

# Board of Education Agenda Item

Item: G.

Date: September 25, 2008

Topic: First Review of Plan for Increasing Number of Students Obtaining Industry Certification and Licensures

Presenter: Lan Neugent, Assistant Superintendent for Technology and Career Education

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## Origin:

Topic presented for information only (no board action required)

Board review required by  
 State or federal law or regulation  
 Board of Education regulation  
 Other: \_\_\_\_\_

Action requested at this meeting  Action requested at future meeting: \_\_\_\_\_ (date)

## Previous Review/Action:

No previous board review/action

Previous review/action  
date \_\_\_\_\_  
action \_\_\_\_\_

## Background Information:

Senate Bill 326 requires the Board of Education to develop a plan for increasing the number of students receiving industry certification and state licensure as part of their career and technical education. The Virginia Department of Education needs to provide the plan to the bill patron and to the Manufacturing Development Commission.

## Summary of Major Elements:

The proposed plan meets the requirement of Senate Bill 326 by:

- including rigorous academic preparation and career and technical assessment in the standard technical and advanced technical diplomas in the proposed Standards of Accreditation (SOA);
- collaborating with middle/secondary education and providing for industry certification and licensure in an academic and career plan for all students as requested by Governor Kaine and included in the proposed SOA;
- providing for industry certification and licensure in the newly implemented Governor's Career and Technical Academies that are designed to expand options for the general student population to acquire science, technology, engineering and mathematics (STEM) literacy as well as other critical skills and knowledge;

- continuing to offer training and certification for teachers through academies and virtual online courses that will allow schools to offer industry certification and licensure to students; and
- utilizing industry certification and state licensure as part of the requirement to meet Perkins Performance Standard 25 – Technical Skills Attainment. This performance standard now requires a third-party assessment in combination with validated classroom assessment for all career and technical education completers. (Perkins Performance Standard was approved by the U.S. Department of Education via Grant Award letter dated July 1, 2008.)

**Superintendent's Recommendation:**

The Superintendent of Public Instruction recommends that the Board of Education waive first review and approve this plan.

**Impact on Resources:**

School divisions will have three resources to assist in paying for the industry certifications and licensure for students: state allocation for industry credentials, local Perkins allocations, and state Perkins funds. The Department pays for all expenses, including substitute teachers, when teachers attend training and testing industry certification academies, for testing after virtual online courses, and reimburses local divisions via Perkins local allocations for any industry training and certification which the Department does not offer.

**Timetable for Further Review/Action:**

## **Plan for Increasing Number of Students Obtaining Industry Certification and Licensures**

Career and Technical Education (CTE) in Virginia is a national leader in the use of industry certification and licensure as credentials for CTE students at the secondary level. Because of our success in the use of industry credentialing, Virginia is one of only a few states that has been approved to use credentialing as a component to meet the federally-mandated technical assessment of students.

Since the Office of Career and Technical Education began collecting data on industry credentials in 2004 – 2005, we have steadily increased the number of credentials obtained by students (Table 1: State Report Card, Appendix A) and have surpassed the projected number of industry certifications for Virginia Performs (Table 2: Virginia Performs – Industry Certifications, Appendix A). Beginning in 2008 - 2009, individual school division industry certification attainments will be placed into a chart for an overall review of the state reports by industry credential type (i.e., industry certification, state licensure, and NOCTI tests).

Industry credentials earned by students are reported on Virginia's School Report Card that provides information on student achievement, accreditation, safety, and attendance for the state as a whole and for individual schools. In addition, Virginia's schools and school divisions may earn points in the *Virginia Index of Performance* program for continually increasing the number of industry certifications and licensures earned annually or relative to enrollment. The *Virginia Index of Performance (VIP)* is intended to measure the extent to which students are progressing towards advanced proficiency levels in reading, mathematics, science, and history and social science and on other indicators of school and student performance. It is an incentive program to encourage and recognize school accountability performance and competence to excellence.

Industry certification and licensure is highly visible within the proposed Virginia Standards of Accreditation. First, the Technical Diploma and Advanced Technical Diploma are designed to increase rigor in academic preparation as well as provide for Career and Technical Education assessments in the graduation requirements. Second, Governor Kaine requested and the State Board of Education has included in the proposed Standards of Accreditation the use of an Academic and Career Plan. Public hearings for the proposed new Standards of Accreditation are scheduled for October 2008. The Academic and Career Plan proposes the same components as the Career Pathway Plans of Study that have already been developed through the Office of Career and Technical Education at the Virginia Department of Education in cooperation with the Virginia Community College System. Merger of the Academic and Career Plan and the Career Pathway Plans of Study will simplify implementation of the two requirements for school divisions. Local school divisions are required to develop Plans of Study for each Career Pathway that is offered through their Career and Technical Education programs. Components included in these plans of study are career assessment, academic preparation, electives, career and technical sequential offerings, industry certification and

licensure, work-based learning opportunities, sample careers, and articulation among middle, secondary, postsecondary, and four-year education levels of instruction. (Appendix B.)

Another highlight for Career and Technical Education in Virginia are the Governor's Career and Technical Academies. These academies are programs designed to expand options for the general student population to acquire science, technology, engineering, and mathematics (STEM) literacy and other critical skills, knowledge, and credentials that will prepare them for high-demand, high-wage and high-skill careers in Virginia. Achievement benchmarks for the academies will include industry certification and licensure. There are seven academies this first year of implementation. (Appendix C.)

The Carl D. Perkins Career and Technical Education Act of 2006 (the Act of 2006) includes eight performance standards that state career and technical education programs are required to meet. One of the performance standards requires states to measure technical skills attainment of career and technical education graduates. The U.S. Department of Education, Office of Vocational and Adult Education, has approved Virginia's plan to continue utilizing the student competency records that are documented at the local level in combination with students obtaining an industry certification, licensure, or passing National Occupational Assessment Test Institute tests (NOCTI) which have been approved by the Virginia Board of Education for verified credit. (Appendix D.)

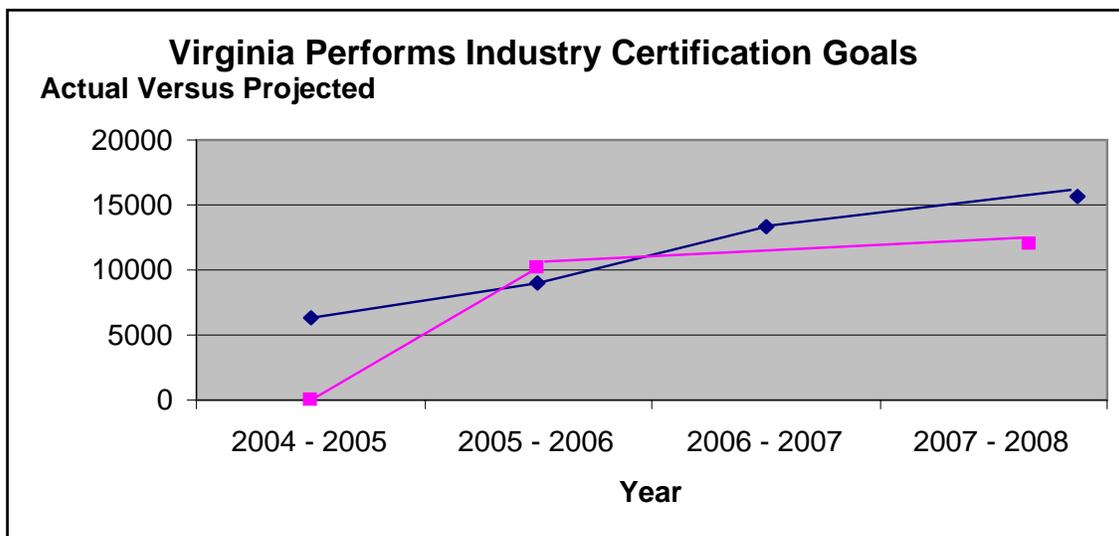
The plan for implementing this process is for local school divisions to test all career and technical education completers (students who complete a CTE program and graduate) by the year 2010 – 2011. The divisions will be adding one-third of their completers each year so the goal of 100 percent can be met by the 2010 – 2011 school year. Currently state dollars have been allocated through the 2009 – 2010 school year and Perkins allocations to local school divisions may also be utilized for this purpose. This supports Governor Kaine's goal for Virginia to elevate the levels of education preparedness and attainment for its citizens and the Virginia Index Performance program to measure this attainment. Technical assistance with this initiative will be provided through the Office of Career and Technical Education staff. The technical assistance will include workshops, on-site visits, and electronic communications.

The Virginia Department of Education, Office of Career and Technical Education (VDOE/CTE) continues to provide teacher training and industry certification through academies and/or virtual online training. If the VDOE/CTE does not provide an academy or virtual online training then local school divisions may utilize their Perkins dollars to support training and testing for the teachers. For those programs where a state licensure is appropriate for the student, current state teacher licensure regulations require the teacher to have this when employed. (Appendix E.)

## APPENDIX A

<b>Table 1: State Report Card</b>				
	<b>State Licensure</b>	<b>Industry Certification</b>	<b>National Occupational Competency Testing Institute (NOCTI) Assessments</b>	<b>TOTAL</b>
<b>2004 – 2005</b>	1,100	4,678	559	6,337
<b>2005 – 2006</b>	1,172	7,935	1,008	9,060
<b>2006 – 2007</b>	1,039	10,369	1,917	13,325
<b>2007 – 2008</b>	918	11,920	2,592	15,430

**Table 2: Virginia Performs**



**SERIES 1:** Projected Industry Certifications from Virginia Performs (16,000 projected for 2012).

**SERIES 2:** Actual Industry Certifications Earned



<b>POSTSECONDARY</b>	<b>SAMPLE POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY</b> Individual plans must include locally agreed upon courses at the postsecondary level (See page 2)			
	<b>Pathway</b>	<b>Associate Degree, College Certificate, or Apprenticeship</b>	<b>Bachelors Degree</b>	<b>Postgraduate Degree</b>
	Interactive Media	Information Systems Technology AAS (NRCC)	Information Science & Systems BS (Radford University)	

College: \_\_\_\_\_

School Division(s): \_\_\_\_\_

**Postsecondary: Placement Assessments such as COMPASS & SAT II**

<b>POSTSECONDARY - COMMUNITY COLLEGE or APPRENTICESHIP - Determined Locally</b>	Semester	English	Mathematics	Science	Social Studies	Required Courses or Recommended Electives			
	<b>POSTSECONDARY PLAN OF STUDIES MUST INCLUDE POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.</b>								
	Year 1 1 <sup>st</sup> Semester								
	Year 1 2 <sup>nd</sup> Semester								
	Year 2 1 <sup>st</sup> Semester								
	Year 2 2 <sup>nd</sup> Semester								

College courses offered locally in the high school for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)

Related Industry Certifications Available:

Additional Suggested Learning Opportunities:  
**Work-Based Learning:**  
 Cooperative Education     Internship     Mentorship  
 Job Shadowing     Service Learning Project     Registered Apprenticeship

<b>UNIVERSITY</b>	University/College: Degree or Major: Number of Articulated CC Credits:
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Notes:

## APPENDIX C

### GOVERNOR'S CAREER AND TECHNICAL ACADEMIES

#### Governor's Career and Technical Academy for Renewable Resources and Agricultural Sciences Executive Summary

<b>Partnership Members:</b>	Halifax County Public Schools; Southern Virginia Higher Education Center; Virginia Polytechnic Institute and State University; WoodLINKS, Inc.; Morgan Lumber; Ontario Hardwood; J.M. Huber Corporation; Virginia Cooperative Extension; Danville Community College; Southside Virginia Community College; Halifax County Board of Supervisors; H&M Logging; Virginia Department of Forestry
<b>Lead Entity:</b>	Halifax County Public Schools
<b>Fiscal Agent</b>	Halifax County Public Schools
<b>Contact Person:</b>	Dr. Melanie A. Stanley, Director of Academies, Halifax County Public Schools (434) 476-3107 <a href="mailto:mstanley@halifax.k12.va.us">mstanley@halifax.k12.va.us</a>
<b>Academy Location:</b>	STEM Academy 315 South Main Street Halifax, VA 24558
<b>Number of Students Served:</b>	150 middle school students; 360 high school students; 60 students in summer programs. Also, 2,586 K-5 students will have the opportunity to tour the laboratory facilities and receive introductory materials related to the program.
<b>Pathways:</b>	Natural Resource Systems Biological Engineering and Technology
<b>Academy Goals and Description:</b>	Halifax County Public Schools (HCPS) is located in rural Southside Virginia in the heart of the wood and agricultural industries. Since this area is rich in forests, land, and timber resources, the Academy will provide students with opportunities to gain knowledge and hands-on experience in careers related to the wood and agricultural industries. This Governor's Career and Technical Academy proposes to meet state and regional strategic growth needs through the Engineering and Technology and the Natural Resource Systems career pathways. The major focus of the Academy is to address the management of forest lands, and the management and leadership of forest industry businesses by inspiring students with the qualities of creativity, innovation, and entrepreneurship. The programs and courses offered through the Governor's Career and Technical Academy for Renewable Resources and Agricultural Sciences will range from biological applications in agriculture, biotechnology, and forestry to the production of manufactured goods made from wood. The foundation of the Academy will be the establishment of strong partnerships, including WoodLINKS, Inc., to provide students with opportunities

for work-based learning experiences.

The focus of the Governor's Career and Technical Academy for Renewable Resources and Agricultural Sciences is to provide students with opportunities to gain the skills, knowledge, and aspirations to be successful in the agricultural and wood industries. Specifically, the goals of the Academy are to: 1) maximize opportunities to prepare students for targeted careers in the agricultural and wood industries; 2) raise student aspirations and attract more students to postsecondary education in the areas of agriculture and wood sciences; and 3) provide well-trained, highly skilled workers to meet the work force needs of existing businesses.

**Highlights of the Academy:**

- The program will have postsecondary components for students to receive occupational certifications and continue their education through a four-year degree program at Virginia Polytechnic Institute and State University.
- Three learning laboratories will support the educational structure of the Academy: 1) the Forest-Land Laboratory will be established at the Moorefield Estate; 2) the WoodLINKS, Inc. Training Laboratory will be developed at the Southern Virginia Higher Education Center; and 3) the Agricultural Biological Applications and Biotechnology Laboratory will be established at the STEM Academy facility.
- At the elementary level, students will use the laboratories as part of their science coursework and learning experiences.
- At the middle school level, the program will provide students with the foundational knowledge of agricultural science. Two agri-science courses will be offered through the career and technical program for students to gain the knowledge and basic skills related to renewable resources. Middle school students will use the three laboratories to conduct research and investigate the biological applications in agriculture.
- At the high school level, the basis of the program is the WoodLINKS, Inc., curriculum framework. This is an industry and education partnership that provides a national curriculum framework for wood sciences. The goals and objectives of this curriculum framework will be integrated into the courses offered.
- The dual enrollment courses will prepare students for employment in the wood industry, and/or create a seamless pathway to a four-year bachelor program in Wood Science or Forestry at Virginia Polytechnic Institute and State University.
- During the summers, students at all grade levels will have the opportunity to participate in summer programs that focus on agriculture and wood sciences.

## **Governor's Academy for Innovation, Technology and Engineering Executive Summary**

**Partnership Members:** New Horizons Regional Education Centers (NHREC); Greater Peninsula Public School Divisions: Gloucester County; Hampton City; Newport News City; Poquoson City; Williamsburg-James City County; York County; Thomas Nelson Community College (TNCC); Old Dominion University (ODU); Virginia Space Grant Consortium; Northrop Grumman Corporation; The Apprenticeship School of Northrop Grumman; Cooperating Hampton Roads Organization for Minorities in Engineering (CHROME); Peninsula Council for Workforce Development; Peninsula Workforce Investment Board; and Peninsula Technical Preparation

**Lead Entity:** New Horizons Regional Education Centers (NHREC)

**Fiscal Agent:** Hampton City Public Schools

**Contact Person:** Mr. J. Joseph Johnson, Executive Director  
New Horizons Regional Education Centers  
757-766-0000  
jjohnson@nhrec.org

**Academy Location:** STEM Academy  
520 Butler Farm Road  
Hampton, VA 23666

**Number Students Served:** Seventh and eighth grades: 75-100 students; ninth and tenth grades: 150 students; eleventh and twelfth grades: approximately 180 students

**Pathways:** Electrical Engineering Technology  
Mechanical Engineering Technology

**Academy Goals and Description:** The Governor's Academy for Innovation, Technology and Engineering (GAITE) will foster a vibrant economy for the Virginia Peninsula and the Commonwealth by creating a culture that educates and trains innovators and technologists necessary for businesses to remain competitive in a global economy. GAITE will direct its initial focus on the Science, Technology, Engineering, and Mathematics (STEM) career cluster with the development of career pathways in engineering technologies, particularly electrical engineering technology and mechanical engineering technology. For these two career pathways, GAITE will establish regional enrichment programs to include *Engineering Technology Exploratory Saturdays* (seventh and eighth grades) and an *Engineering Technology Summer Camp* (ninth and tenth grades). GAITE will also establish an *Academy for Engineering Technology* (eleventh and twelfth grades) within at least one high school in each of the six school divisions in the Greater Peninsula area.

Under the facilitation of NHREC, the *Academy for Engineering Technology* will implement a unique Academy model that focuses on school division-based courses while utilizing regional courses at NHREC and the community colleges, as well as distance learning. GAITE's engineering technology curriculum will provide a seamless

alignment from middle school to high school to college, emphasizing advanced academics (Algebra I in 8th grade, Algebra II by 11th grade, and four years of science) and college-level technical training. The instructional pedagogy will implement project-based, experiential and cooperative learning. GAITE implementation will be supported by regional and school team-based professional development.

Upon successful implementation of this initial effort, GAITE will be expanded to develop enrichment programs and Academy designs for other career clusters and pathways such as geospatial technologies, modeling and simulation, nanotechnology, biotechnology, and other fields of innovation, technology and engineering based upon the work force needs of the Greater Virginia Peninsula.

NHREC is the largest and oldest regional center in the state and will become the only one to operate both a Governor's School (The Governor's School for Science and Technology) and a Governor's Academy for Career and Technical Education (GAITE).

**Highlights of the Academy:**

- A regional partnership facilitated by a Regional Education Center to establish regional and divisional programs focused initially on Electrical Engineering Technology and Mechanical Engineering Technology.
- The Virginia Space Grant Consortium will design and facilitate enrichment programs to include *Engineering Technology Exploratory Saturdays* and *Engineering Technology Summer Camp*.
- *The Academy for Engineering Technology* curriculum (eleventh and twelfth grades) will be aligned with Thomas Nelson Community College's and Old Dominion University's Engineering Technology degree programs.
- *The Academy for Engineering Technology* will be based in the school divisions, and courses will be offered at divisional high schools, NHREC, TNCC, and/or through distance learning.
- Students will earn college credits and industry credentialing as well as participate in a senior-year internship, mentorship, or project learning experience.

## **Governor's Career and Technical Academy in Arlington Executive Summary**

<b>Partnership Members:</b>	Northern Virginia Community College and Arlington County Public Schools are co-lead partners for the Governor's Career and Technical Academy in Arlington. Partners include The American Service Center; Arlington Employment Center; Passport Nissan; Nortel Telecommunications; The American Youth Policy Forum; Viral Media Productions; and Virginia Polytechnic Institute and State University. Other supporters include The American Association of Community Colleges; Arlington Economic Development; DeVry University; Farrish of Fairfax; National Science Foundation; Nortel Telecommunications; Passport Chrysler; and Passport Infiniti
<b>Lead Entity:</b>	Northern Virginia Community College
<b>Fiscal Agent:</b>	Northern Virginia Community College
<b>Contact Person:</b>	Mr. Milan Hayward, Special Assistant for Career and Technical Education Northern Virginia Community College 4001 Wakefield Chapel Road Annandale, VA 22003 (703) 323-2263 <a href="mailto:mhayward@nvcc.edu">mhayward@nvcc.edu</a>
<b>Academy Location:</b>	The Arlington Career Center 816 South Walter Reed Drive Arlington, VA 22204
<b>Number of Students Served:</b>	At least 50 students will be served during the 2008-2009 academic year, while up to 600 will be served at full implementation in the 2012-2013 academic year.
<b>Pathways:</b>	Engineering and Technology Audio and Video Technology and Film (Health Sciences) Support Services Information and Support Services Facility and Mobile Equipment Maintenance
<b>Academy Goals and Description:</b>	The Governor's Career and Technical Academy in Arlington promises a unique, jointly administered Career and Technical Education (CTE) Center, offering area CTE students the option of a five-year high school diploma/two-year college degree program. The Academy will be located within the Arlington Career Center and will open its doors in the fall of 2008 as a part-day program. Students will participate in featured dual enrollment CTE courses and supporting workplace activities, along with continued study at their respective home schools. Over the next several years, an increasing number of CTE and academic subjects will be offered until the

Academy also offers full-day programs as a comprehensive school.

The Academy's science, technology, engineering and mathematics (STEM)-infused curriculum will initially feature programs within five pathways: Audio and Video Technology and Film; Engineering and Technology; Facility and Mobile Equipment Maintenance; (Health Science) Support Services; and Information Support and Services. Additional programs in other pathways will be added as the Academy develops, providing broader academic and employment opportunities for more students. Virginia Polytechnic Institute and State University will provide staff development in Integrative STEM Education, helping the Academy assimilate a cross-disciplinary pedagogy in STEM/CTE education.

Expected student outcomes include improved high school graduation rates and enrollment in postsecondary education, as well as the reduced need for remediation and an increase in college student retention, transfer, and graduation. Relevant preparation for employment will be a hallmark of the Academy. Improvement in these areas will be effected through increasing STEM and CTE academic integration, strengthening the five featured pathways, training staff and raising awareness in STEM education, and improving data collection for continuous program improvement. Students will learn subject matter as appropriate through discovery, analysis, inquiry-based research, and on-the-job experience.

**Highlights  
of the  
Academy:**

- The Governor's Academy will be a joint secondary/postsecondary institution.
- Students can earn a college degree at no cost one year after high school graduation.
- Dual enrollment opportunities will exist for grades 11, 12, and beyond.
- Cross disciplinary pedagogy informed by Virginia Polytechnic Institute and State University's I-STEM Education program will be the major focus of staff development for teachers.
- The flexible Academy model will incorporate several pathways beyond the initial five over time.
- Student job shadowing and internships will be available across a variety of disciplines.
- Required Stretch projects will introduce students to real work-related projects.
- Involved business partners will assist in keeping curriculum relevant.
- Summer college coursework will be available.

## **STEM for LIFE Governor's Academy Executive Summary**

**Partnership Members:** Russell County Public Schools; Southwest Virginia Community College; The University of Virginia's College at Wise; Virginia Economic Development Program; Bostic, Tucker and Company; Virginia Coalfield Economic Development Authority; Appalachian Electric Power Company; Southwest Virginia Public Education Consortium; Town of Lebanon

**Lead Entity:** Russell County Public Schools

**Fiscal Agent:** Russell County Public Schools

**Contact Person:** Dr. Lorraine C. Turner, Superintendent  
Russell County Public Schools  
276-889-6518  
[lturner@russell.k12.va.us](mailto:lturner@russell.k12.va.us)

**Academy Location:** STEM for LIFE Governor's Academy  
P.O. Box 8  
One School Board Drive  
Lebanon, Virginia 24266

**Number Students Served:** 284 sixth graders in 2008-2009, 284 seventh graders in 2009-2010, 319 eighth graders in 2010-2011, and 425 high school students taking dual enrollment courses from 2008 through 2012.

**Pathways:** Science and Mathematics  
Engineering and Technology  
Information Support and Services

**Academy Goals and Description:** Russell County Public Schools, in partnership with business, industry, higher education, and local government, has developed the Science, Technology, Engineering and Mathematics for Lifelong Initiatives for Education (STEM for LIFE) Governor's Career and Technical Academy. The Academy will provide opportunities for all students in grades six through twelve to learn about STEM careers that are available locally, regionally, and nationally. In addition, the Academy will develop the academic skills and competencies necessary to prepare students for the work force and postsecondary education in STEM fields. The Academy pathways emphasize both academic and hands-on experiences. To gain parental and other local support for the Academy and its goals, career awareness sessions for parents and community members will be held. It is the philosophy of the STEM for LIFE Academy that a team effort is essential to the success of this program and that ongoing communication is key to its sustainability.

It is the intent of the STEM for LIFE Academy founders to expand into the surrounding school divisions and to produce a pipeline through which all students in southwest Virginia school divisions have access to STEM opportunities.

**Highlights  
of the  
Academy:**

- STEM for LIFE will begin in the sixth grade with students enrolling in the Gateway to Technology sequence, the middle school component of Project Lead the Way, which includes courses in Design and Modeling and the Magic of Electrons. Keyboarding classes will also be required for two nine-week periods.
- All seventh-grade students will continue to develop keyboarding skills. They will enroll in the continuation of the Gateway to Technology sequence through courses in Science of Technology, Automation of Robotics, and Flight and Space.
- A summer program for students in grades seven, eight, and nine will afford students the opportunity to study in the STEM areas and work on an original project.
- Through the Kuder career assessment program, each student will be assessed, explore jobs that align with identified areas of interest, and complete a job interview planner.
- A transition plan for students entering high school will be in place for seventh- and eighth-grade students to assist in a successful high school transition.
- All high school students in the Academy will be required to complete a service-learning project in addition to the internship, mentoring or job shadowing experience.
- Parents will receive updates and projections about career preparation and opportunities which are available locally, regionally, and statewide.
- Dual enrollment courses will be offered through Southwest Virginia Community College either with instructors at the high school or through distance learning.
- Students who graduate from one of the STEM for LIFE Academy pathways will meet necessary requirements in mathematics, science, and career and technical education to qualify for Technical and Advanced Technical diplomas.
- Extensive professional development for all academic and career and technical education teachers, guidance counselors, and administrators responsible for aspects of the Academy began in the spring of 2008 and will continue throughout the first year of the Academy.

## **Stafford Academy for Technology Executive Summary**

<b>Partnership Members:</b>	Stafford County Public Schools; Germanna Community College; Diversified Educational Systems; Employment Resources, Inc.; Fredericksburg Regional Alliance; Fredericksburg Regional Chamber of Commerce; Free Lance-Star; GEICO; Hilldrup Companies; Mary Washington Hospital/Medicorp; Rappahannock Region Small Business Development Center; R.L. Williams, Ltd./Autodesk, Inc.; Spotsylvania Technology Center; Stafford County Economic Development; Stafford County Career and Technical Education Advisory Committee; Stafford Rotary; University of Mary Washington; Virginia Employment Commission; Weldon Cooper Center; Workforce Investment Board, Inc.
<b>Lead Entity:</b>	Stafford County Public Schools
<b>Fiscal Agent:</b>	Stafford County Public Schools
<b>Contact Person:</b>	Ms. Kathleen M. Burant Director of Career and Technical Education Stafford County Public Schools 31 Stafford Avenue Stafford, VA 22554 (540) 658-6672 <a href="mailto:burantkm@staffordschools.net">burantkm@staffordschools.net</a>
<b>Academy Location:</b>	Brooke Point High School North Stafford High School Stafford High School
<b>Number of Students Served:</b>	Maximum of 180 in Phase I
<b>Pathways:</b>	Network Systems Science and Engineering
<b>Academy Goals and Description:</b>	<p>The Stafford Academy for Technology will be used as the catalyst to prepare students to meet both current and projected work force needs through an interdisciplinary course of study bringing science, technology, engineering, and mathematics together across all grade levels, K-16. The Academy will assure excellence by raising the aspirations of all students through: 1) the incorporation of workplace experiences as part of the school program; 2) the implementation of industry assessments; 3) the application of concepts through hands-on learning experiences; 4) the alignment of programs of instruction to emerging job opportunities; and 5) the coordination of related efforts throughout a partnership network.</p> <p>The Academy will open at three sites in Stafford County in the fall of 2008 with one site focusing on the Network Systems pathway and the other two</p>

sites on the Science and Engineering pathway. Access will be provided for students from all five Stafford County high schools. There is a substantial opportunity for dual enrollment coursework and career and technical integration as part of the Academy educational experience. The curriculum of the seven Stafford County middle schools will support and encourage enrollment in the Academy.

**Highlights  
of the  
Academy:**

- The Stafford Academy for Technology has a strong and growing partnership including representatives from business and industry, postsecondary educational institutions, work force and economic development groups, parents, and Stafford County Public Schools.
- A major component of the Academy is the integration of academics and career and technical education staff and curriculum.
- The Stafford Academy for Technology is building upon Project Lead the Way to give students pre-engineering curriculum at the middle and high school levels.
- FIRST Robotics, N-STAR projects and Legos™ will be incorporated into the middle school curriculum so that students will receive hands-on experience applying instructional technology and science and engineering concepts.
- Small learning communities will be a hallmark of the Academy to give students more personalized instruction.
- Required service learning experiences are incorporated into students' Academy experiences.
- The Stafford Academy for Technology will address the needs of special populations and nontraditional students in engineering and technology fields.
- The strong connection with business and industry partners will facilitate mentorships, job shadowing, cooperative education, and internships as early as the tenth grade.
- The two pathways will be the model for expanding the Academy concept to the development of a future STEM-based career and technical education center.

## **Fostering Innovation and Relevance through STEM and Trades (FIRST) Executive Summary**

<b>Partnership Members:</b>	The Pruden Center for Industry and Technology; Suffolk Economic Development; Tidewater Community College; Hampton Roads Research Partnership; Isle of Wight County Public Schools; Suffolk City Public Schools; Isle of Wight Chamber of Commerce; Isle of Wight Economic Development; Isle of Wight County Government; The Pruden Foundation; Sentara Obici Hospital; Starr Motor Company
<b>Lead Entity:</b>	The Pruden Center for Industry and Technology
<b>Fiscal Agent:</b>	City of Suffolk Public Schools
<b>Contact Person:</b>	Mr. Corey McCray, Director The Pruden Center for Industry and Technology (757) 925-5651 <a href="mailto:cormccray@prudencenter.net">cormccray@prudencenter.net</a>
<b>Academy Location:</b>	The Pruden Center for Industry and Technology 4169 Pruden Boulevard Suffolk, VA 23434
<b>Number of Students Served:</b>	Fifty students will be enrolled in the Engineering and Technology Pathway in the fall of 2008.
<b>Pathways:</b>	Engineering and Technology (Modeling and Simulation Support Specialist) Interactive Media (Geographic Information Systems - GIS)
<b>Academy Goals and Description:</b>	<p>The program of study for the FIRST Academy includes two career pathways: Interactive Media with a specialization in Geographic Information Systems (GIS) and Engineering and Technology with a specialization in Modeling and Simulation. The Pruden Center will focus efforts for the 2008-2009 school year on implementing the Modeling and Simulation Support Specialist instructional program, as part of the Engineering and Technology career pathway. Implementation efforts for the 2009-2010 school year will focus on GIS, as part of the Interactive Media career pathway. Long-range plans include developing additional programs of study.</p> <p>The FIRST Academy instructional programs will focus on the integration of academics and Career and Technical Education (CTE), enhanced career development/guidance services, work-based learning offerings, industry credential opportunities and transition agreements, thus creating a seamless transition to postsecondary education and/or high-demand, high-wage, high-skill employment.</p> <p>The goals of the FIRST partnership are to:</p> <ol style="list-style-type: none"><li>1. Increase opportunities for students to receive rigorous academic instruction contextually as part of career and technical education program offerings.</li></ol>

2. Increase the emphasis on STEM career pathways.
3. Develop individualized high school plans to ensure course selections that are aligned with student postsecondary education and career aspirations.
4. Ensure that graduates complete a college and work readiness curriculum, minimally at the level of the Commonwealth Scholars Course of Study.
5. Ensure that graduates will qualify for the Advanced Technical or Technical Diplomas.
6. Incorporate Virginia's Workplace Readiness Skills.

**Highlights  
of the  
Academy:**

- Students completing the Engineering and Technology pathway will have the option of pursuing an Associate of Science degree in Modeling and Simulation Technology at Tidewater Community College. This degree prepares students to enter the work force, and/or transition to a baccalaureate program at Old Dominion University.
- Students completing the Interactive Media pathway will have the option of pursuing a Career Studies Certificate in Surveying and/or an Associate of Liberal Arts degree at Tidewater Community College, enabling them to transition to a baccalaureate program at Old Dominion University.
- FIRST Academy students will receive enhanced science, technology, engineering and mathematics (STEM) instruction through: contextual application/course integration, monthly STEM focus sessions, summer enrichment opportunities, career and technical student organizations (CTSO) activities and enhanced career planning/development.
- The FIRST Academy students will complete a project including a portfolio, presentation, research paper and project components.
- The design of the Modeling and Simulation Support Specialist I and II and GIS courses will support a variety of learning experiences such as project-based learning, simulations, and guest speaker presentations.
- The design of the Modeling and Simulation Support Specialist I and II and GIS courses will also support a variety of external workplace learning experiences such as Student Technical Internships (STIs), job-shadowing, and mentorships.

## **The Loudoun Governor's Career and Technical Academy Executive Summary**

<b>Partnership Members:</b>	Loudoun County Public Schools; Monroe Technology Center; Northern Virginia Community College; Shenandoah University; Virginia Polytechnic Institute and State University; George Washington University; REHAU; Fortessa, Inc.; Lockheed Martin; Metropolitan Washington Airports Authority; America Online, LLC; Loudoun County Economic Development, The Claude Moore Charitable Foundation; TELOS/Xacta Corporation; Hayes-Large Architects; Jerry's Automotive Group
<b>Lead Entity:</b>	Loudoun County Public Schools
<b>Fiscal Agent:</b>	Loudoun County Public Schools
<b>Contact Person:</b>	Ms. Shirley L. Bazdar Director of Career and Technical Education Loudoun County Public Schools 571-252-1070 <a href="mailto:shirley.bazdar@loudoun.k12.va.us">shirley.bazdar@loudoun.k12.va.us</a>
<b>Academy Location:</b>	The Loudoun Governor's Career and Technical Academy 715 Childrens Center Road, SW Leesburg, Virginia 20175
<b>Number of Students Served:</b>	One hundred twenty-five high school students will have the opportunity to enroll in the Academy for the 2008-2009 school year. Future plans are in place to expand and grow Academy programs.
<b>Pathways:</b>	Plant Systems Diagnostic Services Therapeutic Services Engineering and Technology Facility and Mobile Equipment Management
<b>Academy Goals and Description:</b>	The Loudoun Governor's Career and Technical Academy will provide rigorous academic content within its career and technical instruction, concentrating on five career pathways. Academic integration and STEM curriculum expansion will enhance student learning through curriculum enhancements and targeted staff development with concentrations on integrative applications of mathematics and science. Academic content integration will be facilitated by enrollment in the STEM certificate/degree program at Virginia Polytechnic Institute and State University for identified faculty. A cluster resource teacher will also be identified to assist with curriculum enhancement and monitoring. Each of these tools will be used to connect and integrate academic content areas. Additionally, a partnership with the Loudoun Academy of Science program will enhance the academic rigor and create opportunities for future STEM education initiatives. Graduates of The Loudoun Governor's Career and Technical Academy will complete a college and work readiness curriculum meeting the

Commonwealth Scholars course of study. High school diploma completion will include up to nine career and technical course credits that can be earned, including corresponding industry credentials. Academy graduates will meet the requirements for an Advanced Technical Diploma. Opportunities will be available within Academy programs for students to earn at least nine dual enrollment college credits. Academy programs will utilize Virginia's Workplace Readiness competencies. Advisory committee members will work with Academy students by offering seminars addressing topics such as life skills, background checks, or professional ethics and behaviors.

**Highlights of  
the  
Academy:**

- Dual enrollment opportunities will be available through Northern Virginia Community College and Virginia Polytechnic Institute and State University. Future dual enrollment opportunities will be made available through the George Washington University and Shenandoah University.
- Academy students will receive enhanced science, technology, engineering, and mathematics instruction via the staff development opportunities, curriculum enhancement, and partnerships with the Loudoun Academy of Science, as well as advisory and planning committee member participation.
- The Health Science cluster pathways contain two new and innovative pathway programs. Curriculum is currently being developed at the CTE Resource Center for these two pathways. The Medical Laboratory Technology and Radiology Technology pathway programs have been created through the support and partnership of the Claude Moore Charitable Foundation and the Inova Healthcare System.
- The Agriculture, Food and Natural Resources Plant Systems pathway is aligned with the global movement to develop more green technologies and practices to conserve and protect earth's natural resources.
- The Transportation, Distribution and Logistics Facility and Mobile Equipment Maintenance pathway will provide direct instruction in the development and maintenance of alternative fuels and hybrid vehicles.
- The Engineering and Technology pathway offers a digital visualization and animation program. This program prepares students to enter the evolving career fields of animation, gaming and software development, prototyping, and rendering.

## APPENDIX D

### VIRGINIA'S TECHNICAL SKILL ATTAINMENT ASSESSMENT

**STEP ONE OBJECTIVE:** Strengthen the validity and reliability of the Student Competency Record system so it can be used as a part of Perkins IV technical skills assessment.

#### **Beginning 2007 – 2008**

##### **STRATEGIES:**

- 1. Student Competency Records will be used correctly by CTE teachers as a reliable formative assessment component of Perkins technical skills assessment.**

##### **Direct Benefit to Teaching and Learning:**

- Teachers are in the best position to assess student learning in a formative fashion.

##### **Current Reality:**

- Student Competency Records are not always used by CTE teachers according to reliability standards.

##### **Gap Analysis:**

- Guidelines are needed for the use of Student Competency Records by CTE teachers.

##### **Progress Measures:**

- CTE directors report and certify that SCRs are being used correctly by teachers in all courses.

##### **Key Department of Education Strategies to Reach Target:**

- Guidelines for the use of Student Competency Records have been developed and made available to school divisions.
- A certification form has been developed for CTE directors and teachers to attest to the correct use of SCRs (to include signature of division superintendent).

**Key School Division Collaborative Strategies to Reach Target:**

- CTE directors will meet with teachers to explain the importance of keeping reliable SCRs, and that this system will be a major component in meeting Perkins IV technical skills requirements.
- School division will utilize the SCR sign-off form to attest to the fact that the competency check-off system was used correctly by CTE teachers.
- Principals will expect teachers to follow state developed guidelines for the use of SCR, and will work with CTE administration to ensure compliance.

**2. Establish a student performance benchmark pertaining to the use of Student Competency Records.**

**Direct Benefit to Teaching and Learning:**

- Students will be expected to achieve a satisfactory rating on at least 80% of the essential course competencies in the terminal course of a CTE program sequence as determined by the teacher's rating of one, two, or three for each essential competency using the SCR rating scale.

**Current Reality:**

- Student Competency Records are not always used to assess technical skills by CTE teachers according to accepted reliability standards.

**Gap Analysis:**

- Guidelines are needed to outline the correct use of Student Competency Records by CTE teachers.

**Progress Measures:**

- CTE directors report the number of graduating completers who are meeting at least 80% of CTE course competencies (terminal course of completer sequence).

**Key Department of Education Strategies to Reach Target:**

- Guidelines for the correct use of the Student Competency Records has been developed and made available to school divisions.

**Key School Division Collaborative Strategies to Reach Target:**

- CTE directors will meet with teachers to explain the importance of keeping reliable Student Competency Records, and that this internal student evaluation system will be a major component in meeting Perkins IV technical skills assessment requirements.

**Other Key Stakeholder Collaborative Strategies to Reach Target:**

- Principals will expect teachers to follow state developed guidelines for the use of SCRs, and will work with CTE administration to ensure compliance.

3. **The use of “Student Competency Records” (SCR) as a valid assessment method:**

- serves to recognize and respect the expertise of the CTE instructor to evaluate student knowledge and technical skill; and
- is considered an internal assessment. External examinations cannot duplicate the instructor’s comprehensive and formative appraisal of students’ mastery of the skills and knowledge included in a CTE course.

**STEP TWO OBJECTIVE:** Assist each school division to establish in 2008 – 2009 a “set” of external credentials that can be used to test a baseline number (33%) of graduating CTE completers with an acceptable pass rate (50% or above).

**Beginning 2008 – 2009**

**STRATEGIES:**

1. **External credentials will be used to test at least 33% of all graduating CTE completers in each school division.**

**Direct Benefit to Teaching and Learning:**

- Students will gain industry standard skill sets (in the form of a recognized external credential) that will, either benefit them in gaining entry-level employment, and/or serve as a “stepping stone” in building a resume for a chosen career pathway.

**Current Reality:**

- A significant number of school divisions are not using external credentialing to test at least 33% of their graduating CTE completers.

**Gap Analysis:**

- Many school divisions need assistance in selecting and establishing a baseline “set” of external credentials for testing graduating CTE completers.

**Progress Measures:**

- CTE directors report testing data to Department of Education that demonstrates external credentialing is being used to test at least 33% of their graduating CTE completers for 2008 – 2009

**Key Department of Education Strategies to Reach Target:**

- Implementation data (reflecting credentialing usage in Virginia for the last two school years) have been collected and posted to Virginia's credentialing Web site for each CTE program.
- Reference information on credentialing entities and options for CTE programs are available in the Administrative Planning Guide as well as on Virginia's credentialing Web page.
- Provide state funding for technical skills assessment using external credentials based on number of students in related CTE classes.

**Key School Division Collaborative Strategies to Reach Target:**

- Implement a testing process, using one or more external credentials (division minimum "set"), that will test at least 33% of all graduation CTE completers for 2008 – 2009.
- If state funding is not adequate, allocate funding to test at least 33% of CTE program completers.
- School principals and division superintendent monitor and support the testing process for the division's minimum "Set" of external credentials as used by specific CTE classes

**2. Graduating CTE completers tested with external credentials (using division's chosen minimum "set") achieve at least 50% average pass rate.****Direct Benefit to Teaching and Learning:**

- Students will gain self-esteem as they prove that they can master market-standard technical skill sets.

**Current Reality:**

- Many credentials are being used with a less than desirable student pass rate percentage.

**Gap Analysis:**

- Efforts are needed to determine the cause of low student pass rates for any external credential not meeting at least a 50% pass rate.

**Progress Measures:**

- CTE directors report testing data to Department of Education that demonstrates external credentialing is being used to test at least 33% of their graduating CTE completers achieving an average 50% pass rate.

**Key Department of Education Strategies to Reach Target:**

- Assist school divisions in achieving success with their minimum "set" of credentials chosen for Perkins IV technical skills assessment.

**Key School Division’s Collaborative Strategies to Reach Target:**

- Develop program improvement strategies (i.e., curriculum alignment and targeted instructional methods) that will improve the utilization of credentials in CTE classes in an effort to achieve at least an average 50% student pass rate.
- School principals and division superintendent monitor and support the testing process for the division’s minimum “set” of external credentials as used by CTE classes.

**STEP THREE OBJECTIVE:** Assist school divisions to begin the process of “continuous improvement” for technical skills assessment by establishing external specific credentialing benchmarks.

**Beginning 2008 – 2009**

**STRATEGIES:**

- 1. Establish external credentialing benchmarks relating to the NUMBER of graduating completers tested in CTE program.**

**Direct Benefit to Teaching and Learning:**

- As many graduating completers as possible in CTE programs will have an opportunity to demonstrate competency in relevant job market skill sets.

**Current Reality:**

- A majority of school divisions are not testing 100% of graduating CTE completers using at least one external credential.

**Gap Analysis:**

- Realistic “continuous improvement” goals are needed for technical skills assessment of graduating CTE completers.

**Progress Measures:**

- School divisions report to the Department of Education on one or more of the following continuous improvement goals: increase in the total number of CTE completers tested with an external credential or increase in the total number of CTE areas and programs that are using external testing for CTE graduating completers.

**Key Department of Education Strategies to Reach Target:**

- Negotiate with each school division regarding the achievement of “continuous improvement” goals. Provide comparative data on credentialing implementation statewide that will help each school division set realistic “continuous improvement” goals.

**Key School Division Collaborative Strategies to Reach Target:**

- Develop a plan and process for establishing “continuous improvement” benchmarks regarding the number of CTE completers externally tested as well as the number of CTE areas and programs utilizing external credentialing for CTE graduating completers.
- School principals and division superintendent monitor and support the testing process for the division’s minimum “set” of external credentials as used by specific CTE programs.

**2. Establish realistic credentialing benchmarks relating to the PERCENTAGE of graduating completers who pass external credentials.**

**Direct Benefit to Teaching and Learning:**

- As many CTE completers as possible will have a successful opportunity to demonstrate competence in job market skill sets by passing one or more external credentials.

**Current Reality:**

- Pass rates on many external credentials being utilized are not at desirable levels.

**Gap Analysis:**

- Realistic “continuous improvement” goals for credentialing student pass rates are needed for each external credential being used to test graduating CTE completers.

**Progress Measures:**

- School divisions report to the Department of Education on one or more of the following: Increase in the division’s average pass rate for all CTE completers tested or increase in the pass rate for each specific credential used as a part of the division’s minimum “set” of credentials.

**Key Department of Education Strategies to Reach Target:**

- Negotiate with each school division regarding the achievement of “continuous improvement” goals. Provide comparative data on credentialing implementation statewide that will help each school division set realistic “continuous improvement” goals.

**Key School Division Collaborative Strategies to Reach Target:**

- Develop a process for establishing continuous improvement goals regarding the percentage of CTE completers externally tested who pass specific credentials as well as the average passing percentage for CTE areas and programs utilizing external credentialing for graduating completers.
- School principals and division superintendent monitor and support the testing process for the division's minimum "set" of external credentials as used by specific CTE programs.



### **Wednesday, November 16, 2005 - Continued**

12:45 – 1:45

Lunch

2:00 - 3:45

Routed & Routing Protocols

Andy Wolfenbarger

Routed protocols transport data across a network. Routing protocols allow routers to choose the best path for data from a source to a destination.

### **Thursday, November 17, 2005**

9:00 – 10:45

DHCP

Nels Marvin

DHCP enables DHCP clients on an IP network to obtain their configurations from a DHCP server.

11:00 – 4:00

Lunch/Review/Testing