

Six-Year Plans (2011) 2012-14 through 2016-18

Due: July 1, 2011

Institution: Virginia Polytechnic Institute & State University, Agency 208

Institution UNITID: 233921

Individual responsible for plan

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Six-Year Plans (2011)
Virginia Polytechnic Institute & State University, Agency 208
ACADEMIC AND FINANCIAL PLAN

Instructions: In the column entitled "Academic and Support Service Strategies for Six-Year Period (2012-2018)," please provide 2-3 sentences detailing strategies (for the three biennia of this six-year period) associated with each objective of the "Preparing for the Top Jobs of the 21st Century: The Virginia Higher Education Opportunity Act of 2011." The information provided should be macro-level information with sufficient detail for the reader to understand your general approach.

Priority Ranking	Within Tuition Increase	ACADEMIC AND SUPPORT SERVICE STRATEGIES FOR SIX-YEAR PERIOD (2012-2018)								
		Biennium 2012-2014 (7/1/12-6/30/14)				Biennium 2014-2016 (7/1/14-6/30/16)		Biennium 2016-2018 (7/1/16-6/30/18)		
		Strategies	TJ21 Objectives	Cost: Incremental, Savings, Reallocation				Strategies	Strategies	
				2012-2013		2013-2014				
Amount	Within Increase			Amount	Within Increase					
5	No	<p>Advance Strategic Research Opportunities. The growth of complex interdisciplinary research has resulted in an environment that is more capital intensive than ever. Funding agencies have moved away from supporting the individual investigator and are more interested in investing in large scale interdisciplinary teams working over periods of years. The ability to compete for awards in the current research environment requires flexible support that allows institutions to be nimble in landing large competitive grants. Investments in programs and infrastructure in emerging research areas including biomedical/life sciences, energy, and employing emerging technologies in fields such as cyber security and nanotechnology, will position the university to leverage existing infrastructure into externally sponsored research projects that bring economic development to the Commonwealth. The Virginia Tech Transportation Institute's National Tire Research Center in southside Virginia is an example of the university's contribution to economic development in a stressed region of the state through research.</p>	E8, E13	Incremental:	\$8,307,632	\$0	\$15,952,998	\$0	<p>Virginia Tech will continue to invest in emerging research opportunities that result in significant advances in knowledge and contribute to the economic development of the Commonwealth.</p>	<p>Virginia Tech will continue to invest in emerging research opportunities that result in significant advances in knowledge and contribute to the economic development of the Commonwealth.</p>
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		
6	No	<p>Support Existing Virginia Student Enrollment Growth and Degree Attainment. Virginia Tech has grown by more than 2,200 undergraduate students over the past 6 years. During that same period the number of tenure/tenure track faculty employed by the university has decreased as state support has declined. The institution has become stressed in its instructional delivery through the use of larger class sizes and the use of adjuncts, graduate students, and professional instructors in the delivery of curriculum and the availability of course sections. Continued growth in high demand areas such as engineering, architecture, business, and life sciences has strained student to faculty ratios. Additional support for faculty costs will allow the university to maintain the quality and access to courses that students demand to ensure timely graduation. (Section 23-38.87:14.B of the Code of Virginia: "The Governor shall consider and recommend as he deems appropriate and the General Assembly shall consider and provide as it deems appropriate additional general fund appropriations to address the unfunded enrollment growth that occurred between the 2005-06 fiscal year and the enactment of this chapter.")</p>	E1, E13	Incremental:	\$3,466,490	\$0	\$6,932,979	\$0	<p>Having taken on an additional 2,200 Virginia resident undergraduates without state support, it is critical to continue to address the shortfall in instructional funding necessary to maintain this enrollment.</p>	<p>Having taken on an additional 2,200 Virginia resident undergraduates without state support, it is critical to continue to address the shortfall in instructional funding necessary to maintain this enrollment.</p>
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		

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Priority Ranking	Within Tuition Increase	ACADEMIC AND SUPPORT SERVICE STRATEGIES FOR SIX-YEAR PERIOD (2012-2018)								
		Biennium 2012-2014 (7/1/12-6/30/14)				Biennium 2014-2016 (7/1/14-6/30/16)		Biennium 2016-2018 (7/1/16-6/30/18)		
		Strategies	TJ21 Objectives	Cost: Incremental, Savings, Reallocation				Strategies	Strategies	
				2012-2013		2013-2014				
Amount	Within Increase			Amount	Within Increase					
8	Yes	<p>Expand and Enhance STEM-H Degree Production. Building upon Virginia Tech's current excellence in STEM instruction, the university is developing innovative instructional models and new degree opportunities in emerging and high-demand STEM-H fields to advance the educational and economic competitiveness of graduates and the Commonwealth. Modern science is becoming increasingly interdisciplinary and collaborative in nature to address the complex science problems of our time. New interdisciplinary undergraduate degree programs in <u>Nanoscience</u>, <u>Neuroscience</u>, <u>Systems Biology</u>, and several new interdisciplinary graduate degree programs will provide the 21st century STEM-H student with a breadth of knowledge that spans traditional science disciplines. The university will expand health science instruction through the addition of an undergraduate <u>Biomedical Engineering</u> degree, a graduate <u>Population Health Sciences</u> degree, and through strengthening pre-med instruction and advising that prepares undergraduates for medical school. This strategy also includes the addition of a <u>Meteorology</u> degree program.</p>	E6, E7	Incremental:	\$3,261,521	\$1,891,681	\$6,603,571	\$3,830,073	<p>The university will continue to grow faculty and degree attainment opportunities in the STEM-H fields in emerging areas.</p>	<p>The university will continue to grow faculty and degree attainment opportunities in the STEM-H fields in emerging areas.</p>
				Savings:		\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		
16	Yes	<p>Support Faculty Startup Packages, Particularly for New Faculty in the STEM-H Fields. The ability to offer competitive start-up packages, including appropriate research facilities and equipment, allows the Commonwealth to attract and retain the best and most qualified faculty, including established investigators with international reputations. The success of these faculty benefits students and the Commonwealth's economy through increased research and cutting-edge instruction in STEM-H fields.</p>	E6	Incremental:	\$1,875,000	\$1,087,500	\$1,875,000	\$1,087,500	<p>As STEM-H areas grow and degree offerings increase, faculty and infrastructure needs will continually be assessed to ensure that students have access to the best and brightest faculty the discipline has to offer.</p>	<p>As STEM-H areas grow and degree offerings increase, faculty and infrastructure needs will continually be assessed to ensure that students have access to the best and brightest faculty the discipline has to offer.</p>
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		
7	Yes	<p>Increase Virginia Undergraduate Enrollment. In partnership with the Commonwealth, the university will continue to enroll an additional 50 Virginia undergraduates each year through 2014-15, for a total of 200, honoring an existing agreement with the 2011 General Assembly.</p>	E1	Incremental:	\$746,277	\$246,272	\$1,492,548	\$492,540	<p>As classroom and faculty resources allow, the university will explore opportunities to partner with the Commonwealth to expand access to higher education for Virginia residents.</p>	<p>As classroom and faculty resources allow, the university will explore opportunities to partner with the Commonwealth to expand access to higher education for Virginia residents.</p>
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		

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		Strategies	TJ21 Objectives	Biennium 2012-2014 (7/1/12-6/30/14)				Biennium 2014-2016 (7/1/14-6/30/16)	Biennium 2016-2018 (7/1/16-6/30/18)	
				Cost: Incremental, Savings, Reallocation						
				2012-2013		2013-2014				
Amount	Within Increase	Amount	Within Increase	Strategies	Strategies					
9	Yes	Expand Enrollment in the University's Veterinary Medicine Program. Creating additional Virginia graduate students seats will help to ensure that the Commonwealth's residents have access to the program and the veterinary services that graduates offer the community, addressing the industry's projected demand for veterinary services. The program will enroll an additional 30 students per year for a total of 120 additional students.	E1	Incremental:	\$1,567,860	\$517,398	\$3,135,720	\$1,034,796	Continued growth by 30 students per year during this biennium will fulfill existing plans for Veterinary Medicine enrollment expansion.	Complete.
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		
15	Yes	New or Expanded Summer Academic Opportunities to Accelerate Degree Completion. Virginia Tech has successfully undertaken a strategy of increasing the number of on-line courses available in the summer so that students away from campus can continue progress toward their degree or take additional courses toward a second major or additional minor over the summer. To accelerate degree completion, incentives to increase on-campus instruction and facility use over the summer must also address student financial barriers. The university is exploring four strategies to increase the utilization of summer instruction at the Blacksburg Campus: (1) Lowering costs for students who take seat based courses in Blacksburg over the summer will allow students to weigh the choice of returning home to work with the opportunity to take advantage of summer cost savings, (2) creating a summer undergraduate research program to provide meaningful, resume building employment for students to encourage them to remain in Blacksburg, work and take seat based instruction, (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 for summer enrollment.	A, B, D, E3, E5,	Incremental:	\$1,709,614	\$875,576	\$2,406,084	\$1,221,530	As non-academic year activities increase, additional faculty may convert from academic-year to calendar year appointments, new faculty and support staff may be necessary to maintain emerging programs, and student financial aid needs will increase, requiring the university to support additional needs to promote year-round utilization.	As non-academic year activities increase, additional faculty may convert from academic-year to calendar year appointments, new faculty and support staff may be necessary to maintain emerging programs, and student financial aid needs will increase, requiring the university to support additional needs to promote year-round utilization.
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		
13	Yes	Ensure Access for Low and Middle-Income Families by Continuing to Expand Need-based Financial Aid to Undergraduate Students. The university's Funds for the Future financial aid program protects students from tuition increases during their academic careers. The university's financial aid initiatives also address the enrollment of first generation Virginians and other underrepresented student populations, and the overall reduction of unmet need.	A	Incremental:	\$1,250,000	\$1,000,000	\$2,500,000	\$2,000,000	Continue to protect low and middle income students from tuition increases, and work to address aggregate unmet need of undergraduate students.	Continue to protect low and middle income students from tuition increases, and work to address aggregate unmet need of undergraduate students.
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		
18	Yes	Enhance Student Advising Services and Degree Completion. To expedite degree completion and promote academic success, student support services will be bolstered through strategies that include pathway to degree attainment assistance for students, a Center for Transfer and Veteran Students to aid in the transition to a four-year academic environment, student crisis counseling, additional support for students with disabilities, and maintain the student health insurance program.	E3, E5	Incremental:	\$580,736	\$391,531	\$780,918	\$507,533	Growing diversity of backgrounds and preparedness for higher education of our student population will demand evolving approaches to student advising to ensure academic success and continued degree completion.	Growing diversity of backgrounds and preparedness for higher education of our student population will demand evolving approaches to student advising to ensure academic success and continued degree completion.
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	-\$130,000	-\$130,000	-\$130,000	-\$130,000		
10	No	Enhance Creative Technologies Programming and Degree Attainment. The university is on the leading edge of a new PK-12 educational paradigm that merges technology, creative arts, and learning to enrich PK-12 learning environments and strengthen student achievement. Programs developed within the creative technology field will allow the transfer of research and innovative learning technologies to the classroom, both within the university and through linkages with the Commonwealth's PK-12 system. This strategy includes support for new degree programs in creative technologies and visual communication design.	E6, E7, E10	Incremental:	\$1,995,580	\$0	\$3,362,695	\$0	Continue to explore opportunities to leverage creative learning technologies in the classroom environment.	Continue to explore opportunities to leverage creative learning technologies in the classroom environment.
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		
19	Yes	Advance Institutional Efficiencies and Effectiveness. Continuous improvement of the university's processes and infrastructure requires new investments in systems to reduce costs and address future capacity needs, classroom and equipment upgrades to modernize instructional and other university facilities, and to address issues such as health and safety, sustainability, and regulatory mandates.	E9, E12	Incremental:	\$1,400,011	\$812,006	\$1,447,110	\$2,495,015	The university will continually seek opportunities to employ more efficient and effective business practices that contain costs and ensure the effectiveness of the university's efforts.	The university will continually seek opportunities to employ more efficient and effective business practices that contain costs and ensure the effectiveness of the university's efforts.
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		

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				Cost: Incremental, Savings, Reallocation						
				2012-2013		2013-2014				
Amount		Within Increase		Amount		Within Increase				
17	No	Increase Support for Unique Military Activities. The university will increase support for the Unique Military Activities program to an amount that is equivalent to per student support at other public UMA programs within the Commonwealth, and address incremental support for planned enrollment increases.	E13	Incremental:	\$842,371	\$0	\$947,021	\$0	Maintain equitable support for UMA amid planned enrollment growth.	Maintain equitable support for UMA.
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		
20	Yes	Expand Effective Statewide Economic Development Program. To better serve the needs of the Commonwealth, the university will provide opportunities for students to apply and expand upon classroom learning in real world service opportunities in the local community and extend the campus expertise across the Commonwealth.	E13	Incremental:	\$396,420	\$0	\$396,420	\$0	Continue to invest in economic development opportunities in areas of potential return to the Commonwealth.	Continue to invest in economic development opportunities in areas of potential return to the Commonwealth.
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		
12	No	Increase Administrative Efficiency Through Relief From State Requirements: Reducing or eliminating statewide requirements on several identified administrative activities will result in significant savings that can be reallocated to other university activities. Examples include relief from eVA fee assessments, elimination of the requirement to purchase from the Virginia Correctional Enterprise, relief from SWaM requirements, relief from user fees for state central administrative systems such as Cardinal, and moving to a post-audit review rather than a pre-approval process for Equipment Trust Fund purchases.	E13	Incremental:	\$0	\$0	\$0	\$0	Continue to look for operational efficiencies.	Continue to look for operational efficiencies.
				Savings:	\$250,000	\$0	\$250,000	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		
22	Yes	General Fund Contingency: The university believes that the fund splits used for strategies included in this plan appropriately reflect required General Fund revenue needs. Assuming the Commonwealth fully funds the General Fund portion of each, the university's realistic tuition capacity would exceed the total nongeneral fund component of all included strategies. If, however, the Commonwealth does not fully fund the General Fund portion of each of the strategies included in this plan, the university would be forced to apply the remaining tuition capacity to fully fund the following critical activities: utility cost increases, operation and maintenance of new facilities, hiring of new faculty, library inflation, and a portion of the cost of existing resident enrollment growth.		Incremental:	\$0	\$6,431,846	\$0	\$13,056,041		
				Savings:	\$0	\$0	\$0	\$0		
				Reallocation:	\$0	\$0	\$0	\$0		
Total 2012-2014 Costs										
Incremental (Included in Financial Plan line 17)					\$27,399,512	\$13,253,810	\$47,833,064	\$25,725,028		
Savings					\$250,000	\$0	\$250,000	\$0		
Reallocation					-\$130,000	-\$130,000	-\$130,000	-\$130,000		
(a) 2013-14 represents a cumulative number for the biennium.										
Six-Year Financial Plan for Educational and General Programs, Incremental Operating Budget Need										
2012-2014 Biennium										
(Assuming No Additional General Fund)										
					2012-2013		2013-2014			
Items					Amount	Within Increase	Amount	Within Increase		
Total Incremental Cost from Academic Plan³					\$27,399,512	\$13,253,810	\$47,833,064	\$25,725,028		
1	Yes	Increase Faculty Salaries ²			\$11,663,203	\$6,764,658	\$23,854,993	\$13,835,896		

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		Strategies	TJ21 Objectives	Cost: Incremental, Savings, Reallocation				Strategies	Strategies
				2012-2013		2013-2014			
Amount	Within Increase			Amount	Within Increase				
		Faculty Salary Increase Rate ^{6,7}		4.50%	2.61%	4.50%	2.61%		
11	Yes	Increase Number of Full-Time Faculty ³ (\$)		\$1,607,699	\$932,465	\$3,215,397	\$1,864,930		
		Increase Number of Full-Time Faculty ³ (FTE)		14.00	0.00	28.00	0.00		
		Increase Number of Part-Time Faculty ³		\$0	\$0	\$0	\$0		
		Increase Number of Support Staff		\$0	\$0	\$0	\$0		
14	No	Library Enhancement		\$1,000,000	\$0	\$2,000,000	\$0		
		Technology Enhancement		\$0	\$0	\$0	\$0		
4	Yes	O&M for New Facilities		\$2,015,575	\$1,048,556	\$5,334,075	\$2,940,768		
3	No	Utility Cost Increase		\$1,200,000	\$0	\$2,600,000	\$0		
		Add'l In-State Student Financial Aid From Tuition Revenue ⁴		\$0	\$0	\$0	\$0		
		Others (Specify, insert lines below)							
2	Yes	Staff Salary Increases ⁵		\$2,921,391	\$1,694,407	\$5,930,425	\$3,439,647		
21	Yes	Additional Fringe Rate Support ⁶		\$1,000,000	\$580,000	\$2,000,000	\$1,160,000		
		Total Additional Funding Need		\$48,807,380	\$24,273,896	\$92,767,954	\$48,966,269		

Notes:

- (1) Enter staff FTE change over the FY2012 level in appropriate columns.
- (2) If planned, enter the cost of any institution-wide increase.
- (3) **Please ensure that these items shall not be double counted if they are already included in the incremental cost of the academic plan.**
- (4) In-state financial aid expenses are included in the itemized Academic Plan initiatives.
- (5) Amount shown is placeholder for unknown but anticipated expense increases.
- (6) Enter planned annual faculty salary increase rate in Cell B22 and D22. Any salary increase entered here will be counted when calculating the gap to reach the 60th percentile in the future.
- (7) 4.5% is a combined GF and NGF amount; the NGF portion (2.7%) is expected to be all the university would consider funding if the state does not provide the GF portion, based on current market assessment.
- (8) 2013-14 represents a cumulative amount for the biennium.

Six-Year Plans (2011)

Virginia Polytechnic Institute & State University, Agency 208

FINANCIAL AID PLAN

Instructions: Complete the table for the Actual 2010-11 and Estimate 2011-12 distribution of financial aid by category. The planned distributions for 2012-13 and 2013-14 will be automatically calculated based on the estimated 2011-12 distribution. Adjust the 2012-13 and 2013-14 distributions, as necessary, by entering values instead of using the formulas.

2010-11 (Actual)			
T&F Used for Financial Aid	Gross Tuition Revenue	Tuition Revenue for Financial Aid	Distribution of Financial Aid
In-State Undergraduate	\$140,832,264	N/A (1)	\$5,434,340
Out-of-State Undergraduate	\$122,110,405	N/A (1)	\$5,937,659
In-State Graduate	\$18,283,497	N/A (1)	N/A (2)
Out-of-State Graduate	\$23,636,815	N/A (1)	N/A (2)
In-State 1st Professional	\$5,404,448	N/A (1)	N/A (2)
Out-of-State 1st Professional	\$1,962,200	N/A (1)	N/A (2)
Total	\$312,229,629	N/A (1)	\$11,371,999
In-State Sub-Total	\$164,520,209	N/A (1)	\$5,434,340

2011-12 (Estimated)			
T&F Used for Financial Aid	Gross Tuition Revenue	Tuition Revenue for Financial Aid	Distribution of Financial Aid
In-State Undergraduate	\$153,789,450	N/A (1)	\$7,413,161
Out-of-State Undergraduate	\$127,892,896	N/A (1)	\$5,889,789
In-State Graduate	\$19,588,071	N/A (1)	N/A (2)
Out-of-State Graduate	\$25,456,069	N/A (1)	N/A (2)
In-State 1st Professional	\$6,038,392	N/A (1)	N/A (2)
Out-of-State 1st Professional	\$2,288,628	N/A (1)	N/A (2)
Total	\$335,053,506	N/A (1)	\$13,302,950
In-State Sub-Total	\$179,415,913	N/A (1)	\$7,413,161

2012-13 (Planned) (3)			
T&F Used for Financial Aid	Gross Tuition Revenue	Tuition Revenue for Financial Aid	Distribution of Financial Aid
In-State Undergraduate	\$166,419,962	N/A (1)	\$7,413,161
Out-of-State Undergraduate	\$135,787,503	N/A (1)	\$5,889,789
In-State Graduate	\$20,888,138	N/A (1)	N/A (2)
Out-of-State Graduate	\$27,141,757	N/A (1)	N/A (2)
In-State 1st Professional	\$6,495,800	N/A (1)	N/A (2)
Out-of-State 1st Professional	\$2,380,173	N/A (1)	N/A (2)
Total	\$359,113,333	N/A (1)	\$13,302,950
In-State Sub-Total	\$193,803,900	N/A (1)	\$7,413,161
Additional In-State	\$14,387,987	N/A (1)	\$0
Additional In-State from Fin Plan			\$0

2013-14 (Planned) (3)			
T&F Used for Financial Aid	Gross Tuition Revenue	Tuition Revenue for Financial Aid	Distribution of Financial Aid
In-State Undergraduate	\$178,443,392	N/A (1)	\$7,413,161
Out-of-State Undergraduate	\$144,633,924	N/A (1)	\$5,889,789
In-State Graduate	\$21,844,348	N/A (1)	N/A (2)
Out-of-State Graduate	\$28,947,270	N/A (1)	N/A (2)
In-State 1st Professional	\$7,246,252	N/A (1)	N/A (2)
Out-of-State 1st Professional	\$2,475,380	N/A (1)	N/A (2)
Total	\$383,590,566	N/A (1)	\$13,302,950
In-State Sub-Total	\$207,533,992	N/A (1)	\$7,413,161
Additional In-State	\$13,730,092	N/A (1)	\$0
Additional In-State from Fin Plan			\$0

(1) The university pools E&G resources in order to fund the highest priority needs of the institution. As a result, financial aid expenses are not linked to revenue from a specific student category.

(2) The university supports graduate and professional students on assistantship with tuition remission as part of a compensation package for their efforts in graduate teaching, research, and general assistance.

(3) Aid distribution by student category for future years has yet to be determined, and will be based upon actual demonstrated need of the aggregate student population of each year. This forecast approximates the incremental growth included in the 6-Year plan, using historical trends.

Six-Year Plans (2011)

Virginia Polytechnic Institute & State University, Agency 208

Six-Year Financial Plan for Tuition and Fee Increases and Nongeneral Fund Revenue Estimates

Items	2011-2012		2012-2013			2013-2014			2014-2015	2015-2016	2016-2017	2017-2018
	Student Charge	Total Revenue	Student Charge	Rate Increase	Total Revenue	Student Charge	Rate Increase	Total Revenue				
E&G Programs												
In-State Undergraduate	\$8,899	\$153,789,450	\$9,655	8.5%	\$166,419,962	\$10,380	7.5%	\$178,443,392				
Out-Of-State Undergraduate	\$22,870	\$127,892,896	\$24,242	6.0%	\$135,787,503	\$25,697	6.0%	\$144,633,924				
In-State Graduate	\$10,095	\$19,588,071	\$10,701	6.0%	\$20,888,138	\$11,343	6.0%	\$21,844,348				
Out-Of-State Graduate	\$20,113	\$25,456,069	\$21,923	9.0%	\$27,141,757	\$23,896	9.0%	\$28,947,270				
In-State Law	\$0			%			%					
Out-Of-State Law	\$0			%			%					
In-State Medicine	\$0			%			%					
Out-Of-State Medicine	\$0			%			%					
In-State Dentistry	\$0			%			%					
Out-Of-State Dentistry	\$0			%			%					
In-State PharmD	\$0			%			%					
Out-Of-State PharmD	\$0			%			%					
In-State Veterinary Medicine	\$17,491	\$6,038,392	\$18,191	4.0%	\$6,495,800	\$18,918	4.0%	\$7,246,252				
Out-Of-State Veterinary Medicine	\$40,941	\$2,288,628	\$42,579	4.0%	\$2,380,173	\$44,282	4.0%	\$2,475,380				
Other NGF		\$42,813,867			\$43,027,936			\$43,243,076				
Total E&G Revenue (a)		\$377,867,373			\$402,141,269			\$426,833,642	\$446,417,942	\$466,270,561	\$487,152,598	\$508,361,310
Auxiliary Program (b)												
Undergraduate	\$1,610		\$1,723	7.0%		\$1,827	6.0%					
Graduate	\$1,610		\$1,723	7.0%		\$1,827	6.0%					
Law	\$0			%			%					
Medicine	\$0			%			%					
Dentistry	\$0			%			%					
PharmD	\$0			%			%					
Veterinary Medicine	\$1,610		\$1,723	7.0%		\$1,827	6.0%					
Total Auxiliary Revenue		\$246,265,596			\$272,838,036			\$295,463,662	\$316,986,108	\$336,170,243	\$359,066,883	\$379,006,508
Total Tuition and Fees												
In-State Undergraduate	\$10,509		\$11,378	8.3%		\$12,207	7.3%					
Out-Of-State Undergraduate	\$24,480		\$25,965	6.1%		\$27,524	6.0%					
In-State Graduate	\$11,705		\$12,424	6.1%		\$13,170	6.0%					
Out-Of-State Graduate	\$21,723		\$23,646	8.9%		\$25,723	8.8%					
In-State Law	\$0		\$0	%		\$0	%					
Out-Of-State Law	\$0		\$0	%		\$0	%					
In-State Medicine	\$0		\$0	%		\$0	%					
Out-Of-State Medicine	\$0		\$0	%		\$0	%					
In-State Dentistry	\$0		\$0	%		\$0	%					
Out-Of-State Dentistry	\$0		\$0	%		\$0	%					
In-State PharmD	\$0		\$0	%		\$0	%					
Out-Of-State PharmD	\$0		\$0	%		\$0	%					
In-State Veterinary Medicine	\$19,101		\$19,914	4.3%		\$20,745	4.2%					
Out-Of-State Veterinary Medicine	\$42,551		\$44,302	4.1%		\$46,109	4.1%					
Student Financial Aid (Program 108)												
Sponsored Programs (Program 110) (c)		283,188,248			\$301,736,591			\$321,499,818	\$342,557,503	\$364,994,430	\$388,900,937	\$414,373,278
Unique Military Activities												
Workforce Development												
Other (Specify)												

Footnotes:

(a) Total E&G NGF Revenue is not equal to "Total Additional Funding Needed" on "Finance-Operating" tab. Rather, Total E&G NGF revenue represents what the University currently believes to be a realistic level of self-generated E&G NGF Revenue in our current economic environment. General Fund support will be required to fill the gap between projected revenues and expenses to accomplish the plan as currently envisioned.

(b) Auxiliary Program Student Charges are based on the university's mandatory non-E&G Comprehensive fee, paid by all students.

(c) Sponsored Program growth projections assume leveraging additional General Fund investment in research activities.

Six-Year Plans (2011)

Virginia Polytechnic Institute & State University, Agency 208

Foregone Tuition Revenue As A Result of Tuition Waivers

Educational and General Programs

(Please provide information and add programs to the list as appropriate)

Program	2012-13					2013-14				
	In-State Undergraduates	In-State Graduates	Out-of-State Undergraduates	Out-of-State Graduates	Total	In-State Undergraduates	In-State Graduates	Out-of-State Undergraduates	Out-of-State Graduates	Total
Academic Common Market	\$0	\$0	\$2,946,574	\$89,776	\$3,036,350	\$0	\$0	\$3,094,034	\$100,424	\$3,194,458
VMSDEP	\$627,595	\$114,167	\$0	\$0	\$741,761	\$829,907	\$148,850	\$0	\$0	\$978,756
Senior Citizens	\$20,898	\$10,872	\$0	\$0	\$31,770	\$22,468	\$11,524	\$0	\$0	\$33,992
International Student Exchange	\$0	\$0	\$1,512,194	\$723,110	\$2,235,304	\$0	\$0	\$1,587,804	\$759,265	\$2,347,069
Graduate O/S Differential	\$0	\$0	\$0	\$21,974,750	\$21,974,750	\$0	\$0	\$0	\$23,073,487	\$23,073,487
Total	\$648,493	\$125,038	\$4,458,768	\$22,787,635	\$28,019,935	\$852,374	\$160,373	\$4,681,838	\$23,933,176	\$29,627,762



October 11, 2011

Mr. James Alessio
Director of Higher Education Restructuring
State Council of Higher Education for Virginia
James Monroe Building
101 North Fourteenth Street
Richmond, VA 23219

Dear Jim:

In response to your September 8th, 2011 email, the university is responding to the review committee's feedback on the university's August 25th 6-year plan presentation. We have addressed the feedback offered on the university's 6-year plan strategies, and look forward to continuing the discussion of how the university and Commonwealth can work in concert to best resource these strategies to advance both the university and the Commonwealth of Virginia.

Consistent with the guidance received on September 8th, 2011, the university's revised six-year academic and financial plans provide a comprehensive statement of university priorities in our strategic plan, as well as the opportunities we have to support the Commonwealth's goals. Nongeneral fund resource estimates remain the same as those included in the initial submission, and we have identified how those resources could be directed to support the initiatives included in the academic and financial plan. Some initiatives require General Fund support, others are shared using the university's fund split, and some will be fully funded through nongeneral fund resources. Strategies that generate expenses in excess of the realistic self-generated revenue estimate provide an opportunity for collaboration with the Commonwealth in areas that benefit the goals espoused by the Higher Education Opportunity Act of 2011. Without additional state support, the university will not be able to deliver the comprehensive set of programs and initiatives proposed. In such a circumstance, the university would reassess and prioritize the listing of initiatives possible given available resources.

The review committee specifically requested additional information for the following items:

- State funding expectations for increases in Veterinary Medicine enrollment. (Attachment 1)
- Average faculty start-up costs for new hires. (Attachment 2)
- Spending and number of students receiving financial aid by income level categorization. (Attachment 3)
- Additional details regarding the university's Research proposal. (Attachment 4)

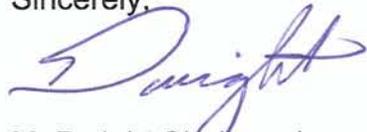
Invent the Future

Each of these items is addressed in detail in the attached documentation. We have also removed the 4VA technology-assisted learning proposal from the plan and will address that separately through a statewide plan with participating institutions. Finally, a revised academic and financial plan is attached, prioritizing and applying resources to strategies consistent with the statewide instructions provided by SCHEV. (Attachment 5)

As we stressed during the 6-year plan presentation, and reinforce here, the university believes strongly that the Commonwealth's prior experience confirms that investment in research will be a necessary component in achieving several goals in TJ21, including a significant contribution to the expansion of new economic development opportunities throughout Virginia. Accordingly, one of the most critical elements of our academic plan is the strategic expansion of the university's research program for the coming biennium and beyond. New General Fund support will dramatically increase the externally sponsored research program activity and the resulting opportunities for economic growth. Working together in partnership with the Commonwealth will result in knowledge and discovery that leads to economic development and job creation at levels which are significantly greater than could be realized without state support.

We appreciate your continued support for higher education across the Commonwealth. If additional information is requested, please do not hesitate to contact my office.

Sincerely,



M. Dwight Shelton, Jr.
Vice President for Finance and
Chief Financial Officer

Attachments

cc: Charles W. Steger
Mark G. McNamee
Timothy L. Hodge

Veterinary Medicine Enrollment for Virginians

A recent industry report from the United States General Accounting Office on the country's veterinary workforce warns of a growing shortfall of veterinarians, especially those who "care for animals raised for food, serve in rural communities, and have training in public health." (The Equine Chronicle, March 2010 Press Release) Similarly, the 2010-11 Bureau of Labor Statistics Occupational Outlook Handbook cites a projected employment increase of 33% over the next decade, generating a need of 20,000 additional veterinarians over the number employed today. With only 28 accredited veterinary schools in the country generating just 2,500 graduates per year, the need for increased admission and enrollment of qualified veterinary medicine students is significant.

Virginia Tech has been working to address this demand and currently has additional instructional space under construction to accommodate additional students. Nonresident demand for enrollment is overwhelming, with more than 700 qualified applicants for the current 15 nonresident student seats in the 2011-12 incoming cohort. To address market demand for graduates, the university will enroll an additional 30 students per year, for a total of 120 additional students. To ensure that all, or a portion, of these additional seats will be reserved for Virginia residents, the university requests 67% of the Average Cost of Education for the veterinary program per seat. General Fund support will ensure that this enrollment increase includes Virginia residents who will not only be able to attend a school in their home state, but who are more likely to share their skills and service within the Commonwealth upon graduation. As a regional college, Maryland will also have the opportunity to support additional Maryland resident students at an equivalent amount.

Increasing enrollment within the considerable demand of the program will allow for improvements to the program including state-of-the-art clinical teaching space, additional course and laboratory section offerings, additional faculty to ensure that an appropriate student:faculty ratio is maintained to provide for quality instruction and group facilitation, and increase the availability of preclinical skills practice of students.

The Average Cost of Education for a student in the university's Veterinary Medicine program is \$54,189 per year. The General Fund share of 67% for a Virginia resident is \$36,307. **For the full expansion of 30 seats to be reserved for Virginia students, the university would need an additional incremental \$1,089,199 of General Fund support and \$517,394 of nongeneral fund appropriation in each of the next four years to fully fund the state's share of the enrollment increase, based on the 2011-12 tuition rates.**

Faculty Startup Packages, Particularly in STEM-H

The university competes nationally and globally to recruit the best faculty in Engineering, Physical and Biological Sciences and other STEM-H fields. To leverage the university's existing excellence in STEM-H areas in support of the Higher Education Opportunity Act goals of increasing STEM-H activities and supporting economic development the university must continue to recruit, equip and support the best and most productive new faculty members possible.

Start-up packages play a strategic role in the recruitment of exceptional faculty and in supporting their ability to rapidly develop a successful, externally funded research program that promotes the state's economic activity. Providing sufficient levels of start-up support is as important as salary in recruiting successful faculty members and faculty with high potential. Start-up funds provide seed funding for the candidate to quickly establish a productive and sustainable research program. Start-up support may include laboratory set up, summer support, specialized equipment, databases, software and supplies, graduate assistantships, data collection, and other similar necessities of establishing the faculty member's infrastructure within the university. Institutions need to be flexible in negotiating with potential recruits to meet their specific needs. Faculty start-up packages vary by discipline and are correlated with the faculty member's experience, potential for external research support, and their specific research field.

At Virginia Tech, between 2008 and 2011, the average start-up support for a new Engineering, Agriculture, or Science hire was \$318,392. Typically these funds are spent in the first 3 years of the faculty members' employment. The potential return in investment on this start-up support is significant. Over the same four year period, the average externally funded research activity for a tenure/tenure track Engineering faculty member is \$229,000 annually and \$110,000 annually for a Science faculty member.

As the university expands research and instruction in health related fields, the market for recruiting new faculty becomes increasingly more competitive and start-up needs become more complex and expensive.

Student Financial Aid Distribution Details

The Code of Virginia authorizes institutions of higher education to create need-based scholarships through the remission of tuition and fees up to certain limits. These programs are supported by the tuition budget and are reflected in the net tuition revenue collected by the university. In 2010-11, the unfunded scholarship program at the university provided 5,334 students with \$11.4 million of financial aid. Recipients must demonstrate financial need through the submission of a Free Application for Federal Student Aid. Unfunded support in 2010-11 is displayed by family income in Figure 1.

Figure 1: Total university unfunded financial aid by income category.

Income Category	2010-11 Unfunded Scholarships	
	Students	Total Award \$
\$0-\$10,000	736	\$ 2,007,425
\$10,001-\$20,000	469	1,278,628
\$20,001-\$30,000	517	1,431,780
\$30,001-\$40,000	505	1,261,601
\$40,001-\$50,000	556	1,255,610
\$50,001-\$60,000	526	894,614
\$60,001-\$70,000	477	711,500
\$70,001-\$80,000	466	685,927
\$80,001-\$90,000	460	504,780
\$90,001-\$100,000	357	379,870
\$100,001 and up	265	960,265
Grand Total	5,334	\$ 11,372,000

By far the largest program within the unfunded support detailed above is the university's **Funds for the Future** financial aid program. This program is designed to assist returning students with financial need by mitigating all or a portion of increases in tuition and required fees based on the student's level of family income. Depending upon the Adjusted Gross Income of the student's family, the student can be fully or partially protected from tuition and required fee increases in each year the student returns to the university. Figure 2 displays the income categories and resulting percentage of tuition and required fee increases that the student will be protected against.

Figure 2: Funds for the Future income categories and resultant tuition increase protection.

Family Income (AGI)	Tuition & Fee Increase Protection
\$0 - \$29,999	100%
\$30,000 - \$49,999	75%
\$50,000 - \$74,999	30%
\$75,000 - \$99,999	20%

In 2010-11, the Funds for the Future program supported 3,902 undergraduate students with \$3.4 million in tuition increase protection scholarships. The total expenditures of the Funds for the Future program, by income range, are displayed in Figure 3.

Figure 3: Funds for the Future, 2010-11 program summary.

Income Category	2010-11 Funds for the Future	
	Students	Total Award \$
\$0-\$10,000	537	\$ 846,989
\$10,001-\$20,000	319	468,389
\$20,001-\$30,000	358	511,450
\$30,001-\$40,000	370	425,411
\$40,001-\$50,000	399	424,960
\$50,001-\$60,000	394	179,792
\$60,001-\$70,000	392	165,837
\$70,001-\$80,000	391	143,428
\$80,001-\$90,000	410	123,514
\$90,001-\$100,000	326	104,338
\$100,001 and up	6	3,210
Grand Total	3,902	\$ 3,397,318

Enhancing Research Capacity for Economic Growth

This strategic initiative targets investment in research activities, specifically in the areas of Health Sciences, Energy, and Transportation research that will drive economic growth.

Recognizing the critical linkage between research activities and the Commonwealth's economy, the state provided an important infusion of support in 2006-08 in order to enhance research capacity at Virginia Tech. The \$7.525 million GF provided through the Commonwealth Research Initiative helped position the university to leverage additional funding from federal and private sources and to be a springboard of innovation and technology transfer. The university invested these funds to support the recruitment of faculty, establish research infrastructure, and create the capacity to significantly increase research activity. As a result, while the average growth of research expenditures at colleges and universities over the last five years has been 5.3 percent (National Science Foundation (NSF) figures), Virginia Tech has experienced growth of 8.5 percent. Not only has Virginia Tech's growth outperformed the average university; it has outpaced the average growth of its peers (4.6 percent). This means that the Commonwealth's support of research has contributed to Virginia Tech growing its research program 85 percent faster than its peer institutions. Unfortunately, general fund support of this initiative has been reduced over the past several years and currently stands at just \$2.38 million.

To recognize and build upon the progress, additional funding is required specific strategic areas of emphasis; 1) Health Sciences, 2)Energy Development, and 3) Transportation Research. In addition to these three, the university requests flexible research support to secure large, competitive, and often matching, grants and sponsored research. The growth of complex interdisciplinary research has resulted in an environment which is far more capital intensive than ever. Funding agencies have moved away from supporting the individual investigator and are more interested in supporting large scale interdisciplinary teams working over periods of several years. Competition to win such awards is often among university consortia from multiple regions of the country, or amongst teams drawn from the strongest institutions across the nation. The ability to compete for awards in today's research environment requires flexible support that allows institutions to be nimble and responsive in securing large federal grants and to deliver required infrastructure.

Health Sciences-

The first of these areas of emphasis, Health Sciences, is a fast-growing and critical area of research that university is well positioned to expand. The VTC Research Institute, recently established in Roanoke, has welcomed internationally respected researchers to lead the world's largest study of the human brain. Studying the linkages between genetics and brain functioning, the "Roanoke 15,000" will chart participant's brain function over the span of their life, allowing researchers to understand the contributing characteristics of neural development. The VTC Research Institute is uniquely positioned to leverage this science in the area of defense, aging, neurological disorders, brain injury (e.g. military/veterans), addiction (which has a high cost to taxpayers), sociology, and autism (predicted to increase from 1 in 150 to 1 in 60). VTCRI's unique hyperscanning technology is attracting defense support for military applications, Veterans support for post-traumatic stress syndrome, and NIH support on aging of the population. These investments will result in economic development that drive's the Roanoke region forward as a biomedical research epicenter for neurology and health science.

The Virginia Tech-Wake Forest University Center for Injury Biomechanics is working with the U.S. Army Medical Research and Materiel Command on a project focusing on brain and eye injuries in military personnel. Specifically, blast induced brain trauma will be investigated using experimental and computational models. Given improvements in helmet design and body armor and the resulting reductions in penetrating injuries, including penetrating head trauma, blast-related closed head injuries have become the signature injury of most military operations. By combining the capabilities at Virginia Tech and Wake Forest, we were able to successfully compete for this funding. The program will also involve new partnerships at the Radford Army Ammunition Plant. The United States military is faced with a number of significant biomechanical questions for the nearly 3 million active duty and reserve personnel who fight in this nation's conflicts. Head (brain, eye, and facial fracture), neck, and chest injuries are an ever present risk of military duty. Injuries to the head, neck, and chest can be seriously debilitating or fatal and dramatically reduce the combat effectiveness of the American soldier.

Energy Development-

The next area of research emphasis, Energy Development, holds potential to develop and commercialize safe alternative energy that will significantly impact the future economy of the Commonwealth and the nation.

Virginia Tech has internationally recognized faculty researchers in nuclear energy that are prepared to rapidly expand and advance the field that will ultimately assist this

important state industry. Research initiatives include particle transport methods, simulation of nuclear systems, safety, parallel computing for nuclear applications, nuclear materials, reactor physics, radiation systems, medical devices, and the digital control and protection systems for nuclear reactors. With state support, Virginia Tech is positioned to expand the nuclear research program for interdisciplinary research in nuclear science across three colleges, with a focus on the area of nuclear safety. As a founding member of the Southeast Universities Nuclear Reactors Institute for Science and Education, Virginia Tech is dedicated to enhancing the quality of nuclear education and research in the region for the purpose of supporting the development of the next-generation nuclear workforce, nuclear technology, and advanced nuclear research. This will position Virginia to continue its leadership in this important industry. Having a robust research program in the Commonwealth will also help the state expand and retain this strategic industry cluster.

The Future Energy Electronics Center (FEEC) at Virginia Tech is engaged in the study of high efficiency power conversion in electronic applications, specifically in transportation and industrial automation industries. FEEC is working with the US Department of Energy to develop cost-effective and high efficiency inverters for solar photovoltaic integration. A “soft-switching” technology developed in-house has increased solar, fuel cell, and electric motor efficiency by 70% over industry benchmarking. This technology has an estimated \$50 billion market opportunity, and the Center is currently pursuing opportunities to market and manufacture the technology within Virginia.

Transportation Research/Economic Development in Southside

The Virginia Tech Transportation Institute’s (VTTI) National Tire Research Center (NTRC) in Halifax County stands as a recent example of the exciting economic potential of the corporate partnered research model’s potential to drive economic expansion in the Commonwealth’s stressed regions. The NTRC plans to create up to 183 new jobs in the local Danville economy by 2020, as well as generating substantial new research and teaching opportunities for Virginia Tech faculty. The research and development center will partner with General Motors to provide the automotive industry with the testing capability that is necessary to develop and engineer tires that will provide higher fuel economy and lower emissions than are currently available. This level of research, development, and testing in one location is not replicated anywhere else in the world. With support from Mechanical Engineering faculty at the Institute of Advance Learning and Research in Danville, Southside is poised to become a national center of automotive research and development.

Economic development through research requires ongoing commitment. The Governor's Commission on Higher Education and the passage of the Higher Education Opportunity Act reinforces the Commonwealth's commitment to growing the magnitude of research carried out in the Commonwealth's colleges and universities with the expectation that this research activity will assist in generating new business opportunities and economic activity.

Commonwealth Research Initiative-

In addition to the specific areas of emphasis described above, the university continues to explore emerging research opportunities in many areas that can leverage the expertise and infrastructure of the university's research program. Flexible, ongoing support is required to accomplish this. For example, the Nanoscale Characterization and Fabrication Laboratory within the Institute for Critical Technology and Applied Sciences at Virginia Tech is at the forefront of this emerging, potentially game-changing technological field. This lab is facilitating research in targeted delivery of nano-medicine, fuel cells, nanoscale engineering and the environment, self-assembled nanostructures, and nano-metrology and nano-manufacturing. These ground-breaking scientific explorations at Virginia Tech are leading to changes in how we assess and treat illness, how we better understand the past, and how we will power the future. Further this infrastructure is shared with other institutions and the private sector.

The initial investment in the Commonwealth Research Initiative has aided the University in developing a robust research environment, resulting in increased research and enhanced opportunities for expanded research in emerging areas. These efforts have been made possible through the work of prominent, nationally recognized faculty and the application of high-technology infrastructure. As an example, CRI funding enabled the College of Veterinary Medicine to retain a nationally known avian flu researcher, with significant external grant support, who was being recruited by another institution. Continued support will improve the university's ability to achieve critical mass in emerging areas and to recruit and retain world-class research groups.

Additional investment by the Commonwealth will support additional faculty, postdoctoral fellows, research associates, and specialists to operate and maintain research laboratories and equipment. Postdoctoral fellows, in particular, are the workhorses (both technically and intellectually) of most successful research laboratories in leading universities, including Virginia Tech, particularly in the life sciences. Postdoctoral fellows often are the engines within faculty members' laboratories that drive the generation of original high impact research publications, development of intellectual property, and the procurement of research grant income for the university. Most recent recipients of the Nobel prize in medicine, the Lasker award in biomedical research, appointment to the National Academies of Science and recipients

of major NIH research grants have served as postdoctoral fellows and have laboratories who employ postdoctoral fellows. In addition to human capital, additional support will be directed to improving and expanding research-related infrastructure to competitively seek emerging research opportunities and demonstrate the ability to undertake the large-scale, multi-faculty research initiatives that dominate the industry.

The growth of complex interdisciplinary research has resulted in an environment which is far more capital intensive than ever. Funding agencies have moved away from supporting the individual investigator and are more interested in supporting large scale interdisciplinary teams working over periods of several years. Competition to win such awards is usually among university consortia from regions of the country or teams drawn from the strongest institutions across the nation. The ability to compete for awards in today's research environment requires flexible support that allows institutions to be nimble in landing large federal grants and meet matching requirements. Virginia Tech is well positioned to compete in this new environment and has a history of leading successful collaborations, but the University is limited in investment capital especially for matching requirements.

Targeting research opportunities in expanding areas of discovery is critical for the university to grow the Commonwealth's economy and knowledge capital that will create jobs and enhance the standing of Virginia in the eyes of manufacturing and development corporations looking to locate in areas of intellectual support. This investment will result in increased competitive position with other states, development of intellectual property, licensing agreements, and spinoff corporations. The partnerships that have brought Rolls Royce's aerospace research to Northern Virginia and General Motors tire research to Southside exemplify the benefits to the Commonwealth realized through investment in research activities at Virginia Tech.

Economic Development Opportunities Through Research

Investing in expanding areas of scientific discovery drives not only the knowledge capital of the Commonwealth, but directly and positively impacts the local and state economy, creating high-paying employment opportunities and generating significant related economic activity. As a recent example, the university's new Virginia Tech Carilion Research Institute (VTCRI) in Roanoke has already spun-off a related corporation that will be based on neurological breakthroughs developed within the institute.

This spin-off, Neurotek, will commercialize cutting-edge ultrasound technology to treat neurological diseases such as Parkinson's disease, epilepsy, and depression. Located in the Carilion biomedical facility adjacent to the university's Research Institute, Neurotek will bring several million dollars of private venture capital investment to the Roanoke economy. This is the first of many spin-off investments expected to be generated through the Virginia Tech Carilion Research Institute. A recent article from the Roanoke Times that captures this exciting announcement is attached.

Through investment in emerging scientific discoveries, the Commonwealth can leverage the reputation and significant experience of Virginia Tech in competing for, conducting, and commercializing cutting-edge research to energize the state's economy.

Friday, October 07, 2011

Va. Tech Carilion Research Institute's 1st spinoff set to launch

To be located at Carilion's Riverside 1 building, Neurotrek will use ultrasound to help treat neurological diseases.

By [Sarah Bruvn Jones](#)

981-3264

The first spinoff company from the Virginia Tech Carilion Research Institute is getting ready to open its doors inside a Carilion Clinic building that was conceived of more than a decade ago as a place to nurture new biomedical companies.

Neurotrek will likely be open by December once renovations to the 1,900-square-foot office space are finished, said Jamie Tyler, an assistant professor in the institute and the new company's chief scientific officer.

Neurotrek is based on Tyler's research into using ultrasound to treat neurological diseases including depression and epilepsy.

Tyler said the Delaware-incorporated company is backed by a major venture capital firm, although he declined to name the firm or say how much money was involved.

The company will be on the first floor of Carilion's Riverside 1 building, in the city-designated redevelopment zone that was intended to be the beginning of a biomedical park. This is the same building that houses the headquarters for Luna Innovations.

Tyler said he came to Roanoke in part because he has bought into the vision of developing an economic engine based on the biomedical industry.

"I'd love to see this place become that," he said. "I knew I was coming here to build my company."

The company is actually based on research Tyler conducted while at Arizona State University. In 2009, he formed SynSonix to try to commercialize the research.

But securing money for SynSonix proved difficult in a down economy.

Neurotrek is a way to revive that effort. In short, Neurotrek bought SynSonix.

Commercializing biomedical research is one of the expectations that Carilion and Virginia Tech set for the new research institute they created.

And it's a goal that the institute's executive director, Michael Friedlander, has helped promote.

Friedlander said Tyler's Neurotrek is only the beginning.

"There will be several others you'll be hearing about within this [academic] year," Friedlander said.

He hinted that one or two other companies, formed by scientists at the institute, will be revealed before the new year.

Friedlander said neither he nor the institute is financially connected to Neurotrek.