Part II:

A. Institutional Mission:

Virginia Polytechnic Institute and State University (Virginia Tech) is a public land-grant university serving the Commonwealth of Virginia, the nation, and the world community. The discovery and dissemination of new knowledge are central to its mission. Through its focus on teaching and learning, research and discovery, and outreach and engagement, the university creates, conveys, and applies knowledge to expand personal growth and opportunity, advance social and community development, foster economic competitiveness, and improve the quality of life.

B. Strategies
208 Program Strategies:

1. **Advance Faculty Salary Competitiveness to the 60th Percentile:** Virginia Tech is regularly ranked among the best institutions in the world. We owe this success to our outstanding faculty who are committed to excellence in education, research, and outreach. We know that the highest quality employees in our organization are constantly being sought out by peer institutions, industry, and research centers around the world. Attracting and retaining the caliber of faculty needed to maintain and improve upon our successes is becoming increasingly difficult. While compensation is only one factor that contributes to the university's ability to attract and retain the best faculty, it is a major consideration. In addition, the replacement of faculty is far more expensive than the cost to retain those persons for whom the university has already invested significant time and resources. Competition for faculty across top-tier institutions is accelerating, creating an environment in which faculty are rewarded for mobility in addition to performance. The university's actual faculty salary currently ranks at the 35th percentile of the SCHEV peer group for Virginia Tech: 18th of 26 institutions in terms of salary competitiveness. Maintaining an annual merit process that rewards our top faculty for their efforts is fundamental to keeping up with the market and mitigating turnover. In the absence of a statewide compensation process, the university will make limited progress with nongeneral fund revenue alone.

2. **Increase Staff Salaries:** Much like faculty, the slow pace of growth of staff compensation has negatively impacted retention and recruitment efforts at the university. The need to competitively compensate the hard-working support staff at the university is a key factor in ensuring a highly productive and innovative organization.

3. **Address Operation and Maintenance of New Facilities:** With new facilities coming on-line during the planning period, including the university's new Classroom Building, operation and maintenance support is a primary cost driver in the future budget. Facilities must be open year-round in order for the university to deliver its mission of providing programming for the citizens of the Commonwealth. Addressing operation and maintenance of facilities will ensure the maximum facility service life and the prevention of building deficiencies.

4. **Increase Access for Virginia Undergraduates and Support the Production of STEM-H Degrees in the Commonwealth:** The university has grown enrollment of resident undergraduates by 2,935 students since 2004. Despite this growth, demand continues to outpace the university's ability to provide access to highly qualified Virginia students. A record of almost 25,300 students applied to be in the university's fall 2016 class. Demand is broad-based and impacts every college on campus. New and growing STEM-H degree offerings such as neuroscience, computational modeling and data analytics provide an opportunity to leverage the university's expertise to provide students with high-demand skills and knowledge to be successful in the economy of the future. By partnering with the Commonwealth, the university can expand resident undergraduate enrollment to qualified students from all corners of the Commonwealth and ensure a high-quality education for our residents.

5. **Enhance Economic Development in the Commonwealth through Investment in Market-Centered Instruction and Research Clusters (Destination Areas):** The university will invest in world-leading instruction and research clusters that are focused on addressing complex (regional, national and global) problems that intersect with Virginia Tech's core strengths, while engaging industry, supporting faculty, and preparing our students to be the next generation of leaders and doers. Current planning for these clusters include foci in the adaptive brain and behavior across the lifespan, intelligent infrastructure for human-centered communities, global systems science, data and decision sciences, and integrated security. The university will grow high-demand degree attainment, research, and other economic development opportunities through investment in these areas. This is the core of our effort to advance Virginia Tech as a contemporary land-grant university.

6. **Advance Entrepreneurial and Innovation Ecosystem:** Virginia Tech is the Commonwealth's largest research institution and brings significant research, economic development, and innovation into Virginia's economy. Virginia Tech, as the 39th largest research program in the United States, is advancing transdisciplinary knowledge in areas such as neuroscience, water, energy, cybersecurity, autonomous transportation, resiliency and nanoscience. With the continued support of the Commonwealth, research and innovation activities will increase with national and international recognition of the state as the place to partner with industry. State support is critical to advance discovery and economic development opportunities across the Commonwealth.

7. **Support Faculty Startup Packages, Particularly for New Faculty in the STEM-H Fields, Including Equipment and Lab Renovation:** Establishing and setting up a research facility or lab for a newly hired faculty member can cost millions of dollars. However, this is a necessary cost as advanced facilities and equipment are essential for faculty to successfully compete for research funding from the federal government and other private sources. The university must be able to provide start-up packages to faculty

to support equipment and infrastructure purchases that position them to successfully operate their instructional and research responsibilities, or risk not being competitive with offers from institutions in other states.

8. **Expand K-12 Pipeline Opportunities for Underserved Virginia Residents to Access a Virginia Tech Education:** Virginia Tech, the commonwealth's premier STEM-H institution, is committed to supporting the Statewide Strategic Plan for Higher Education. In order to increase access and affordability for all Virginian's, while also optimizing student success for work and life, the university will expand upon existing, successful outreach programs to provide a comprehensive K-12 Pipeline program that offers educational opportunities to more students than ever before. The newly developed targeted K-12 Pipeline initiative is a two pronged approach that will 1) enhance outreach to underserved Virginians while students are in the K-12 system and 2) expand student financial aid to increase access to Virginia Tech.

9. **Ensure Access for Low and Middle-Income Families by Continuing to Expand Need-based Financial Aid to Undergraduate Students:** Virginia Tech in its land grand mission is very sensitive to student access to higher education, including student cost and borrowing levels. The university's Funds for the Future financial aid program protects returning students with financial need from tuition rate increases. This and other need-based financial aid programs are intended to work in concert with increases in state support for student financial aid. A primary goal of new investments in student financial aid is the reduction of net price for Virginians in the first through third income quintiles. Additional state funding for student financial aid can help address financial access for low- and middle-income students and continue to ensure Virginians at all socio-economic levels can access a Virginia Tech education.

10. **Support Timely Degree Completion Through Enhanced Student Advising, Year-Round Academic Programs, and Instructional Resource Sharing Opportunities:** The Joint Legislative Audit and Review Committee found that Virginia Tech has one of the highest graduation rates in the state and has successfully reduced the average time to degree from 4.22 to 4.09 years since 2007. Continuing this trend can expand the university's ability to enroll Virginia students and reduce the time and expense of completing a degree program.

The university is also expanding the use of data to ensure quality education. Virginia Tech plans to pilot an initiative incorporating personalized instruction and learning in large, high-demand, high-pressure courses through the use of machine learning to further support timely degree completion. This will be developed in partnership with other institutions.

Excellent student advising services are essential to helping students properly plan and execute an efficient course of study leading to their desired credential. Departments and colleges are continuing to shift to a model that relies more heavily upon professional

advisors for students in order to provide continuity over an undergraduate student's career. Professional advising staff can assist students in this more technical process and allow faculty advising to focus on academic mentoring and career planning.

To continue to accelerate degree completion, incentives must be expanded to increase on-campus instruction and facility use over the summer and winter months. The university is working to implement strategies to increase the utilization of year-round instruction at the Blacksburg campus and leveraging: (1) Lower costs for students who take seat based courses in Blacksburg over the summer/winter sessions, (2) expanding summer/winter undergraduate research programs to provide meaningful, resume building employment for students, (3) expanding course offerings to meet the needs of students seeking to advance their plans of study toward early degree completion and (4) increasing available student financial aid to ensure access to non-traditional session enrollment.

11. **Increase Graduate Enrollment in Strategic Areas:** The university will increase graduate student enrollment, focusing on masters and doctoral level science, technology, engineering, mathematics, and health sciences (STEM-H). Graduate education is a key component of the university research mission that leads to innovation, technological development and entrepreneurship vital for the continued success of the Virginia economy.

12. **Increase Number of Full-Time Faculty:** The institution is investing in teaching resources to ensure quality and provide an excellent instructional opportunity for its students. Recent success in enrollment growth efforts have mandated larger class sizes, the use of adjuncts, graduate students, and professional instructors in the delivery of curriculum. Continued growth in high demand areas such as engineering, architecture, business, and life sciences will continue to strain student to faculty ratios and limit the university's ability to expand high-demand offerings. Beginning in 2016-17, the university will hire faculty in a newly developed rank of Collegiate Faculty (non-tenured) whose primary responsibility will be to focus on excellence in instruction that includes teaching, pedagogy, and curricular reform. The university is also enhancing the preparation and training of graduate teaching assistants to provide high quality instruction and classroom support. The financial support requested in this initiative will allow the university to make continued progress in balancing quality, efficiency, and timely graduation.

13. **Library Enhancement:** 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 continue providing access to information on cutting edge research in a variety of subject areas to students and faculty while minimizing the negative impacts of increasing costs of subscription based resources and information platforms. Expanding research programs of the institution also require access to new resources, journals and other databases not in the current collection.

14. **Increase Support for Unique Military Activities:** As one of the nation's senior military colleges, the Corps of Cadets at Virginia Tech is producing the next generation of Virginia's leaders. The university seeks support for the Unique Military Activities program that is equivalent to per student funding at other public military program within the Commonwealth.

15. **Advance Institutional Efficiencies and Effectiveness to Support Cost Containment Efforts:** Improvement of the university's processes and infrastructure requires investments in cost containment efforts that will reduce expenses, address capacity needs, and modernize instructional and other university facilities. These investments will allow the university to address issues such as student health, safety, environmental sustainability, and at the same time answer to the changing regulatory environment, all while managing future capacity and costs.

16. **Reallocation of Existing Resources to Support University Priorities:** In an environment of cost containment and limited capacity for revenue generation, the university plans to continue to reallocate existing resources to support university strategic priorities including academic advancements, support for faculty startup packages, and enhancing the competitiveness of faculty compensation.

17. **Utility and Fixed Cost Increases:** Rising costs of contracts, utility service, and other mandated or required operating costs must be addressed to maintain the delivery of institutional services.

18. **Fringe/Health Benefit Increases:** Planning assumptions include escalation in fringe benefit rates and health insurance costs.

19. **VRS Increases:** The Commonwealth reached the ninetieth percentile of actuarial rates for the Virginia Retirement System employer contribution in FY16 (one year earlier than projected). This resulted in a projected savings to the university in the short term.

20. **Additional In-State Student Financial Aid from Tuition Revenue:** The university will continue to ensure access to a Virginia Tech education by providing increased support for student financial aid.

21. **Miscellaneous Operating Costs:** The university experienced cost escalation (e.g. software and service contract escalation) outside of traditional utility and fixed-cost increases.

C. **Financial Aid:** Virginia Tech's student financial aid programs are designed to help support student access, enrollment, retention and graduation goals. Virginia Tech 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 §23-31 of the Code of Virginia, and as required by the university's management agreement.

A key innovation in meeting this need at Virginia Tech is the Funds for the Future program, which ensures a predictable tuition rate for returning students through grants to help mitigate the impact of tuition increases. These grants are awarded based on family income and financial need. 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 varying levels of tuition increase protection for families with adjusted gross incomes up to $99,999, capturing both low and middle-income students with need. Additionally, the Virginia Tech Grant supports in-state Pell Grant recipients. A separate program, Virginia Tech Grant, supports the university's land grant mission by assisting students with the greatest financial need. The university also supports other, smaller programs that assist financially needy undergraduate low and middle income students. The university has recently expanded its support for financial aid for low and middle income families through the Funds for the Future program. Beginning in the fall of 2016, any family with an adjusted gross income of less than $74,999 will be 100% protected from increases in tuition and mandatory fees during their undergraduate career at Virginia Tech.

The university continues to allocate institutional resources to maintain the purchasing power of student financial aid programs and mitigate the impact of tuition increases on student borrowing. The university's graduates continue to track lower than their national peers in the percentage who take out student loans and their average debt at graduation. In 2014, 53 percent of Virginia Tech graduates borrowed an average of $27,865 each, as compared to the national average of 69 percent and $28,950, respectively.

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.

D. **Evaluation of Progress Towards Meeting Goals of Current Six Year Plan:**
   As the Commonwealth of Virginia makes strides to invest and grow its support of higher education, the university has been able to make progress towards several major initiatives in the Six-Year Plan. Significant increases in fixed costs such as and health and retirement costs have limited some planned growth, however, the institution has been able to make significant advancements including:

   - In fall 2015, Virginia Tech set enrollment records with 4,262 Virginia freshmen (423 higher than the fall 2014 record of 3,839.
     - 18,179 Virginia undergraduates, and a total headcount of 31,663; all exceeding former thresholds.
   - Continued expansion of institutional student financial aid programs to support low- and middle-income families.

- Strengthening of the K-12 pipeline to serve all of Virginia.

- Identification and startup of destination areas to advance market-centered instruction and research clusters in key interdisciplinary areas.

- Health/Life science research has advanced rapidly at the university, including growth of the Virginia Tech Carilion Research Institute. The expansion of the medical research program, along with a growing core of highly-skilled researchers and a current portfolio of $45 million in externally sponsored research, continues to play a key role in the revitalization of the Roanoke and Southwest Virginia economy. Virginia Tech has a cooperative relationship with the Virginia Tech Carilion School of Medicine established in 2010. The School of Medicine received full accreditation and graduated its second class of physicians in 2015.

- The Virginia Tech Carilion partnership has led to the creation of a Health Science and Technology Innovation district in Roanoke.

- Efforts to enhance degree completion and academic opportunities that encourage year-round utilization of facilities include discounted summer tuition, expanded summer undergraduate research opportunities, and the university's Summer Academy transitional program for first-year students and incoming transfer students. Together, these programs have resulted in summer enrollments consistently topping 8,000 students.

- In 2015-16, the university continued its successful Winter Session, which offers additional degree credit opportunities for students. For 2015-16, the Winter Session grew by **15%** to reach **7,209** student credit hours in the third year it was offered (2,005 unique students).

- The university also appreciates the state's recognition of the need for a compensation program to retain and reward hard-working faculty and staff. Continued progress towards the Commonwealth's goal of the 60th percentile will require considerable and consistent focus on competitive compensation in the coming biennia.

- Cyber Security: Virginia currently has more than 67,850 people working in cyber-security related jobs, with several thousand openings for qualified graduates in the information technology field. The Virginia Employment Commission recently found that the ratio of applicants to cybersecurity job postings in Virginia is just 0.4 applicants per job. As one of the fastest growing industries in the nation, Virginia Tech appreciates the state's investment in a cyber-security test range at the university. Virginia Tech is developing the cyber-test range for use by high school college students throughout the state to develop the next generation of cyber-ready professionals.

E. Capital Outlay Significantly Impacting E&G and NGF costs:

Virginia Tech appreciates the significant support to advance enrollment growth, research and economic development by fully funding four high priority capital projects in the 2016 Session. Supporting enrollment growth and facilitating STEM-H instruction is a primary goal of the university. The current construction of a new Classroom Building facility (expected to be complete in summer 2016) is the first phase of supporting needed instructional space; the

second phase is the construction of an Undergraduate Science Laboratory Building (approved for planning in the 2016 session) that will provide much needed STEM-H instructional capacity. As the university begins to utilize previously undeveloped portions of campus, the construction of the second phase of the Central Chiller Plant will allow the university to support new facilities without the addition of several individual and less efficient chiller installations. In addition, renovating and replacing existing instructional space in Holden Hall will allow the university to offer greater square footage to support instruction and lab space for engineering students and faculty. After these projects that support the instructional needs of the university, additional research space at the Virginia Tech Carilion Research Institute will allow continued growth of the university's research program to enhance the economy in both the Roanoke and New River Valleys.

The Virginia agriculture industry represents a significant portion of commerce for the commonwealth. Virginia Tech's Cooperative Extension/Agriculture Experiment Station agency provides critical production and operation research to advance and protect these industries. The focus of the renewal of the Livestock and Poultry Research Facilities project is five specific animal programs that are in need of improved facilities to sustain and advance the commonwealth's industries. The specific sectors include sheep, poultry, swine, equine and beef cattle.

Virginia Tech continues to grow in undergraduate students, particularly in STEM-H majors. Over the past decade STEM-H majors have grown by 2,600, or 31 percent. Thus, as the total number of students is expanding, the number of STEM-H majors is growing at faster rate. Most of this growth will be in engineering, traditional sciences, as well as in new degree programs such as neuroscience. Meanwhile, during this period of expansion, the university last constructed an undergraduate laboratory facility in 2004 for instruction in chemistry and physics. The university's existing inventory of science laboratory instruction is now too small and generally outdated to accommodate the current demand for instruction spaces by engineering and science majors. The Undergraduate Science Laboratory project that was approved for planning in the 2016 General Assembly session would construct a new undergraduate science laboratory facility of 102,000 gross square feet to accommodate the growing demand for STEM-H degrees at Virginia Tech. The timing of this project is critical for the university in order to continue to support enrollment growth, especially for STEM-H majors.

In accordance with the state's traditional capital outlay process, the university has begun its internal work to develop the 2018–2024 Capital Outlay Plan. There are certain key focus areas that will be needed to continue to advance the instruction, research, economic development, and campus infrastructure at the university including: Data and Decision Sciences, Intelligent Infrastructure, Resilient Earth Systems, Integrated Security, and Global Business and Agriculture Systems.

Virginia Tech is sensitive to the total cost of education passed on to our students. We understand that resources are finite, and projects that impact the cost of attendance to our

students undergo significant scrutiny and planning to ensure that students' value meets or exceeds the impact of any incremental costs. A project that may occur in the upcoming Six-Year Planning period envisions new student facilities to support enrollment growth; including but not limited to residential, dining, recreation, and student unions. Planning for these activities will be coordinated with actual growth and spending plans, while also balanced with the needs and impact on student costs. The university seeks to phase in projects over a multi-year planning period in an effort to control costs and minimize any potential impact on student fees.

F. Restructuring:
In the ten years since the General Assembly passed the Restructured Higher Education Financial and Administrative Operations Act of 2005 Virginia Tech has experienced significant benefits through the ability to locally manage university processes and resources. Particularly in a period of constrained resources and growing fixed costs, the flexibility provided through Restructuring has allowed the university to continue to make progress in important strategic areas, and has become the standard operating environment at Virginia Tech. From the ability to manage capital outlay decisions on a more timely basis to streamlined purchasing and reporting requirements, the benefits of the state's forward-thinking in the Restructuring Act permeate the operating culture of the university and facilitates decision-making at the ground level where the university can deploy efficient and specialized solutions to meet our management needs.

Given the resource constraints at the state level, the increasing dependency on cost containment and tuition and self-generated revenue, and the need to mitigate student costs and indebtedness, the university believes that a renewed focus on administrative and financial operational autonomy can yield additional opportunities to advance the strategic goals of both the university and the commonwealth.

This is not a uniquely Virginia Tech issue but rather a shared vision for higher education operations across the commonwealth. To that end, the university supports a thorough conversation that includes our Level III colleagues to illuminate the possible advancements to restructuring.

Initial opportunities for additional flexibility and cost savings could include, but are not limited to, advancements in the following domains:
 • The ability to develop and enact long-term plans.
 • Assured continuity of operations
 • Procurement flexibility
 • Flexibility in the management of human resource programs.
 • Assured retention of nongeneral funds and savings by institutions.
 • Expanded management authority regarding enrollment management, including enrollment mix, to strengthen revenues without significant tuition rate increases while assuring the delivery of a high quality education to an increasing number of Virginia students.

- Additional flexibility in leasing, information technology management, capital budgeting.
- Reduced administrative requirements.
- Streamlined access to state programs (e.g. VCBA)

A thorough discussion of restructuring could yield enhancements that allow institutions to further streamline operations and mitigate the university's increasing dependence on tuition and fees. Further restructuring is important to remain competitive with private institutions and other states, such as Colorado and Oregon, which have also advanced restructuring processes for their state's flagship institutions to streamline their operations. As global competition increases, this will only become more important. We look forward to the opportunity to continue this discussion in the near future.