mitigating in-state tuition increases. Additional General Fund investment for undergraduate student financial aid was leveraged with increased institutional support to expand access to low- and middle-income Virginia students. In addition, the state’s 2021-22 support for faculty and staff salary increases allowed the university to take steps towards addressing a top priority of retaining and attracting a talented workforce.

Other significant progress includes:

* Enrollment Growth and Access
	+ In fall 2020, total enrollment included a record 21,441 Virginia undergraduates; an increase of 6,197 students over the university’s pre-Restructuring level of fall 2004.
	+ Demand for a Virginia Tech education continues to grow. Applications exceeded 40,000 this year; more than double those received for fall 2014.
	+ For fall 2020, underrepresented and underserved students, including low income, first-generation, veteran and underrepresented minority students, comprised 39% of the entering class; The overall percentage of underrepresented minority students in the entering class increased from 15% in fall 2019 to 19% in fall 2020.
* Research
	+ Estimated total FY20 research expenditures totaled $555 million with $340 million coming from external sources, a more than 6% increase over the prior year; Sponsored projects awards increased by 15%.
	+ Progress continued for the Virginia Tech Commonwealth Cyber Initiative with $85 million in active research grants in cyber related areas; Researchers are building an AI and 5G testbed that will support advanced research and development in the cyber realm.
	+ Virginia Tech’s Link+License+Launch, a team of scientists, engineers, business developers, consultants, entrepreneurs, intellectual property attorneys, and technology transfer professions, executed more than 30 licenses in 2020, including several faculty-led startups.
	+ Notable examples of translational research include:
		- Drucker Film Technologies – surface coating that inactivates viruses, including COVID-19.
		- Dive Technologies – with faculty and students in Electrical and Computer Engineering, developed autonomous underwater vehicles.
		- Mayfair Group – working with Computer Science, developed an AI platform to analyze legal trends and risks.
	+ Fralin Biomedical Research Institute (FBRI)
		- FRBI scientists joined a collaborative team at the Children’s National Research and Innovation Center in the fight to stop pediatric cancer;
		- In 2020, the Fralin Institute opened its new 139,000 sq. ft. research facility in Roanoke;
		- Currently, there are 33 faculty research teams at FBRI with 100 active grants totaling over $120 million.
* Academic Initiatives
	+ Recognized by industry for its impact across several research areas, Virginia Tech’s College of Engineering recorded three top 10 placements and eight total placements in the top 20 in the 2021 U.S. News and World Report’s graduate program rankings.
	+ The university continues to develop and implement an education model which seeks to integrate disciplinary concepts and skills with interdisciplinary capacities though embedded experiential learning opportunities. Matching appropriate experiential learning opportunities to Virginia’s Tech diverse disciplines requires careful design. Opportunities include:
		- Undergraduate Research – courses and outside experiences connect key course concepts and questions to systematic investigation and research.
		- Internships – provides students with direct experience in a professional setting.
		- Study Abroad – provides educational opportunities abroad including field research, internship programs, and study overseas.
		- Service Learning – designs experiences that position the student to perform a sustained task in the community and reflect on their contribution and impact.

**Section L. Diversity, Equity and Inclusion (DEI) Strategic Plan:** Provide an update on the completion status of your institution’s plan that is being coordinated with the Governor’s Director of Diversity, Equity and Inclusion. If a copy of the plan is available, please include it when your institution submits its initial plan. If a copy of the plan is not available for July 1 or if changes are made, please provide a copy with your institution’s final plan submission on October 1.

**RESPONSE:**

Diversity, inclusion, and equity are central to Virginia Tech’s strategic plan, The Virginia Tech Difference: Advancing Beyond Boundaries. Developed in collaboration with the Virginia Tech community, the strategic plan guides steps toward achieving our Beyond Boundaries (https://beyondboundaries.vt.edu/) vision and actualizing InclusiveVT – the institutional and individual commitment to Ut Prosim (That I May Serve) in the spirit of community, diversity, and excellence. The strategic plan at Virginia Tech incorporates and embeds diversity, equity, and inclusion goals and aspirations as an integral part of the institution’s vision. It reflects a holistic approach and integration.

An overview of Virginia Tech’s ONE Virginia Strategic DEI Plan is attached to this submission.

**Section M. Economic Development Annual Report:** Provide a copy of any report your institution has produced about its economic development contributions.

**RESPONSE:**

The ongoing work of implementing Virginia Tech’s [Beyond Boundaries](https://beyondboundaries.vt.edu/) vision has shaped important institutional contributions over the last year that are stimulating economic development across the commonwealth. Key goals and themes connecting these efforts include:

Increasing Virginia Tech’s regional, national, and global ***Impact***.

Elevating the ***Ut Prosim Difference*** by addressing the current interconnected crises in public health, social equity, and economic vitality, along with longer-term post-COVID restructuring and building more resilient systems.

Bringing a uniquely ***Transdisciplinary***, high-impact approach to engagement, discovery, and learning.

Building on the university’s unique position to respond to the state’s challenging ***Urban-Rural Divide***.

A sampling of projects and initiatives advancing the vision include university-led, public-private partnerships in community development and real estate; research activities with direct relevance to key state industries; and high impact programs designed to meet the needs of local families, community partners, and business.

**Innovation Campus**

Virginia Tech continues work on the [Innovation Campus](https://vt.edu/innovationcampus/index.html), focusing on graduate education in computer science and computer engineering, in partnership with the Commonwealth of Virginia and the private sector. Located near Amazon’s HQ2 in Northern Virginia, the Innovation Campus is already bringing industry, government, and academia together to develop a dynamic approach to project-based learning and research that will shape the region and the state’s future innovation economy.

The first Innovation Campus Class, about 75 students, started in the fall of 2020. Classes were online because of the COVID-19 pandemic. Virginia Tech recently opened its Innovation Campus HQ adjacent to the future Innovation Campus location. This space houses the campus executive offices and features a café-style area where student workgroups, seminars, and community engagement will take place after the pandemic.

Also, this year Boeing has been named as the first foundational partner of the Virginia Tech Innovation Campus in Alexandria, Virginia. A $50 million, multiyear commitment from the company will help jump-start Virginia Tech’s effort to create the most diverse graduate technology campus in the United States. Boeing’s commitment will provide student scholarships, foster the recruitment of world-class faculty and researchers, and fund STEM pathway programs for underserved K-12 students looking to pursue a college degree and enter high-tech career sectors.

The Innovation Campus will eventually make its home on 3.5 acres in the first phase of a new mixed-use development and innovation district JBG Smith is developing near the future Potomac Yard Metrorail Station. Construction of the first academic building, an 11-story, 300,000 square-foot structure, is on track to start this summer and open to students in 2024. Plans call for two additional buildings, each about 150,000 square feet, as the campus grows. At its full build-out, the Innovation Campus will host approximately 750 master’s and 200 doctoral students and graduate 550 master’s and 50 doctoral candidates annually.

**Smart Farm Innovation Network™**

Virginia Tech launched a community-based agricultural research network throughout Virginia. [The Smart Farm Innovation Network™](https://caia.cals.vt.edu/smartfarm.html) connects Virginia Tech’s interdisciplinary researchers and Virginia Cooperative Extension specialists and agents to producers and the commercial sector to develop and deploy a wide array of innovative technologies that will increase overall efficiency, resilience, and sustainability of agricultural and natural resources production systems.

The network is made up of about 120 interconnected locations — the Blacksburg campus, 11 Agricultural Research and Extension Centers (AREC), and 108 Virginia Cooperative Extension local unit offices. The network leverages the university’s existing infrastructure to capitalize on its proximity to agricultural and natural resources industries around the commonwealth and on the state’s soil, climate, and geographic diversity.

The Controlled Environment Agriculture Innovation Center (CEA-IC) is one of the key nodes on the network. The center is a newly established joint initiative between Virginia Tech School of Plant and Environmental Sciences, Virginia Seafood AREC, and the Institute for Advanced Learning and Research, in Danville, Virginia. This testbed attracts domestic and international partnership industries, including controlled environment agriculture and aquaculture producers, energy, materials, cyber-biosecurity, and others. CEA-IC is working with multiple private partners including hydroponic greenhouse startup Sunny Farms -- which just announced plans to build a 1.2 million square foot greenhouse in Virginia Beach, among the largest on the East Coast -- and AeroFarms, which is located in Pittsylvania County and is building a $53 million indoor vertical farm.

**Responding to COVID and related crises**

All parts of the university worked hard to come to terms with the health, social, and economic crises of the last year. Pivoting to share the intellectual capital of the university with community partners, including research and testing equipment, faculty expertise, and student talent, was an important part of Virginia Tech’s contribution to the commonwealth’s effort to find a pathway to economic recovery.

[The Molecular Diagnostics Lab at the Fralin Biomedical Research Institute at VTC](https://fbri.vtc.vt.edu/research/research-centers/molecular-diagnostics-lab.html) worked to improve COVID-19 testing efficiency and effectiveness. They made it possible for Virginia Tech to detect and trace COVID infections early in the pandemic, providing a reliable testing resource that made it possible to continue university operations and keep our campus and community safe. Their COVID-19 lab analysis, in collaboration with Schiffert Health Center, analyzed over 100,000 tests, 40 percent of which were completed for local health districts outside of the university community. This played an important role in reopening the regional economy, garnering support from GO Virginia, a state economic development program, among others.

[The Big Event at Virginia Tech](https://vtbigevent.org/), a student run service program, teamed up with Downtown Blacksburg, Inc. [to support local businesses](https://www.wdbj7.com/2021/04/07/downtown-blacksburg-inc-and-the-big-event-team-up-to-help-local-business-and-students/). Students are matched with companies for mini-internships, providing technical assistance with marketing, e-commerce, and other areas where small business needed help pivoting to the challenges created by the crisis.

[Virginia Tech’s Center for Economic and Community Engagement](https://cece.vt.edu/) received support from the US Economic Development Administration through the CARES Act. These funds are used to assist Virginia communities with economic recovery planning. The Center for Economic and Community Engagement’s researchers have worked in places ranging from Wytheville and Blacksburg to Roanoke County and Newport News, assisting communities that were changed by the pandemic in building new visions and opportunities. Some of the economic recovery work includes exploring technology-focused opportunities in the Hampton Roads region’s robotics sector and conducting strategic planning for two regional economic development organizations in far Southwest Virginia — the Virginia Coalfields Economic Development Authority and Virginia Industrial Advancement Alliance.