Final Report – October 16, 2010

Introduction

On January 16th 2010, immediately after his inauguration, Governor Bob McDonnell signed Executive Order One, creating the Governor's Economic Development and Job Creation Commission. He charged the Commission Co-Chairs, Lieutenant Governor Bill Bolling and Senior Economic Advisor Bob Sledd, and the Commission members with developing innovative and achievable policy recommendations to further develop an environment for job creation and economic growth in Virginia.

To accomplish its mission, the 64 members of the Commission were organized into eight subgroups focused on key industry sectors and elements of economic development in Virginia:

1. Business Recruitment and Development
2. Economically Distressed Areas
3. Energy
4. Manufacturing
5. Small Business
6. Technology
7. Tourism
8. Workforce Development

The subgroups were assigned Commission staff and given the support of agency representatives pertinent to the subject matter of the subgroup.

Over the last five months, the Commission members have worked tirelessly with agency representatives and stakeholders from across the Commonwealth to analyze Virginia's economic development programs and agencies, assess competitive initiatives in other states and consider existing tax and regulatory impediments to job creation.

The Commission subgroups used volumes of research, hours of discussion and their vast personal expertise to develop a series of comprehensive recommendations to strengthen key strategic industries in Virginia, better position the private sector and entrepreneurs to grow their business and create new jobs and make Virginia a more competitive national and international business destination. The complete reports of the Commission subgroups, including significant additional detail on all of the recommendations, are available on the Jobs Commission website – www.ltgov.virginia.gov/initiatives/jcc.

The final report of the Commission attempts to prioritize and condense the subgroup recommendations around a set of common themes to address deficiencies in Virginia's economic development systems and position Virginia to better create jobs and provide greater prosperity for Virginians.

Analysis

While Virginia is consistently ranked as the most business friendly state in America, the Commission subgroups identified through research, personal experience and discussion with agency representatives and other stakeholders several general areas where Virginia's economic development systems, programs and infrastructure are insufficient to meet current and future needs of business. Some of these common deficiencies include:

- Virginia's innovation economy lacks appropriate coordination with higher education institutions and infrastructure needed to capitalize and commercialize on future emerging technologies and industries.

- Key sectors such as small business, tourism and biotechnology, among others, have historically lacked the attention, resources and tools commensurate with their return on investment, value to Virginia's economy and capacity to create jobs.

- Virginia must more effectively align higher education, workforce development and incentive programs with strategic regional and statewide priorities and assets.

- Virginia's workforce development system lacks the coordination and leadership to adequately provide the workforce needed to support new and existing businesses and be prepared for the jobs of the future.

- Budget reductions during previous Administrations have negatively affected Virginia's existing economic development programs, incentives and marketing initiatives.

- Virginia's tax structure affects some businesses unevenly and unfairly, stifles capital investment and perpetuates competitive disadvantages in key industries.

The Commission report contains 50 specific recommendations to address these and other challenges. The proposals promote greater coordination and efficiencies in our economic development systems, investment in proven job creating programs and establishment of innovative new incentives to grow existing business and industry. These recommendations will position Virginia to remain competitive nationally and internationally in the emerging, evolving 21st century economy.

The recommendations are grouped into seven themes to address the opportunities identified by the Commission.

1. Growing Virginia's Innovation Economy
2. Transforming Academic Institutions into Economic Engines

3. Business Growth and Development
4. Training Workers for Virginia Businesses
5. Coordinated, Efficient and Effective Economic Development Strategies
6. Promoting the Virginia Brand
7. Virginia's Business Tax Policy

Some of the Commission recommendations are achievable through administrative or legislative action, while others represent long-term goals of the subgroups that will require additional refinement, discussion and development with affected stakeholders and legislators and consideration of budgetary impact.

Governor McDonnell and the Commission leadership understand by increasing revenue growth through economic growth, this leads to additional resources for education, health care, transportation, public safety and other essential programs. Increased funding for economic development programs with proven return on investment will ultimately generate more revenue to pay for the other core services of state government.

This final report is a comprehensive roadmap for enhancing economic development, creating jobs and strengthening Virginia's position as the best place for business in America. From the development of emerging industries and collaboration with higher education to expanding existing industries and building a highly-skilled workforce to more effective and responsive systems and superior marketing, the Commission has presented a detailed blueprint to best position Virginia business and industry to create jobs and economic opportunity for all Virginians.

Growing Virginia's Innovation Economy

Virginia is non-competitive in the development and commercialization of evolving and emerging technologies that are the cornerstone of a 21st century innovation economy. In 2006, Virginia ranked last among our peer competitor states for per capita patents awarded. As the 2007 SRI International Report recognized, "Virginia possesses important assets and initiatives related to innovation, but the Commonwealth has not reached its potential."

Additionally, Virginia lacks the necessary infrastructure and collaboration between research universities and industry to maximize and capitalize on ideas and concepts put forward by emerging technology entrepreneurs.

Virginia's existing environment is prohibitive to the development of emerging and innovative companies. However, Virginia does possess the assets – business climate, higher education assets, existing industry and entrepreneurial spirit – to position itself as a leader in the innovation economy.

For the next Apple, Google or Facebook to start in Virginia instead of California or Massachusetts, Virginia needs to establish a structure to increase collaboration and coordination between industry, higher education and emerging technology entrepreneurs.

Several states currently offer innovative solutions to this problem by leveraging private sector participation and revenue streams separated from the general appropriations process. In order for Virginia to become competitive and eventually a leader in the innovation economy, we must create a structure to provide capital and knowledge centers for the development and commercialization of advanced technology companies in the Commonwealth.

To grow Virginia's innovation economy, the Commission recommends the following:

1. Emerging Technology Fund
2. *VentureVirginia*
3. Advanced Technology Convertible Loan Fund
4. Refundable Research and Development Tax Credit

Emerging Technologies Fund

While the Commission does not believe the role of government is to select winners and losers in the marketplace, government can serve as a catalyst for leveraging the entrepreneur, Virginia's higher education research assets and private-sector funding through a program such as an emerging technologies fund (similar to a program in Texas). This would provide a structure and funding to encourage evolving technologies that create industries of the future.

Such a fund would address research commercialization awards to grow new businesses and existing businesses and accelerate entrance of new products and services to the marketplace; provide institutions of higher education and companies engaged in research a source of matching

funds for outside funding; and provide research superiority acquisition grants to create an eminent scholars program.

An emerging technology fund would help fill an imperative strategic gap in Virginia's current array of business incentives. By encouraging research-based technologies, Virginia can support existing and new small, medium and large businesses. The Fund would be governed by a board of technology experts and potentially be divided into three areas:

- Research Commercialization Awards - grow new small businesses/existing businesses; accelerate entrance of new products/services to the workplace;
- Research Award Matching - provide institutions of higher education/companies engaged in research a source of matching funds for outside funding opportunities; and
- Research Superiority Acquisition Grants - provide source of funds for bringing the best and brightest researchers.

An emerging technology fund will provide a comprehensive structure to foster the development and commercialization of the best emerging technology companies through capital, collaboration and industry expertise and be a signal to the national innovation, knowledge-based economy that Virginia is the best place to start their next business.

While the Commission envisions an emerging technology fund as an umbrella approach to developing Virginia's innovation economy, the Commission subgroups also recommended other initiatives that could be complementary to or included in this fund.

VentureVirginia

In order to compete in today's economy, it has become increasingly important to find innovative ways to lure capital investment dollars. A *VentureVirginia* program would incentivize high wage job creation and public-private partnerships to catalyze entrepreneurial investment in high growth, advanced technology industries in the Commonwealth. These high-growth, 21st century companies pay higher wages and have larger multiplier ratios than traditional businesses in Virginia.

Consistent with the approach taken by *Invest*Maryland, a *VentureVirginia* program would offer tax credits to insurance companies that expedite payment of their state taxes. For every $1 of tax credits to insurance companies offered by the Commonwealth, insurance providers that pay taxes to the state can receive an up-front discount on the credit for investing in the program. The concept is similar to the Small Business Investment Credit offered by Delegate Merricks during the 2010 Session of the General Assembly. This program would get capital flowing to high growth, high wage, advanced technology firms now when they need it the most.

Other approaches to fund the *VentureVirginia* Program might include the above and some combination of: (1) extending the above-described tax credit to corporations outside of the insurance industry; (2) extending a tax credit to high net worth individuals seeking participation in a diversified portfolio of early stage investments by a combination of return and tax incentive;

and (3) matching funds from state loans which are repaid with interest, similar to the Enterprise Capital Funds program in the UK.

The funds raised by the *VentureVirginia* program would be targeted at programs that commercialize qualified advanced technologies in Virginia. The funds raised would be used for technology-based economic development initiatives that encourage investment in seed-stage technology and life sciences companies.

VentureVirginia will provide an influx of capital and deal flow today when the economy needs it the most. This program will generate state and local taxes, attract out of state venture capital funds and create high-paying, full time jobs with no immediate fiscal impact to the state.

Advanced Technology Convertible Loan Fund

Based on a successful North Carolina program, this program would provide additional investment capacity to the CIT GAP Fund, an initiative that makes seed-stage equity investments in Virginia-based technology and life science companies with a high potential for achieving rapid growth and generating significant economic return. This program would loan up to $500k paid out over 12-18 months based upon developmental milestones of qualified, advanced technology companies.

Refundable Research and Development Tax Credit

Virginia is one of only twelve states that do not offer a Research and Development (R&D) tax credit. Small research-intensive advanced technology companies often take ten or more years to get a product to market. Tax credits are extremely helpful to provide capital, especially if they are refundable or transferable.

The Commission proposes a Virginia R&D Refundable Tax Credit, equal to 1-6% of the federal credit, scaled based upon the R&D investment, with a special 6% credit for qualified advanced technology start-ups and early-stage firms. A special incentive (and additional 6-10%) could be added if the research is performed by a Virginia university. For qualified start-ups and early-stage firms with 50 or fewer employees, the state will refund in cash 65% of the value of R&D credits that cannot be used for lack of tax liability, in lieu of a carry-forward option.

The R&D Tax Credit will end Virginia's competitive disadvantage by adding this important incentive tool for advanced technology firms and provide needed capital for technologies invented at Virginia universities that would otherwise never be commercialized, create jobs or add to the tax base.

Transforming Academic Institutions into Economic Engines

While Virginia has one of the best higher education systems in America, our colleges and universities' economic development potential is severely underutilized. The Commission believes that our universities' research and development capabilities and collaboration with the private sector are deficient and recognizes the need to make fundamental changes in how we disseminate information with our institutions of higher education excellence.

While the Commission's recommendations to grow Virginia's innovation economy are an important part of utilizing higher education for economic development, it is only one part of the role our academic institutions can play to help create jobs and grow Virginia's economy.

In order to remain competitive in the high growth industries of today's market, Virginia must maximize the existing assets of our higher education system. With improved collaboration between the business community and the research and development initiatives of universities, Virginia can provide a nurturing environment for new and existing businesses and a workforce ready to meet the demands of evolving industries.

There is currently no method to comprehensively identify and tie the pockets of excellence in our higher education system to business outcomes. Lack of catalyzed coordination among the universities is lost opportunity. Virginia has the potential to cultivate a reputation for creative and distributed innovation leading to job creation and new capital investments benefitting all regions of the Commonwealth.

To transform academic institutions into economic engines, the Commission recommends a series of proposals including:

1. Centers of Excellence
2. Energy Based Research
3. Energy Education and Energy Degrees
4. Agriculture Research
5. Agriculture and Veterinary Graduates

Expand Initiatives Such as Industry "Centers of Excellence"

The Commission recommends establishing research-based collaborations or "Centers of Excellence" between private industry and our research universities as an effective way to boost Virginia's economic development performance.

An example of such a center, the Commonwealth Center for Advanced Manufacturing (CCAM), represents a model for devising additional centers that align with our target markets and leverage our universities' expertise into these areas. The model has been proven internationally and other states are developing similar approaches to help them compete in the innovation economy.

The key is having private industry in a leadership role to help establish and validate targeted markets and direct research efforts in a manner most likely to have commercialization and resulting job creation benefits. Building on inherent strengths within Virginia, the energy and information technology markets are highlighted as natural targets for additional centers of excellence.

Energy-Based Research Coordination

Virginia's natural resources together with the strategic leadership by provided by Governor McDonnell have positioned Virginia to be the "Energy Capital of the East Coast." However, increased coordination between higher education, the Commonwealth and industry is needed to maximize that potential.

The five energy centers being established by the Virginia Tobacco Commission provide an opportunity to create a synergy in this area and to better handle intellectual property issues for higher education. This is an opportunity to increase energy entrepreneurship and put Virginia on the map as an innovative technology economy. In addition, an emerging technologies fund, as previously recommended, will provide strategic and flexible incentive opportunities as it relates to quickly evolving, energy technologies.

The Commission recommends maximizing the investment in clean energy research and development in the following ways: 1) Universities Clean Energy Development and Economic Stimulus Foundation; 2) establishing the Virginia Energy Initiative to bring together research capabilities of our major research universities under one canopy to help focus efforts on developing energy technologies and energy jobs for the 21st century and; 3) supporting the work of the Virginia Coastal Energy Research Consortium (VCERC) and the Virginia Offshore Wind Development Authority's efforts to grow Virginia's offshore wind development and supply chain industries.

Energy Education and Energy Degrees

While higher education can play a greater role in energy research, our four-year colleges and universities and community colleges should bolster and expand their energy-related degree programs.

Between the possible expansions of Dominion's North Anna nuclear power station, potential uranium mining in Pittsylvania County and the existing nuclear work of Babcock & Wilcox, AREVA and Northrop Grumman, nuclear resources are positioned to be an increasingly significant energy resource for Virginia.

To prepare for the high-skill, high-paid nuclear jobs, the Commission recommends expanding university programs in areas such as nuclear power, energy engineering and environmental management, including nuclear engineering and nuclear technician programs.

While Virginia Tech, the University of Virginia and Virginia Commonwealth University have begun to move in this direction, this area is a void in the workforce.

Additionally, community colleges should expand jobs training in high growth areas such as energy auditing and efficiency, utility and related trade activities and renewable system operation and maintenance.

Agriculture Research

Agriculture is the #1 industry in Virginia employing over 500,000 people and a key economic development driver in many economically distressed communities in Virginia. The Commission recommends investing in agriculture and forestry research and outreach to ensure the economic viability and growth of the agribusiness industry.

At Virginia's two land grant universities, Virginia Tech and Virginia State University, focused research is conducted on improving human and animal health and nutrition, enhancing the quality of the environment, reducing the effects of major infectious diseases, developing value-added products, building viable communities, and preventing chronic diseases such as obesity, heart disease, and diabetes. Through the Virginia Cooperative Extension, this knowledge is put into the hands of farmers, foresters, and agribusiness men and women to advance economic development.

Agriculture and Veterinary Medicine Programs

Virginia must ensure higher education opportunities for agriculture, forestry and veterinary medicine students by finding solutions for accepting more students with an interest in those fields to Virginia Tech and Virginia State University. Virginia is losing its own students to other states who have larger programs and accept more students. Taxpayers have invested in their K-12 education and a solution needs to be found to ensure these students remain in the Commonwealth to further their agriculture and veterinary education.

Virginia must also actively support the recruitment and retention of large animal veterinarians in Virginia. A moderate to severe shortage of food animal veterinarians both in the private and public sector over the next 20 years has been predicted, especially in the Southern and far Southwest areas of the Commonwealth.

Potential solutions may include support for federal legislation addressing the issue, growing the Virginia-Maryland Regional College of Veterinary Medicine, access to Industrial Development Authority funds for establishment of veterinary practices in rural areas and inclusion as an area supported by the Tobacco Commission.

Business Growth and Development

Developing emerging technologies and an innovation economy are crucial to the future economic prosperity of Virginia. However, to remain competitive and create jobs and opportunity for Virginians today, we must invest in and develop key existing industries and economic development infrastructure to recruit new business to Virginia.

Some key industries have historically lacked the attention, resources and tools commensurate with their return on investment, value to Virginia's economy and capacity to create jobs. To help these existing industries grow and provide an attractive environment for new businesses to locate in Virginia, we must maximize and further develop our existing assets and resources.

The Commission offers the following recommendations to assist business development in certain strategic sectors of Virginia's economy:

1. Technology
    a) Incubator and Commercialization Centers
    b) Advanced Technology Relocation Fund
    c) Biotechnology Wetlab Facility Construction
2. Small Business
    a) Small Business Investment Tax Credit
    b) Virginia Small Business Financing Authority
3. Tourism
    a) Tourism Development Grant Program
    b) Tourism Development Micro Loan Fund
    c) Motion Picture Grant and Tax Credits
    d) Winery Development Tax Credit
4. Revitalization and Redevelopment
    a) Virginia Main Street Program
    b) Brownfield Redevelopment
    c) Industrial Site Revitalization
5. Port of Virginia Tax Credit

Technology

Technology Incubators and Commercialization Centers

Knowledge-based businesses are often founded by scientists, engineers and other technology-oriented individuals who may have had little or no experience in starting a business or in dealing with business challenges. According to the National Business Incubation Association (NBIA), businesses started in organized incubators utilizing industry best practices have a much higher success and survival rate.

- 87% of companies started in an incubator program are still in business after 5 years.

- Companies started outside of organized incubators have a 30% failure rate after 2 years and over 50% in 5 years.
- 90% of companies started in incubator programs tend to remain in the community.

Knowledge-based companies often face unique challenges including protecting their intellectual property, regulatory hurdles, dependency on non-traditional sources of capital, and exit strategies such as licensing or joint ventures with very large multi-national companies. However, these companies tend to a high rate of job creation many with high average wages.

A technology incubator or commercialization center would partner with local governments, commercial real estate owners, vendors, suppliers and others who see and support the economic development benefits and the long term potential for return on investment. The Commonwealth would typically support salaries and operating costs of the incubator with a high degree of leverage from the other sources, both direct and indirect, in order to construct a program that meets industry best practices.

Incubator programs would be targeted for areas of the state where the potential to create and expand knowledge-based companies and jobs in targeted high technology sectors has the greatest potential for success. This type of program would be developed using proven standards and metrics and through partnerships and affiliated agreements and would result in a 5:1 return on state investment. Incubators would likely result in new technology companies, each bringing highly skilled, high paying and sustainable jobs.

Advanced Technology Relocation Fund

As previously mentioned, Virginia has few incentive tools that specifically target small and mid-sized successful, high growth, high wage technology companies. The Advanced Technology Relocation Fund would provide an effective vehicle that could be marketed to attract innovation economy companies from Maryland, North Carolina, Pennsylvania and other states.

The Fund would develop a targeted relocation strategy for small, high-growth, advanced technology companies and appropriate funds to off-set equipment and employee relocation costs. Because of the size and cost of equipment in biotechnology and other advanced technology industries, a small company cannot afford to move or purchase new equipment to relocate in Virginia despite the more favorable tax and regulatory environment in the Commonwealth.

The Fund would provide discretionary grant awards for relocation of high wage executives or equipment and furnishings from old location to new location and expenses incurred in exiting old business location and establishing the new office location in Virginia. Recipients would be required to headquarters to the state and commit to remaining in Virginia for a pre-determined term.

Through a minimal investment in the Relocation Fund, Virginia could attract out-of-state advanced technology companies, create high-paying and sustainable jobs and quickly realize a significant return on investment through payroll, corporate income and sales taxes.

Biotechnology Wetlab Facility Construction and Loan Guarantee Fund

Biotechnology research and production facilities are highly specialized with an extreme cost differential over normal office and light industrial facilities. Most biotechnology companies are still small (early to mid-stage) with high research and development costs and significant capital needs. A lack of available facilities that can be outfitted to meet the needs and to finance the improvements of biotech companies is an impediment to the growing life sciences industry in Virginia.

While the investment made by Governor McDonnell and the General Assembly in 2010 into the biotechnology industry was a positive first step, Virginia needs to create a program to construct wet laboratory shell facilities in various regions of the Commonwealth where opportunity exists to attract life science and biotechnology companies from out-of-state and retain growing in-state companies who require specialized laboratory research space.

The Commission recommends establishing a fund to assist with the development of 2-3 biotechnology shell facilities. These facilities would be designed to accommodate wet lab users or be used for annual lease payments in a PPEA proposal for a specific project with high chances of success. In addition, the program can be structured so that once the facilities are built and fully leased they could be sold to real estate investors with the proceeds being earmarked to a revolving fund to build new facilities over time.

By expanding Virginia's inventory of wet labs and biotechnology research and production facilities, Virginia will create new biotech industry jobs in Virginia by alleviating shortage of wet lab space for biotech companies in the Commonwealth, attracting companies by having facilities in place versus showing prospects raw undeveloped land and competing with peer states currently implementing various loan and lease guarantee or grant programs.

Small Business

In the current economic environment, small businesses have found access to financing more difficult to obtain than in any other time in recent history. Credit and equity investment are vital to small businesses to support new business growth, encourage expansion of existing businesses and create jobs in Virginia.

The reasons behind the difficulty in small businesses accessing credit and equity are varied. Some businesses say that access to credit and equity have tightened, while some lenders and investors say demand has decreased as businesses have become more cautious. Some equity providers feel there are fewer viable business plans that can generate the returns necessary to justify the investment risk. Others blame the federal financial regulatory environment and believe that tougher regulatory standards have made banks less interested in taking risk because of the increased capitalization required by a downgraded loan.

To address small businesses capital challenges, the Commission recommends establishment of a Small Business Investment Tax Credit and additional support for the Virginia Small Business Financing Authority.

Small Business Investment Tax Credit

During the 2010 General Assembly session, Delegate Don Merricks introduced the Virginia Small Business Investment Credit (VSBIC). The VSBIC would have provided for the creation of private investment funds to be invested in small businesses located in Virginia. Private capital would be raised from outside entities (insurance companies) to be invested in qualified companies in accordance with certain guidelines. This program is similar to the *VentureVirginia* recommendation earlier in this report.

Delayed tax credits from the state would then be issued to the outside entities for their investment in these private investment firms. Private investment managers are required to invest the capital in Virginia businesses quickly to get the capital working within the economy before the tax credits become due.

To qualify to access the capital a company must have headquarters in Virginia, employ fewer than 100 people and agree to remain in Virginia for a predetermined period of time after investment.

Similar programs are in place in 9 other states: AL, CO, FL, LA, MO, NY, TN, TX and WI, plus DC. These programs have resulted in over $2.2 billion in capital for small businesses and created over 21,000 jobs.

Enhanced Funding for Virginia Small Business Financing Authority

Additional utilization, funding and flexibility for the Virginia Small Business Financing Authority (VSFBA) and its multiple loans and financing tools will help Virginia entrepreneurs attract more banking partners, make more direct loans and meet a variety of small business credit needs.

VSFBA utilizes several tools and programs to help small businesses with financing. The Loan Guaranty, Virginia Capital Access and Tobacco Capital Access programs are designed to assist banks and credit unions in extending working capital lines of credit and refinancing needs in a non-bureaucratic and efficient method. The Economic Development Loan Fund is a direct loan program that provides gap funding between private debt financing and private equity.

VSFBA has also proven to be an efficient and effective use of state funds. Based on direct and indirect job creation from projects financed by the VSFBA, the Commonwealth has historically received a $5.81 return on investment after the first year for every state dollar loaned. In addition, through the revolving loan and program requirements, VSFBA has leveraged private credit and equity dollars at a ratio of 29:1 for every state dollar invested.

For example, a one-time $5 million appropriation would allow VBSFA to assist more than 200 additional small businesses and generate $35 million in private equity and credit in the first year the loans are made.

Tourism

Tourism Development Grant Program

Tourism is big business in Virginia. In 2008, 60 million visitors came to Virginia, generating $19.2 billion in economic impact, supporting 210,000 jobs and providing $1.28 billion in state and local taxes. Virginia currently ranks 8th in domestic visitation spending and 14th in international visitation. The return on investment for tourism is immediate and proven. For every $1 spent on tourism marketing, the Commonwealth receives $5 in additional state and local tax revenue. Every $90,000 in tourist spending creates 1 new job.

To create the complete tourism experience, product development is essential. However, in many parts of Virginia, tourism product is aging or lacking and there is little hope of significant tourism development in the near future. For example, comprehensive research conducted by the Tourism Subgroup confirmed that Virginia Beach needs a large entertainment venue, Norfolk needs a convention hotel and Patrick County needs small to midsize lodging. However, these and other needed projects around the state are stagnant due to the lack of available credit and other adverse market conditions that discourage investment.

Virginia offers an array of incentive and development programs for many industries, but few programs exist to support tourism business development. The Commission believes there is an appropriate role for the state, in partnership with local governments, to assist with tourism-related development projects. The creation of a Tourism Development Grant Program (TDGP) would stimulate the construction, tourism and banking industries, position our marketing campaigns to capitalize on economic recovery and provide for a standardized process for future tourism and non-state agency funding requests.

The TDGP provides a vehicle to fill gap financing needs for certain locality endorsed tourism development projects that fulfill a predetermined tourism product need.

The TDGP would combine aspects of several existing programs to create a revenue stream from the retention of 1% of state and local tax revenues generated by the project and a matching developer contribution. The retention of state and local taxes and the developer's contribution are limited only to the footprint of the project and do not affect or impact any other facilities, businesses or taxpayers in the locality.

The revenue stream would fund grants to repay a private gap loan as contractually agreed to by the developer and locality. If the loan is retired prior to the agreed upon period, the property is sold or the project is refinanced, the developer contribution will no longer apply and all state and local tax revenue generated by the project will return to their respective general funds.

The TDGP will allow major projects, like an entertainment center in Virginia Beach, and smaller projects, as bed and breakfast in a wine region, that will create jobs, grow the economy, strengthen the complete tourism experience and generate millions in state and local tax revenue that otherwise would not exist.

Benefits:

- This program does not raise taxes, use existing General Fund revenues or divert resources from other programs.
- There is no financial risk exposure to state and does not affect bond rating or debt capacity.
- Requirement of locality sponsorship and endorsement mitigates political issues.
- Serves as an immediate job creator for construction and tourism industries.
- Creates an "open for business" message to help attract national development interest.
- This program is a hybrid of existing programs already approved or offered by state.
- Benefits all localities in Commonwealth: large and small, urban and rural.

Tourism Development Revolving Micro Loan Fund

While all localities and projects will have the opportunity to access and utilize the Tourism Development Grant Program, the Commission recognizes that the TDGP may not be an ideal fit for all tourism development projects. The committee recommends the creation of a Tourism Development Revolving Micro Loan Fund designed to provide direct loans and/or loan guarantees to small tourism development projects. The Loan Fund would be capitalized with a one-time General Fund appropriation and would provide low-interest small and micro-loans in the range of $25,000 to $500,000. Interest would be paid to the Loan Fund, which would grow over time.

Governor's Motion Picture Opportunity Fund and Tax Credits

A vibrant film production industry can be a powerful catalyst for tourism, economic development and job creation. In addition to national and international exposure, a 2005 VCU study concluded that every dollar invested in Virginia's film incentive program returns an average of 14 dollars in economic impact to Virginia.

Film production is driven by incentives and in recent years our competitor states have adopted significantly larger programs than Virginia, For example, while Virginia has $4.5 million in tax credits and grants, Georgia and North Carolina have unlimited tax credits, Pennsylvania has $42 million, Tennessee has $20 million and West Virginia has $10 million – all per year.

Because of this competitive deficiency, Virginia has lost at least 12 major films to other states with a total economic impact of $367 million since 2006. Additionally, from 2007 to 2009

Virginia lost more than 2,000 film industry jobs, a 43% decrease, while national film employment increased by 4%.

For Virginia to continue to attract film production, create film industry jobs and increase economic impact and state and local tax revenue, the Commission recommends an increased investment in film incentive grants and/or tax credits to build on recent investments and successes and make Virginia more competitive with other states' programs.

Winery Development Tax Credits

Virginia is the 5th largest producer of wine in America and sales increased by 13% in the last fiscal year. According to figures from the most recent economic impact study, the Virginia wine industry employs approximately 3,000 people and contributes almost $350 million to the Virginia economy on an annual basis. The study reflected the impact of 120 wineries in 2005; today, there are nearly 180 licensed wineries in Virginia.

The average price per ton of Virginia fruit is over $1500, nearly three times the cost of a ton of fruit grown in California. The average cost for installing an acre of vines is over $15,000 in Virginia. In addition, Virginia vineyards and wineries must import at great cost all of the rootstock, barrels, glassware and other implements required for wine production. These factors stifle winery development and increase per bottle cost, adding to a market perception that the cost of Virginia wine is out-of-step with its quality.

To lessen this burden and further capitalize on momentum in the industry, Virginia should establish a 25% tax credit program to incentivize winery and vineyard establishment or expansion. The tax credits should be salable or otherwise transferable and would be applied against Virginia state income tax.

For instance, Virginia averages 8 to 10 new wineries and independent vineyards per year. The average cost of installing a vineyard is $15,000 per acre and the minimum planting should be five acres. If Virginia provides a 25% tax credit for the total cost of vineyard planting per year, the tax credits could be capped at $187,500 per year.

Revitalization and Redevelopment

To promote revitalization and economic development in distressed areas of Virginia, the Commonwealth should provide financial and tax incentives to enhance the economic feasibility of reusing vacant, abandoned and derelict structures. These structures include factories, warehouses, strip malls, stores, businesses and other blighted properties in commercial districts located in both rural and urban areas of the Commonwealth.

The erosion of the traditional economic base in economically distressed areas of Virginia has left behind many abandoned and derelict commercial, industrial and neighborhood properties. Distressed areas, both small towns and inner cities, have been impacted by the

closure of manufacturing, textile, tobacco and furniture plants. These properties serve not only as reminder of the loss of former economic vibrancy, but as a barrier to future economic growth.

Without public intervention, the private sector will continue to be hesitant to take the risks associated with redeveloping these blighted properties. The scale of the interventions required to reverse years of decline is often beyond the fiscal capacity of the distressed areas or the potential new tenants.

Virginia Main Street Program

The Virginia Main Street program promotes economic and physical revitalization of historic downtowns and neighborhood commercial districts. The Main Street program utilizes a comprehensive, incremental approach to revitalization built around a community's unique heritage and attributes.

Using local resources and initiatives, Main Street helps communities develop their own strategies to stimulate long term economic growth and pride in the traditional community center and downtown area. The Main Street Program has a proven track record of economic development and a demonstrated return on investment.

Jobs created expanded or retained	14,386
Small businesses created, expanded or retained	4,926
Private investment	$638 million

Current state funding is used to provide communities and businesses in Main Street localities access to design assistance and other professional services. Additional funding and resources should be allocated to expand and enhance the Virginia Main Street program to include additional communities in economically distressed areas and to consider services beyond the immediate Main Street area within those communities.

Brownfield Cleanup and Redevelopment

Brownfields are often a major impediment to redevelopment in distressed areas, especially older cities. The term brownfield means the expansion, redevelopment or reuse of any property that may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant. To begin addressing this issue, the General Assembly adopted the Virginia Brownfield Restoration and Land Renewal Act in 2002.

This legislation was designed to better facilitate the cleanup and redevelopment of brownfield sites. However, no funding has been allocated for these efforts. If funded, it could be used to assess the environmental liabilities of brownfield sites, promote the restoration and redevelopment of brownfield sites and address environmental problems or obstacles to reuse so that these sites can be effectively marketed to new economic development prospects.

Since August 2003, 60 sites have already utilized the Act for redevelopment. These projects represent more than $700 million in created value, along with hundreds of jobs created or saved. With funding for site assessment and/or remediation, many more sites would come into play as developers leverage the funding.

Significant results have been achieved from a similar combined liability reduction and assessment program in Pennsylvania. The Commonwealth should provide matching grants to localities to perform Phase I environmental studies. These studies would provide prospective private sector developers with specific information regarding environmental liability and risk thereby helping to address the unknown cost of redevelopment.

Industrial Site Revitalization

Many distressed communities throughout Virginia continue to be negatively impacted by the closure of manufacturing, textile, tobacco and furniture plants. These buildings and structures are often vacated leaving a negative economic and aesthetic impact on communities. Virginia should consider providing direct financial or tax incentives to encourage investment in revitalizing these vacated structures. This program could be modeled after the North Carolina State Mill Rehabilitation Tax Credit.

The North Carolina Mill Rehabilitation Tax Credit is considered a major economic development initiative that enhances the economic reuse feasibility of many former industrial sites. The North Carolina program provides incentives for restoring and reusing large vacant industrial, agricultural and utility buildings. State tax credits are available for the rehabilitation of income and non-income producing historic mill properties.

A recent report published by Preservation North Carolina reveals that rehabilitation and reuse of historic mills and buildings bring substantial benefits to North Carolina communities. Virginia should consider establishing a similar program to provide incentives to revitalize vacant industrial buildings. Funding could be routed through the existing Derelict Structures Fund or through the creation of a stand-alone tax credit. Properties identified would need to be part of a broader community revitalization strategy and selected based on the committed private sector investment.

Virginia Port Tax Credit

The Port of Virginia is a major economic engine for the Commonwealth and a key factor in attracting businesses to Virginia. Of the new manufacturing and warehouse distribution project announcements in fiscal year 2009-2010, 22% are confirmed users of the Port of Virginia. The Commonwealth should pursue incentives to increase the use of the Port of Virginia by Virginia manufacturers.

South Carolina currently has a successful tax credit program in place to incentivize manufacturers to locate to or expand within the state and use the Port of Charleston. Virginia

must remain competitive with its neighboring ports in order for the manufacturing industry to continue to thrive in the Commonwealth.

The Commission recommends a Virginia Port Income Tax Credit for utilizing Virginia Ports for export and import of materials and finished goods relative to the Virginia based manufacturing operations.

A Virginia Port Tax Credit will provide Virginia-based manufacturers a competitive shipping cost advantage relative to peer competitors in other states. Virginia ports apply a standard tariff irrespective of base of operations. As an example, this standard system charges a Pennsylvania manufacturer the same rates as a Virginia manufacturer. Incentivizing Virginia-based manufacturers to do business with the Port of Virginia will lower costs, make Virginia more competitive and help create new manufacturing jobs.

Training Workers for Virginia Businesses

While this report has offered significant and important recommendations to grow Virginia's innovation economy, transform academic institutions into economic engines and enhance business growth and development in Virginia, none of these initiatives will be successful without a competent, qualified and trained workforce to support these new businesses and new jobs.

For existing businesses to expand and new businesses to locate in Virginia, they must be able to find the skilled workers to meet their company's needs. Virginia must be able to deliver a prepared workforce that can adapt to the changing economy. The economic prosperity of Virginia depends on a responsive workforce that has specialized and advanced training, cutting-edge skill sets and higher levels of education.

Secondary and post-secondary graduates need to have a combination of hard skills including the theory and applied technology, and soft skills, including the ability to effectively read, write, compute and communicate, to become trainable employees for specific jobs and re-trainable as those positions change.

Currently, Virginia has many of the appropriate tools to build a quality workforce. However, the state lacks leadership, coordination and accountability in its workforce development infrastructure. There are many agencies and groups involved in workforce development and the Commission recognizes the need for streamlining and collaboration between them for Virginia's workforce system to be successful. The Commission also recognizes the need for performance measures on the system as a whole to determine effectiveness.

To train workers for Virginia businesses, the Commission offers the following recommendations:

1. Align workforce development with economic development strategies
2. Align job demand and workforce development efforts
3. Greater use of Career Pathways Programs, including apprenticeship, on-the-job training and other "Earn While You Learn" models
4. Establishment of a senior administration leadership position
5. Improved policy development and performance reporting
6. Expanded teaching of economics in high school
7. Expedite veterans and military into healthcare and technology workforce
8. Fully fund commitment to non-credit courses at community colleges

Align Workforce Development with Economic Development Strategies

A state coordinated career pathways system will provide businesses with assurance that the workforce delivery system will meet both their immediate start-up and long-term needs. The

Commission recommends that curriculum at the community colleges and four-year institutions be aligned with statewide and regional economic development strategies.

In addition, the Commission recommends that there be a sole entity charged with working with existing and new businesses to appropriately direct them to existing programs in order to fully leverage state, federal, and local investments in workforce training programs and to ensure that such programs are focused on the needs of business.

Greater Alignment Between Job Demand and Workforce Development Efforts

The rapidly evolving global economy of the 21st century is driven by the increasing pace of technology and innovation. Being competitive depends predominantly on the capacity to generate and apply knowledge, which is determined by the quantity and quality of the available workforce.

To meet this challenge, Virginia's workforce development and delivery system must accurately identify current needs and forecast future demands based on business requirements and data-based modeling. The system must ensure that corresponding skills training is readily available and easily accessible through the community college system, educational and training providers and One-Stop Career Centers.

The Commission recommends purchasing, creating or expanding an information technology solution, similar to the existing Wizard program, which will provide user-friendly and up-to-date information to students and job seekers on the programs and technologies currently utilized by employers both in their region and across Virginia. To match the evolving and growing needs of business, Virginia must help align job-seekers with the occupations and sectors in the greatest demand.

Expanded Career Pathways Programs, Including Apprenticeship, On-The-Job Training, and Other "Earn While You Learn" Models

Given the accelerating integration of advanced technologies in both products and processes and the associated rapid growth in skills requirements in today's workplace, employers need educators to provide them with individuals who are trainable for a multitude of positions during their careers.

The Commission recommends the continued implementation of the state's Career Pathways System in all of the Commonwealth's educational programs through the following actions:

- Support, promote and more widely implement programs that prepare students for higher academic success.
- Encourage greater collaboration between secondary and post-secondary institutions and employers including the registered apprenticeship program and "Earn While You Learn"

programs.

- Continued promotion of dual enrollment classes that allow students to enroll in college-level courses for credit while still in high school.

As Virginia places a greater emphasis on Science, Technology, Engineering and Math (STEM) education and STEM-related careers, we will have qualified educators to teach science, technology, engineering and mathematical related classes. The Commission supports the increased efforts by colleges, universities and local school divisions to train more teachers to enter Career and Technical Education (CTE) and STEM programs.

Senior Level Leadership Role

Greater coordination among education, workforce development, businesses and economic development in Virginia is fundamentally an issue of executive level leadership. Some suggestions to address this challenge include creation of a Secretary of Workforce Development, while others have suggested that the management and coordination of workforce programs should be in one secretariat - either Education or Commerce and Trade.

The issue of senior level leadership to carry out the responsibilities of the Chief Workforce Development Officer is crucial to the streamlining, prioritization and organization of Virginia's workforce delivery system. Existing gaps in Virginia's workforce development include:

- The system is complex and involves many players, and not all stakeholders have been engaged in a meaningful way.

- The roles, responsibilities and expected interactions between the various players sometimes overlap and conflict, which is understandable and sometimes healthy; however, not all components of the system work together resulting in duplication of effort and perpetuation of organizational silos.

- Not enough employers understand the services offered by the system and in many cases, employers are still not actively engaged.

- There are potential inefficiencies associated with the lack of integrated technologies, duplication of activities and the overhead associated with a fragmented system.

The Commission recommends designation of a senior-level official to carry out the responsibilities assigned to the Chief Workforce Development Officer and for coordinating the state's workforce development and skills training initiatives in support of the Commonwealth's economic development activities.

Policy Development and Performance Reporting

The Virginia Workforce Council (VWC) is a 29 member business-led board that acts as the principal advisor to the Governor and provides strategic leadership to the state regarding the workforce development system and its efforts to create a strong workforce aligned with employer needs. The VWC is also charged with serving as the State Board for the federal Workforce Investment Act (WIA) and setting policy and standards for the local Workforce Investment Boards (WIBs) and One-Stop Career Centers.

Although the VWC has made considerable progress during the past several years to identify gaps in Virginia's workforce development and delivery system, challenges remain including the need for a quantitative view of the whole system at the state or regional level to facilitate performance accountability.

The Governor and the VWC should establish measures to evaluate the effectiveness of the local workforce investment boards and conduct annual evaluations of the effectiveness of each local workforce investment board. These evaluations should consider items such as (i) employment; (ii) employment retention; (iii) competency-based and industry-certified skills certification; (iv) Career Readiness Certificate achievement; (v) integration with secondary education institutions' Work Readiness Skills programs; (vi) integration with the Virginia Community College Middle College program; and (vii) Science Technology Engineering and Mathematics (STEM) educational opportunities for women, minorities and youth.

Economics in High School

The Commission joins the Virginia Council on Economic Education (VCEE) in supporting the statewide network of college and university based Centers for Economic Education. The Centers for Economic Education provide K-12 educators with local resources and facilitate ongoing collaborative efforts to help them prepare for teaching economic courses as a condition for graduation for all high school students.

Retired Military and Healthcare Workforce

Virginia's significant military presence creates a pipeline of skilled and trained veterans and former military personnel in the workforce after their service is completed. These individuals often have significant experience in high demand fields such as healthcare, machinery and technology.

Virginia should recognize the existing credentials of highly trained and experienced former military health professionals, machinists and other skilled trades and allow substitution of certain military training and service for formal education, certification or clinical experience requirements. Additionally, Virginia should identify opportunities to more effectively recruit and more seamlessly integrate former military personnel into our skilled workforce.

Additionally, the Commission leadership recommends the following initiatives to help address the growing demands on the healthcare workforce:

- Improve opportunities for "dual enrollment".
- Allow students to matriculate into a health science program at the start of each semester rather than once a year.
- Improve awareness of heath career training and re-training through high schools, community colleges and higher education.
- Standardization of college-based curriculum and course numbers.

Non-Credit Funding

State law charges the Virginia Community College System as the state agency with primary responsibility for coordinating workforce training at the postsecondary education to associate degree level. The community college system is also responsible for ensuring that all training and educational resources are being fully utilized to prepare the state's workforce. Consideration should be given to phasing in state support of non credit skills development courses at the 30% level as envisioned in the Appropriation Act. Currently, non credit skills development courses are only being funded at the 5% level.

Coordinated, Efficient and Effective Economic Development Strategies

While the Commission has offered comprehensive strategies to grow Virginia's innovation economy, improve business development and recruitment, increase collaboration between higher education and industry and enhance our workforce delivery system, the Commission recognizes several areas where the state's economic development organizations and related processes could work better and more efficiently, including:

- Fulfillment of current programs and promises
- Reform, reorganization or streamlining of processes
- Better collaboration and cooperation

Businesses, especially small businesses, need to be focused on growing their company and creating jobs, not regulatory red tape and burdensome bureaucracy. By making some processes easier and more streamlined, the business community can thrive and grow, spurring economic growth and job creation. In addition, the state must fund its current programs in order to maintain credibility and continue to assist businesses with financing needs.

The Commission offers the following recommendations to keep existing program commitments, streamline economic development systems and make state government more responsive and user-friendly for businesses:

1. Enterprise Zone Program
2. Agriculture Enterprise Zone Program
3. Regional economic development collaboration
4. Definition of economically distressed areas
5. Incentive reform
6. Increased flexibility of Governor's Opportunity Fund
7. Regulatory permitting
8. Regulatory notification
9. Sports Advisory Commission

Fully Fund Virginia's Enterprise Zone Program

In recent years the Virginia Enterprise Zone Program has not been able to fully meet qualified businesses' grant application amounts. In fiscal year 2010, Enterprise Zone grants were prorated at 62 cents on the dollar. Essentially, this means that a company that anticipates receiving $200,000 after making a significant multi-million dollar real property investment in an Enterprise Zone would receive only $124,000. Virginia must fulfill delivery of promised incentives to companies which have delivered on jobs and investments. Failure to fully meet incentive obligations carries negative consequences for Virginia's business climate.

Enterprise Zones are a significant tool in economic development arsenals across the nation. More than 38 states have an enterprise zone program, including some of Virginia's competitors: Maryland, North Carolina and South Carolina. Although the Enterprise Zone

concept and incentives vary from state-to-state, the existence of one in a locality is often used by business location consultants as a screening criterion in site selection. In Virginia, the program is targeted toward distressed localities, as defined by high unemployment, a high percentage of students receiving free and reduced lunches and low household income.

Currently, there are 57 Enterprise Zones designated across the state. For the 2010 Qualification Year, 214 zone investors received $10.6 million in real property investment grants from the Enterprise Zone program. Private investment in qualified real property investments in Enterprise Zones totaled more than $500 million. Forty-one businesses received $1.2 million in Job Creation grants which created 923 net new, full-time jobs.

Fully funding the Enterprise Zone program will restore credibility and enable the Commonwealth to honor its full commitments to companies locating in these distressed areas of Virginia.

Re-Establish and Fund a Virginia Agriculture Enterprise Zone Program

The total economic impact of agribusiness (agriculture and forestry-related) industries in Virginia is $79 billion, including a value-added impact of $37 billion, which constitutes approximately 9.9% of Virginia's gross domestic product (GDP). The total employment impact exceeds 500,000 jobs, which is over 10% of the state's workforce. In order to sustain and grow this sector of Virginia's economy, the Commission recommends re-establishing and funding a Virginia Agriculture Enterprise Zone Program to incentivize job creation and economic development in the agribusiness industry.

The Virginia Agriculture Enterprise Zone Act was originally passed by the 2005 General Assembly to attract, promote, retain and encourage the expansion of agricultural and farm businesses involved in the growth, production, processing, manufacturing, distribution, wholesale and retail sales of agricultural and food products in designated areas in the Commonwealth. Unfortunately, funding has not been provided to implement the program.

An Agriculture Enterprise Zone Program would allow a "qualified agricultural businesses" and "qualified farm businesses" located within agricultural enterprise zones to apply to the Virginia Department of Agriculture and Consumer Services (VDACS) for assistance in developing business plans and grant funding for implementation of those business plans.

Improving Economic Development Efforts Through Regional Collaboration

The Commonwealth could improve economic development efforts through regional collaboration and cooperation. While the state should not mandate regionalism, it should have targeted incentives that encourage local economic development offices to cooperate within regions. By collaborating, duplication of services is eliminated, cost for services is shared and messages in the marketplace have a larger voice.

- The state incentive programs should encourage regional cooperation in economic development. For example, eligibility criteria could be lowered or bonus points awarded for incentives to assist economic development projects where tangible regional cooperation exists, or where the project aligns with a regional target sector.
- Realignment of existing state resources could be the financial carrot to address workforce issues. Stronger state guidance of federal dollars currently flowing through the Workforce Investment Act program could be one such example to address workforce training systems.
- Leveraging partnerships with local and regional entities such as the Virginia Tobacco Commission, regional non-profit Foundations, or other federal programs, such as those of the Economic Development Administration, could be improved at relatively little cost to the Commonwealth.
- Increased local marketing partnerships with agencies such as VTC or VDACS could leverage more visibility in sectors of strategic regional importance.
- Partnerships with strategic businesses could be formed, where the marketing outcome of the company aligns with the marketing outcome of the region. For example, connecting selected companies in the advanced manufacturing sector with those regions for which advanced manufacturing is a target sector, and sharing the cost of a special media outreach, could result in more effective positioning of the region.

Competitive and Strategic Incentives for Business Expansion and Recruitment

Virginia needs competitive and strategic incentives that support existing business expansions as well as new business locations in the Commonwealth. While traditional programs, like the Governor's Opportunity Fund (GOF), Virginia Jobs Investment Program (VJIP) and the Enterprise Zone Program have served Virginia well over the past decade, our competition is continuously improving and enhancing their offerings as well. Virginia needs to remain innovative and creative in its use of incentives and allow greater flexibility in the program designs to be able to address changes in the marketplace. Such flexibility and enhancements could include:

- Phasing out of certain existing by-right alternative energy tax credit programs in return for more targeted, negotiated grant programs that align with Virginia's competitive advantages.
- Reduce or eliminate the arbitrary eligibility standards used for programs such as the Governor's Opportunity Fund. Projects should benefit from the program, regardless of size, if they can demonstrate that they produce a positive return on the state's investment. Further, restrictions on how the GOF monies can be used by an eligible company should be removed. At the same time, Virginia must put into place strict requirements for the repayment of incentive funds for companies and projects that do not meet their job creation and capital investment commitments.

Consistent Definition of Economically Distressed Areas

To effectively target state resources for community and economic development, Virginia must have a standard definition of economically distressed areas. Although some similarities exist, the definition of economically distressed in Virginia varies by state agency, program and funding source. The Commonwealth must provide consistent and uniform guidance to state agencies to define and identify economically distressed localities.

Federal, state and local agencies target programs to economically distressed areas and adopt various methods, data points and criteria to determine distressed. There is a broad range of indicators for determining economic distress, including: unemployment, income, population, outmigration, housing conditions and educational attainment. Currently, agencies select from these and other indicators to determine its definition of distressed.

After a review of definitions utilized by other states and agencies, the standard definition of "economically distressed" in Virginia should use the core criteria of average unemployment rates, median adjusted gross income, persons in poverty and fiscal stress of locality.

The Commission recommends establishing a working group to analyze the data associated with the criteria listed above to accurately define economically distressed in the Commonwealth. This initiative should be led by the Secretary of Commerce and Trade with input from appropriate stakeholders. The proposed definition should focus primarily on utilization by community and economic development programs in Virginia.

Environmental and Regulatory Permit Reform

Many manufacturers have indicated that the lengthy and complicated process to receive necessary permits is becoming a greater economic and compliance challenge.

For example, a recent competitive business expansion project was put in jeopardy when the company was told it would take 6-8 weeks to have a permit issued by the Virginia Department of Environmental Quality (DEQ). The situation was brought to the attention of DEQ leadership and was quickly rectified. In fact, the company received the necessary permits 48 hours later and has since announced their expansion in the Commonwealth.

DEQ recently directed the chief deputy to serve as a business community liaison and provide assistance with job creating projects. This position works closely with the Virginia Economic Development Partnership, the Chief Jobs Creation Office and the Secretary of Commerce and Trade. The chief deputy meets with all economic development prospects to deliver the message that the department is open and easy to work with and to offer them a point of contact to assure them that they will receive prompt response.

In order to develop a simpler, more efficient permitting process, the Commission recommends the following:

- Develop more general permits and customized permit applications and post these customized applications on DEQ's website in a user friendly manner.

- Utilize the Lean process (EPA business model that focuses on elimination of waste and redundancy) for a review of DEQ's air permitting program with the goal of improving efficiency and timeliness.

- Undertake a stakeholder process to find ways to reduce the time it takes to get to final approval. As the Commission has heard through testimony, delays often occur because of incomplete applications. One recommendation is to encourage a pre-application meeting so applicants know what is necessary to complete the application correctly the first time.

- Encouraging the Chief Deputy of DEQ, in their role as business community liaison, to implement practices beneficial to manufacturers looking to expand their operations or relocate their business to Virginia. Continuity in this position is vital to help manufacturers through an often difficult process that can be prohibitive to job creation and investment.

Regulatory Notifications

Small business owners often struggle to learn and keep up to date on ever-changing state laws, rules and regulations that govern their business. The creation of small business specific advisories or notifications to announce when state laws or regulations change would prove beneficial to small business owners, allowing them to spend more time focused on creating jobs and running a successful business.

For example, Illinois has recently passed the Small Business Advisory Act. This act requires every State agency to make available on the internet a small business advisory page. In addition there is a notification system put in place to inform the small business community of each new rule or change in requirements affecting small businesses.

This could be a perfect tool to have on the Business One Stop website. An alert system could be created where those small businesses and individuals could enroll to be notified when a regulatory change is made affecting small businesses. The Commission recommends Virginia incorporate a similar program and notification system in our Business One Stop program to make it easier for small businesses to be aware of regulatory changes.

Sports Advisory Council

The Commission recommends a continued study and consideration of ways to expand and maximize Virginia's sports marketing initiatives, including additional uses for existing sports venues such as Martinsville Speedway, recruitment of additional sporting events and franchises to Virginia and the creation of a Sports or Motor Sports Advisory Council.

Promoting the Virginia Brand

Virginia has consistently been ranked by Forbes, CNBC, Pollina and others as the No. 1 or No. 2 state in America for business. In 2009, the "Virginia is for Lovers" slogan was both inducted into the National Advertising Walk of Fame for Iconic Slogan and recognized by Forbes.com as one of the top ten marketing campaigns of all time.

While independent third-party validation of our competitive business climate and tourism message resonates, without a coordinated and substantial voice in the marketplace the validations have limited effect.

Shifting federal policies can create an overlaying context of loss of competitiveness for the states, making it even more important for the promotion of Virginia's economic assets to be reinforced in our domestic and international marketing. Communication about Virginia assets – higher education, workforce, transportation and fair taxation policies – build on our most important message of the stable business climate. Our message will resonate well if it is visible and differentiated from others.

A lack of coordinated marketing across all industries and agencies of government became apparent over the course of the Commission's work. Virginia must properly and consistently market its assets in order to see the maximum return on investment. By successfully marketing the qualities and programs Virginia already possesses, our message will broadcast loud and clear: Virginia is the best state to do business, vacation, get an education and raise a family.

The Commission offers the following recommendations to address marketing deficiencies in state agencies and key industries and maximize the impact of the Virginia brand domestically and internationally:

1. Chief Marketing Officer
2. Domestic and International Business Marketing
3. Small Business Information Services
4. Dedicated Tourism Marketing Funding
5. Wine Region Wayfinding
6. Virginia Grown Products
7. Declaration of Innovation

Chief Marketing Officer

Virginia lacks consistent branding throughout the Commonwealth. All state agencies have varying messages, imagery and logos. Virginia does not effectively capitalize on the iconic "Virginia is for Lovers" brand or potential marketing collaboration among state agencies for cost savings, efficiencies and a stronger brand.

The Commission recommends the creation of a Chief Marketing Officer (CMO) for the Commonwealth. The Chief Marketing Officer is responsible for ensuring coordination and

consistency of state marketing activity. This is accomplished by providing direct support to state government organizations and offering marketing specific resources and tools to enable state programs to successfully meet their marketing and outreach objectives. State marketing activity is also guided by marketing policies, standards, and guidelines developed by the CMO that support the goals of efficiency, economies of scale and consistency.

State marketing investments should be designed to build equity in the "Virginia is for Lovers" brand, an iconic brand that has received national recognition for over 40 years. A comprehensive brand platform will enable the Commonwealth to easily, cost effectively and comprehensively address a number of recommendations of key deliverables to support sales and marketing efforts throughout the state. This will create efficiencies and eliminate redundancies within all state agencies' marketing and promotional efforts and budgets, while presenting a cohesive brand that builds upon each agency's independent efforts.

The Commission believes the establishment of a CMO will enable the state to quickly move forward with consolidated and focused spending to achieve the greatest results and align dollars to support individual market initiatives.

Competitively Promote Virginia's Inherent Attributes Domestically and Internationally

The Commission recommends a strategic marketing plan, tied to a measurable results matrix delivering a return on investment, be the context in which VEDP's marketing and operational budget are increased so Virginia's inherent attributes are marketed effectively both domestically and internationally. The marketing plan should build on VEDP's current plan, but should be supported by sustained and long-term funding. Since 2002, funding for outreach marketing (staff and programs) at VEDP has decreased significantly; the real value of the loss of this support means that Virginia has fallen even further behind its competitors.

Steps were made in the first year of the McDonnell Administration to begin rebuilding domestic and international marketing, including allocating funds toward establishing a presence in China, India and additional presence in Europe. The Commission supports continuing the momentum these initial steps will create.

Small Business Information Services

The Department of Business Assistance (DBA) is designed to be the Commonwealth's primary agency to assist smaller businesses with financing, business information and workforce needs.

The DBA budget has decreased by 56% from 2002-2010 and has experienced a 51% staff reduction (34 FTE) from 2006-2010. With limited resources the agency is doing its best to administer and market their popular business information and support programs, including Entrepreneur Express and Growing Your Business, but more assistance is necessary to increase awareness and delivery of the programs to support more small businesses.

It should not go unnoticed that the current budget for DBA has been increased significantly by Governor McDonnell and the General Assembly, which is a positive step forward to bolster Virginia's services for small businesses.

The Commission recommends the following to expand Virginia's services to and marketing for small businesses:

- Consider realignment of the Small Business Development Centers (SBDCs) with DBA to expand and more effectively coordinate and deliver the services offered by the state.
- Expand media advertising and marketing related expenses and restore cuts to DBA's general funds for fiscal year 2012.
- Enhance the Virginia Business One Stop website into a First and Only Stop for Virginia's Small Businesses by increasing the information, resources and assistance available to entrepreneurs to ensure that there is truly only one stop required to get a business up and running with minimal delay. This recommendation is also being advanced by the Government Reform Commission.
- Promote Virginia as the "Best State in America to Open a *Small* Business." While much attention is given to the opening or relocation of Fortune 500 companies in Virginia, little is said about the many thriving Virginia small businesses. Because 98% of all businesses in Virginia are small businesses and 75% of new job growth in the Commonwealth comes from small businesses, Virginia should more aggressively market and celebrate our small business entrepreneurs and their successes.

Dedicated Funding Source for Virginia Tourism Corporation (VTC)

Tourism is big business in Virginia. Sixty million visitors from the US travel to Virginia annually creating a $19 billion economic impact, supporting more than 200,000 jobs and providing nearly $1.3 billion in taxes. Tourism is also small business. More than 93% of the industry is made up of small businesses.

Furthermore, 63% of the businesses in the VTC database have marketing budgets of less than $25,000 annually. The state's investment in tourism marketing is critical to the vitality of the industry and the benefits it provides to its citizens. A recent study conducted by SIR of the tourism industry needs in the state indicate 66% cite marketing support from government as essential for the industry to be more competitive and lucrative.

Because VTC's marketing budget is based on a general fund appropriation and tied to the political process, tourism marketing effectiveness has been hampered by erratic appropriations. Successful marketing campaigns build upon themselves year over year, which makes the existing volatile funding structure exceptionally inefficient and costly. Additionally, VTC's current appropriation is insufficient to reach crucial out-of-state markets.

The Commission recommends establishing a formula funding mechanism for the VTC based on a percentage of state tax revenue generated from tourism-related taxes. Over the last 10

years, VTC's annual General Fund appropriation has averaged 1.33% of total state tourism-related taxes as defined by the U.S. Travel Association.

An increase of the industry's 10 year average from 1.33% to 1.6% will keep Virginia in line with competitor states with similar tourism initiatives, allow VTC to expand their award winning marketing campaign to the lucrative, high return markets of Philadelphia and New York and fulfill Governor McDonnell's mandate to double the tourism budget to $30 million during his administration.

With VTC's current budget of $14.5 million, Virginia realizes a $518 million economic impact, supporting 5,600 jobs and generating $34.6 million in taxes. If the formula funding was implemented and reached Governor McDonnell's goal of a $30 million annual appropriation, Virginia will realize an annual economic impact of $1 billion, generating $70 million in state and local taxes and supporting 11,500 jobs.

Wayfinding Winery Signage Program

Highway and road signage is critical to the development of wineries and the wine industry. Because many wineries are on rural roads and off major thoroughfares, directional wayfinding gateway signage is necessary to increase awareness of wineries and the Virginia wine industry and to get visitors into the wineries and tasting rooms. However, under current regulations, gateway signage is not permitted at the entrance to Virginia's viticulture areas and the cost and requirements of the Tourist Oriented Directional Signage program keep it from fully meeting the needs of the wine industry.

VDOT currently has two pilot implementations of the wayfinding signage program in the Historic Triangle and Stafford County. This program incorporates gateway signage welcoming visitors to a region and supplemental signage connecting tourist destinations to the gateway signage. VDOT staff has indicated that without increased staff resources, the wayfinding program will not be available on a statewide level for at least another two years.

The Commission recommends that VDOT be provided the resources needed to expand the pilot wayfinding program on a statewide level. This will address the wineries' frequent requests for both gateway signage and integrated, recognizable directional signage to tourist locations.

Marketing Virginia Grown Products

Agribusiness is the #1 industry in Virginia providing is $79 billion in economic impact, including a value-added impact of $37 billion, which constitutes approximately 9.9% of Virginia's gross domestic product (GDP). The total employment impact exceeds 500,000 jobs, which is over 10% of the state's workforce.

The Commonwealth can better market Virginia's agriculture and forestry industries by serving Virginia grown and produced products at all state sponsored events and by adequately funding existing promotional programs in VDACS.

Every job created in agriculture and forestry related industries results in another 1.5 jobs in the Virginia economy. Every dollar generated in value-added results in another $1.75 value-added in the Virginia economy. During FY 2009-2010 VDACS' business development and recruitment activities resulted in economic development projects that contributed $66 million in capital investment and included the creation or retention of hundreds of full time, part-time and seasonal jobs in Virginia's agricultural and forestry sectors.

VDACS also manages the "Virginia Finest" and "Virginia Grown" programs to help consumers and retailers know they're buying the very best the state has to offer. These programs are used by several thousand farms and value-added food and beverage producers. As an example of the economic activity generated by these programs, consumers can locate Virginia Grown agricultural products, farms, farmers' markets, Community Supported Agriculture locations and value-added food and beverage products using an agency managed search engine. The website receives approximately 24,000 unique web hits per month from customers looking for locally grown farm products.

To improve promotion and marketing of Virginia agriculture, the Commission recommends:

- Serving Virginia agriculture products at all state sponsored events.

- Expansion of international marketing of Virginia agriculture and forest products through new marketing offices in China, India and Europe, including agriculture and forest products in all Governor's international trade missions and better identifying, applying for, and utilizing available federal grant funding for marketing and selling products internationally.

- Providing additional support for VDACS' "Virginia Grown" and "Virginia's Finest" marketing programs along with efforts to identify and expand into emerging markets.

- Enhancing agri-tourism promotions for the many diverse agriculture industry events, activities and products.

A Declaration of Innovation

Many key stakeholders in the state and national technology community are unaware of the incentives available in Virginia. For example, the Angel Investor Tax Credit was announced earlier this year, yet many angel investors, company CEOs and legal and tax advisors who serve early stage companies are not aware of it.

To realize the potential ROI of greater investment and jobs creation, the Commonwealth needs a marketing plan to reach early stage company investors, and key influencers such as start-up company executives, legal and accounting professionals who are key team players in company formation and growth.

A "Declaration of Innovation" will include proclamations and promotions on Virginia's commitment to the innovation economy and emerging technologies including being "Open for Research and Development" and "Open for Technology Company Formation".

At the announcement and signing of the "Declaration of Innovation", the Governor can be joined by CEOs and entrepreneurs of innovative technology companies from early stage to established companies, and particularly larger companies that have announced recent R&D and new technologies.

The Declaration could also include announcements of innovation prizes including public/private partnerships to offer a prize in the form of start-up capital or scholarship for a young person who invents an innovative technology product that solves problems.

While not as glamorous as other state's hundred-million dollar funding announcements, this action recognizes the current budgetary challenges facing state government and utilizes existing and proven resources to deliver low-cost, high-value solutions to ensure that Virginia establishes an efficient operating model that produces a national reputation for facilitating innovation.

Virginia's Business Tax Policy

Economic development is dynamic and ever-changing and the competition between regions, states and countries for new jobs and investment is intense. As a result, Virginia must continuously examine government policies, particularly our tax policies, to ensure that Virginia maintains its competitive standing.

The Commission subgroups examined several areas of tax policy, including the corporate income tax, machinery & tools tax, business, professional and occupational licensing (BPOL) tax and the accelerated single sales factor transition. For each policy, several factors were considered, including purpose, fiscal impact to the state and local governments, fairness on specific industries, competitiveness with surrounding states and potential impact on economic growth and job creation.

As can be expected with tax policy issues, after lengthy discussion and consideration the subgroups found in some instances that arriving at consensus was difficult and additional research and data was needed.

The Commission offered the following analysis and recommendations on certain business related tax issues:

1. Corporate income tax
2. Machinery & Tools tax
3. Accelerated single sales factor
4. BPOL tax
5. Comprehensive comparative study of total tax burden on certain industries

Corporate Income Tax/Aligning Taxation with Long-Term Growth Sectors

Virginia is fortunate to have long enjoyed a stable tax environment and relatively low tax rates – in fact, our corporate income tax rate has remained flat at 6% since 1972. Both of these factors have been essential to the Commonwealth's ranking as one of the best places to do business. Yet those rankings are ever changing and actions being taken in other states and overseas can erode Virginia's historical position and leave the state at a competitive disadvantage.

While not the sole factor in determining corporate locations, tax policies are instrumental in corporation decisions as to where to invest scarce capital or in determining where entrepreneurs start their new businesses. Capital is mobile and flows to where the returns are the greatest.

There is a concern that the structure of Virginia's tax system can potentially act as a disincentive to further investment and job creation in the Commonwealth, particularly in light of actions being taken by competitors to streamline and harmonize tax policies. Our state corporate tax rate, combined with the federal corporate tax rate, is among the highest in the world, thus

discouraging investment here as opposed to overseas, where companies may also realize other cost efficiencies such as labor costs, transportation or access to raw materials. At the same time, the Commission realizes and appreciates that each of these taxes provides a vital funding stream to support programs at the state and local level. However, studies have suggested lowering the corporate income tax could have a positive impact on job creation and investment in Virginia.

At the direction of the General Assembly, the Joint Legislative Audit and Review Commission (JLARC) is examining Virginia's corporate income tax and the impact a reduction of the tax could have on economic development activities. The study results will not be available until November 2010, after the completion of the Governor's Commission on Economic Development and Job Creation.

The Commission also cautions against a reduction in the corporate income tax that would simultaneously be paired with the creation of new taxes, or changes to existing taxes, that could serve as a disincentive to job creation and investment. Such actions could diminish the impact of the change. Further, Virginia must continue to closely monitor the activities of other jurisdictions as they contemplate similar policies to ensure Virginia's competitive edge.

In the absence of the study results, the Commission is challenged in making a definitive recommendation on what should be done about Virginia's corporate income tax rate and did not come to a consensus recommendation. Nevertheless, the Subgroup offers the following guidance for consideration by Governor McDonnell as those results become clearer:

- A reduction in the corporate income tax rate should be considered so long as the reduction can be specifically linked to new job creation and new investments by employers in the Commonwealth. Such a decision could be made following the completion of an independent, dynamic modeling analysis of the likely impact of a change in the corporate tax rate.
- The revenue the Commonwealth receives from the corporate income tax, even if the level stays at the current rate, should be dedicated to economic development-related activities, including, but not limited to marketing, incentives, and higher education research and development efforts.

Machinery & Tools Tax

Several of Virginia's competitive states have repealed their machinery and tools (M&T) tax, including Alabama, Kentucky, North Carolina, South Carolina and Georgia. While Virginia has taken recent legislative actions to assist manufacturers, including the development of a mega-site fund and maintaining Ch. 199 exemptions, Virginia must offer manufacturers a competitive tax environment which will result in job creation and larger capital investment.

The M&T tax was identified in 2005 as a $200 million disparity on manufacturers as compared to the effective tax rate of all other industries in Virginia. Ultimately, the Commission's goal is to create a low cost solution that corrects these imbalances and increases

the capital investments, competitiveness and job creation in the manufacturing industry in Virginia.

The Commonwealth has clearly stated that manufacturing facilities are an economic priority. Unfortunately, the more manufacturers invest in new technologies and equipment, the more taxes they end up paying. The future success of the manufacturing industry will be based upon higher wages, higher skills, greater global competition and greater investments in new technology.

Additional Recommendations Regarding the Machinery & Tools Tax

The Commission does not take lightly the fiscal impact that elimination of the M&T Tax would have on local governments. Estimates have placed that fiscal impact at $200 million. At a time when revenues across all levels of government are unpredictable, the Commission understands that repeal could create a financial hardship for many local governments.

While the Commission believes a repeal of the M&T Tax is in the best interest for both manufacturers and the Commonwealth, they would like to offer additional recommendations relating to the M&T Tax to be enacted immediately while the Machinery and Tools Tax is phased out over a longer period of time and replacement sources of revenue are identified.

- All new investments in M&T are not taxable for the first three *ta*x years of use after the purchase, transfer or restart date. This policy would motivate industry to purchase new equipment and tools, transfer machinery and tools from out-of-state to Virginia and/or restart idled machinery and tools.

- All in-service M&T over 10 years old would be assessed at a maximum value of 1% of the original cost until idled or disposed of (local rates and taxing methodology must remain constant until all existing taxable assets have aged to the 1% level). All machinery and tools, whether idled or not prior to reaching 10 years, would qualify once its age exceeds 10 years. Machinery and tools taxable under this provision would qualify regardless of prior ownership.

While less appealing to the industry than a repeal of M&T, this approach would allow Virginia to position itself as attractive for manufacturers considering Virginia as compared to the West Coast, Northeast, and Southern locations such as Alabama, Georgia, Kentucky, North Carolina, South Carolina and Tennessee.

Accelerated Single Sales Factor

Beginning in 2011, Virginia will allow manufacturers to transition to a single sales factor. The single sales factor is to be fully phased in by 2014. Manufacturers who elect to use the single sales factor will be locked into a three-year irrevocable election and are required to certify that their average weekly wages for full-time employees are greater than the lower of the state or local average weekly wages in their industry.

Using a single sales factor is beneficial to companies with material amounts of capital and labor in a state. The sales percentage is usually significantly smaller than the property and payroll percentages for manufacturers who ship out of state.

Transitioning to the single sales factor from 2011 to 2014 is expected to save manufacturers a total $55.7M in state income tax over a 4 year period. Immediate implementation would increase the savings by an additional $64.3M. When fully implemented, the single sales factor is expected to result in an annual tax savings of $30M.

BPOL Tax

The BPOL tax has a long history in the Commonwealth of Virginia. License taxes were one of the primary methods for obtaining revenues at the adoption of the federal constitution. Due to Virginia's share in the costs for the War of 1812, license tax rates were increased, and the types of businesses subject to taxation were expanded. By 1850, the policy of levying a license tax on practically all well-established businesses and professionals was adopted. While BPOL was initially a flat-fee that varied by type of business, the system was changed in the 20th century to taxes that are based on the gross receipts of businesses. In 1996, BPOL tax was significantly amended to help ensure more uniform local administration.

Because the BPOL tax is based on gross receipts, many small business owners believe it is unfair not to consider the burden on businesses when the tax is a derivative of total profits. For example, the BPOL tax is biased against new businesses, which typically experience losses in their early years.

The Commission heard from numerous small business owners whose companies lost money in a fiscal year but were still required to pay a BPOL tax. One such testimony was from a small businessman whose company lost $75,000 last year and still paid almost $5,000 in BPOL taxes.

Additionally, because BPOL taxes are administered by localities, inconsistent rules and lack of best practices exist from jurisdiction to jurisdiction that create significant administrative challenges business owners and franchisers.

A general improvement would be to make BPOL taxes more consistent and uniformly applied across localities. For example, a similar system to sales tax structures would allow the state to collect BPOL tax revenue and return them to localities. This approach can potentially reduce competition between Virginia jurisdictions for economic development expansion opportunities. Similarly, businesses with multiple locations across the state may prefer a centralized location for tax matters rather than interacting with multiple local governments.

Any changes to the current BPOL system should address the inherent issue of taxing gross receipts regardless of business profitability while maintaining the revenues for local governments' operations. The Commission understands that repealing BPOL taxes without

finding additional revenue sources would be difficult in the current budgetary environment and does not take lightly the static fiscal impact that elimination would have on local governments.

Therefore, the Commission recommends that the Department of Taxation collect for two years the necessary information to determine the fiscal impact if Virginia taxed small businesses on their relative profitably as opposed to gross receipts.

Once the Department of Taxation has collected the proper data and is able to provide an accurate fiscal impact of reforming BPOL from a gross receipt to a net profit tax, the Commission recommends that Virginia moves BPOL from the current formula of gross sales to a net profit model that is fair and truly represents a company's success.

Comprehensive Tax Study of Targeted Industry

Through the discussions of tax policy affecting certain industries, there was significant consideration of how a tax compared to that specific tax in other states, localities or industries. However, there was little discussion of the overall tax burden on specific industries in Virginia compared to those industries in other states.

The Commission leadership recommends conducting a comprehensive study of the overall tax burden on specific targeted industries such as manufacturing and technology in Virginia compared to our competitor states. The study will not only consider corporate income, M&T and BPOL taxes, but the total tax burden including property tax, sales tax, income tax and others. This will provide a more thorough analysis of which taxes are competitively detrimental to Virginia businesses and prohibitive to job creation and expanding industry.

Preparing for the Top Jobs of the 21st Century

Interim Report of the Governor's Commission on Higher Education Reform, Innovation and Investment

Chairman Thomas F. Farrell, II

Vice Chairman The Honorable M. Kirkland Cox

December 20, 2010

TABLE OF CONTENTS

INTRODUCTION AND EXECUTIVE SUMMARY

On March 26, 2010, Governor Bob McDonnell signed Executive Order Number Nine,[1] establishing the Governor's Commission on Higher Education Reform, Innovation and Investment, and charging it with setting forth "a comprehensive strategy for increased educational attainment, skills development, and lifelong learning that will equip Virginians to succeed at the highest levels of global economic competition."

Today we complete the first phase of our work by issuing this Interim Report recommending passage of landmark higher education legislation in the 2011 session of the Virginia General Assembly. We propose that the Commonwealth articulate a clear and achievable vision of national and international leadership in college degree attainment and personal income and, through legislation, put Virginia on a sustainable path of higher education innovation, investment and reform that will make that vision real.

Our Commission's work is ongoing, and while the legislation we propose will not complete the development of this strategic vision and program, it will set the course and commence it. To develop the full plan and detailed policies, there must be a positive, bipartisan spirit of executive and legislative branch cooperation, active collaboration and trust between and among the Commonwealth and its public and private institutions of higher education, and a dynamic, jobs-focused partnership in every region of Virginia that unites the efforts of the business and professional community and our colleges, universities, and community colleges.

Our Commission proposes a name for this comprehensive, forward-focused effort: "*Preparing for the Top Jobs of the 21st Century*: The Virginia Higher Education Opportunity Act of 2011." We recommend that the *"Top Jobs"* or "TJ21" legislation embrace three core elements:

[1] A copy of Executive Order Number Nine, as revised on July 9, 2010, is Attachment A.

1. Economic Opportunity:

   Recognizing the well-documented link between educational achievement and earning power, we propose a series of measures that will help foster economic growth in the Commonwealth and prepare Virginians for the best jobs and incomes in the knowledge-based economy. The most relevant indicators of our progress—as well as our competitive standing globally—are college degree attainment and personal income growth, and so it is to tangible improvement according to those key measures that our proposals are directed.

2. Reform-Based Investment:

   Moving beyond the tiresome debate about reform versus investment, our proposals recognize the vital need for both. We do not propose quick fixes or a massive infusion of cash. Not only are those things unavailable in the present economy, but even if within our grasp they would not reflect the sound public policy taxpayers have a right to expect. To achieve our shared vision, Virginia must implement a program of sustained investment that will preserve and extend excellence in our higher education system while at the same time instituting reforms and innovations that will extend quality degree opportunities to more Virginians in creative, cost-effective ways.

3. Affordable Access:

   Ultimately, this educational and economic endeavor must work for the students it seeks to serve and serve the Virginians who seek to work. Our proposals are thus directed toward ensuring that all deserving and committed Virginia students have access to an excellent education throughout our broad and diverse higher education system. The proposals likewise will help ensure that a college degree remains within reach for young people of limited or ordinary means and accessible to people already engaged in the workforce.

In remarks delivered at George Mason University before his election, Governor McDonnell candidly observed:

> Many people my age and older worry that the next generation of Virginians may be the first not to enjoy greater economic opportunities than their parents—that the American Dream may be dimming for our children and grandchildren, and that other nations may pass us by in innovation and competitiveness…. [W]hile that may be unduly pessimistic, we certainly cannot afford to be blindly optimistic. The hard reality is this: The 21st-century economy requires increasingly high skill and knowledge levels. Too few Virginians are going to college and getting that preparation. And our present state policies are doing far too little about it.

The Governor's diagnosis appears to reflect an increasingly broad consensus for decisive action, and we applaud him and the Commonwealth's bipartisan legislative leadership—many of whom are members of the Commission or have been consulted during our deliberations—for recognizing the pressing need for change. Because of our excellent system of higher education, the Commonwealth has a solid platform from which to achieve leadership in the knowledge-based economy. It is our privilege as Commission members to assist in giving content to this commitment and fashioning policy recommendations to help achieve it.

For ease of reference, our interim recommendations are listed below in summary fashion. The body of our report then follows, with the following parts: a description of the Commission's work to date; a review of where things currently stand with respect to higher education in Virginia; a detailed discussion of our interim recommendations; and a concluding section on next steps.

SUMMARY OF RECOMMENDATIONS

(1) ECONOMIC OPPORTUNITY

(a) 100,000 More Degrees

- ***Adopt the McDonnell/National Center for Higher Education Management Systems ("NCHEMS") 100,000-degree goal for additional college degree attainment as a state policy priority.***

- ***Enroll more Virginia students at the state's public and private colleges by stabilizing base funding, rewarding enrollment growth, and establishing institution-specific Virginia-student enrollment targets.***

- ***Encourage and facilitate degree completion by more Virginians with partial college credit.***

- ***Establish targeted policies and incentives to promote improved retention and graduation rates throughout the Virginia higher education system.***

(b) STEM and Other High-Demand Degrees

- ***Establish a set of "economic opportunity metrics" that will enable everyone in the higher education enterprise, including students and parents, to understand the economic impact and earning potential of particular degree programs at particular institutions.***

- ***Establish a public-private collaborative effort that engages the business, non-profits, higher education and K-12 communities in the development and implementation of a comprehensive plan to increase science, technology, engineering, math, ("STEM") and high demand degree attainment in Virginia.***

(c) Research and Development ("R&D) Initiative

- ***Develop a statewide strategic roadmap that catalogs all R&D assets and activities, particularly those related to federally funded research, and aligns Virginia's economic development initiatives with additional R&D investments.***

- ***Establish an emerging technologies fund as a vehicle for strengthening R&D-related programs, including recruitment of eminent faculty, acquisition of research-related equipment, intellectual property commercialization and seed-stage funding.***

- ***Create a new state income tax credit to promote private investment in R&D activities.***

(2) REFORM-BASED INVESTMENT

(a) Year-Round Utilization

- ***Engage each public higher education institution in the expedited development of a plan for optimal year-round utilization of its physical and instructional assets.***

(b) Technology-Enhanced Instruction

- ***Provide infrastructure and incentives for institutions to participate in "Virtual Departments" that leverage instructional resources across the Virginia higher education system.***

- ***Promote innovative course redesign initiatives that enhance instructional quality and reduce cost by incorporating new technologies into courses provided at Virginia colleges and universities.***

- ***Enhance the availability, quality and affordability of online course offerings, especially for non-traditional students with partial college credit.***

- ***Encourage expanded use of electronic textbooks and other online curriculum.***

(c) Degree Path Initiatives

- ***Increase the statewide availability of dual enrollment and advanced placement options that can help reduce the time required to complete college study.***

- ***Enhance incentives and aggressively promote options for obtaining a bachelor's degree by enrolling first in a community college and then completing study at a four-year institution.***

- ***Establish economic incentives for timely and expedited completion of bachelor's degree programs.***

- ***Develop a comprehensive college readiness plan that phases out reliance on developmental (remedial) programs at the college level by accomplishing necessary diagnostic and remedial action at the high school level.***

(d) Restructuring Refinements

- ***Establish an effective consultative process for the development, refinement and endorsement of institutional performance plans with appropriate participation by executive, legislative, and institutional representatives.***

- ***Revise performance metrics and corresponding incentives to make the incentives more robust and tailored to specific outcomes on state policy priorities, especially those related to economic impact and innovation.***

- ***Form an executive-legislative-institutional working group to identify additional ways to reduce costs and enhance efficiency by increasing managerial autonomy with accountability at the institutional level.***

(e) <u>Community College Reengineering</u>

- ***Support progress on the Virginia Community College System ("VCCS") Reengineering Task Force's ten major strategies for reform and innovation.***

(3) AFFORDABLE ACCESS

(a) <u>Codified Funding Model</u>

- ***Codify in the Top Jobs legislation a funding model that supports sustained long-term effort to achieve the priority policy goals outlined in this report related to economic opportunity, reform-based investment, and affordable access.***

(b) <u>Stable and Predictable Base Funding</u>

- ***Provide stable and predictable base funding for each institution using objective peer-based methodology that reduces the influence of ad hoc considerations, such as lobbying.***

- ***Enroll more Virginia students at the state's public and private colleges by stabilizing base funding, rewarding enrollment growth, and establishing institution-specific Virginia-student enrollment targets.***

- ***As state support increases over time, reduce reliance on tuition and fees to support institutional operations and instruction.***

- ***As growth revenues become available, deposit funds in a higher education reserve ("rainy day fund") so that state investment in the Top Jobs priorities can be sustained over time and sudden surges in tuition can be avoided during future economic downturns.***

(c) <u>Per-Student Funding</u>

- ***Restore and enhance funding of the tuition assistance grants (TAG) for students attending Virginia's independent colleges.***

- ***Make a 'promise' to every Virginia student that a significant increment of state funding will follow the student to the public or private (not-for-profit) Virginia college of his or her choice.***

(d) <u>Need-Based Financial Aid</u>

- ***Provide additional need-based financial aid—including grants and low-interest loans, if feasible—to enhance college affordability for low- and middle-income students and their families.***

(e) <u>Incentives for Economic Impact and Innovation</u>

- ***Provide performance-based incentive funding tied to key policy outcomes related to economic impact and innovation.***

THE COMMISSION'S WORK

The Commission's charge reflects the Governor's conviction that providing Virginians with affordable access to an excellent college education—especially in high-demand, high-impact disciplines—is vital for the Commonwealth's economic resurgence and for personal opportunity in the 21st Century economy.

In his Inaugural Address, the Governor declared:

> As we confront the worst economy in generations, the creation of new job opportunities for all our citizens is the obligation of our time, so all Virginians who seek a good job can find meaningful work and the dignity that comes with it …. That is why, even in these tough times, we will have the foresight to invest today in ideas and economic policies that increase economic prosperity tomorrow ….
>
> Access to a quality education is the foundation of future opportunity …. New opportunities in science, technology, engineering, math and healthcare must be created …. And let us recognize now that a high school degree is no longer the finish line. We must create affordable new pathways to earning a college degree and make a commitment to confer 100,000 additional degrees over the next 15 years. We must make our community colleges national leaders in workforce development and career training.
>
> These are the investments that will pay individual and societal dividends for many years to come.

In the Executive Order creating this Commission, Governor McDonnell elaborated on the present state of higher education and the challenge before us:

The current period of economic challenge facing our Commonwealth and Nation comes during an era of rapid technological advancement and intensifying international competition, requiring an increasingly knowledgeable workforce and engaged citizenry. There is a well-documented correlation between the degree or certificate a person gains and the income he or she earns—between a state's educational attainment and its per capita income. Higher education is among the state programs generating the highest return in terms of job creation, economic growth, and ultimately tax revenues.

With great national universities, a higher education system distinguished by both its quality and diversity, and a vibrant knowledge-based economy, Virginia has a unique opportunity to show the way to a new era of American leadership in advanced education, ground-breaking research, and economic growth. Our country's security, our state's prosperity, and our citizens' opportunity all depend on a sustained commitment to higher education excellence and access.

During the first decade of this century, Virginia's state support for public colleges and universities was cut nearly in half on a per-student, constant-dollar basis. The result was an unprecedented cost shift to students and their families and a potential threat to quality and access. Tuition has nearly doubled in the past decade. Colleges and universities must continue to find ways to reduce operating costs and focus on the disciplines that lead to the high-paying jobs of the future. Greater efficiencies and more productivity in the state system must be found.

There is a pressing need for the Commonwealth to establish a long-term policy of reform, innovation and investment that will ensure instructional excellence, create affordable pathways to college degree attainment for many thousands more Virginians, prepare our citizens for employment in the high-income, high-demand fields of the new economy, foster socio-economically important research and development, and ensure affordable access to appropriate post-secondary education, training, and re-training for all Virginians.

In keeping with the Governor's directive, our Commission has focused on—and continues to address—the following priorities:

- Preserving and enhancing the instructional excellence of Virginia's leading universities and of the higher education system as a whole;

- Increasing significantly the percentage of college-age Virginians enrolling in institutions of higher education and attaining degrees;

- Attracting and preparing young people for the STEM (science, technology, engineering, and math) areas and other disciplines (e.g., healthcare and advanced manufacturing) where skill shortages now exist and/or unmet demand is anticipated;

- Forging effective public-private partnerships and regional strategies for business recruitment, workforce preparation, and university-based research;

- Making Virginia a national leader in providing higher education opportunities to military personnel and veterans;

- Crafting a sustainable higher education funding model that will systematically move Virginia toward higher levels of educational attainment and economic competitiveness over the next decade-and-a-half;

- Developing innovative ways to deliver quality instruction, cost-saving reform strategies, and affordable new pathways to degree attainment for capable Virginians regardless of income or background;

- Evaluating strategies to reduce costs through additional college placement testing and accelerated degree completion; and

- Creating effective workforce development programs through expanded use of the Virginia Community College System in coordination with the Governor's Commission on Economic Development and Job Creation.

The Commission's work is being accomplished primarily through its three standing committees, whose scopes of work and interim reports are attached to this report.[2] The major recommendations of these committees that bear on the Commission's legislative proposals for the 2011 session are set out in the Recommendations section below.

In the course of developing interim recommendations, the committees have held numerous meetings, received an impressive variety of presentations, and examined many relevant studies and reports. Much good work also has been accomplished through dialogue among Commission members and staff, representatives of the business and higher education communities, various think-tanks and policy experts, legislative members and staff, the Governor's Policy Office, and the Office of the Secretary of Education. The Governor himself has been actively engaged in many of these discussions and has met three times with the full Commission.

[2] The interim report of the Degree Attainment, Financial Aid and Workforce Training Committee is Attachment B. The interim report of the Innovation and Cost Containment Committee is Attachment C. The interim report of the Regional Strategies/Partnerships for Research and Economic Development is Attachment D.

The Commission has received crucial assistance from a number of quarters. In developing the proposed funding model, the Commission has been aided by representatives and staff of the Finance secretariat, State Council of Higher Education for Virginia (SCHEV), Department of Education, Department of Budget and Planning, Senate Finance Committee, House Appropriations Committee, institutions of higher education, Virginia Community College System, Virginia Business Higher Education Council (VBHEC) and others. SCHEV[3], VBHEC[4] , VCCS, and the Center for Innovative Technology have been especially helpful in augmenting the staff resources of the Office of the Secretary of Education and the Governor's Policy Office. In addition, a wide range of other organizations, including the National Center for Higher Education Management Systems (NCHEMS), the Council of Independent Colleges in Virginia, and the Council on Virginia's Future have contributed materially to the Commission's work.

Finally, the Commission and its staff have been mindful of the work of another key panel created by the Governor, the Commission on Economic Development and Job Creation co-chaired by Lieutenant Governor Bill Bolling and Senior Economic Advisor Bob Sledd. We have closely coordinated our activities with members and staff of that commission. Its Final Report, issued on October 16, 2010, includes a number of recommendations that are also reflected in this report, especially in the economically vital area of university-based research and development activities. To take full advantage of the extensive work and findings by the Governor's Commission on Economic Development and Job Creation, our Commission has elected to defer until the second year of our work the exceedingly important task of developing detailed recommendations related to regional strategies and public-private partnerships for economic development, business recruitment and workforce training.

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[3] SCHEV personnel have served as staff to the Commission's committees and have assisted in preparing the committee reports. SCHEV staff members also have worked closely with the Commission in supplying pertinent background information and data that is included in this Interim Report.

[4] VBHEC is a private, not-for-profit organization whose "Grow By Degrees" program seeks to advance higher education reform and investment measures that are generally consistent with many of the Commission's initiatives. VBHEC's chairman, W. Heywood Fralin, a member of the Commission, has made the "Grow By Degrees" team available to assist the members and staff of the Commission as needed.

WHERE THINGS NOW STAND

With 15 public four-year institutions, one public two-year college, a community college system with 40 campuses, 27 independent not-for-profit colleges, and a rich and growing array of degree-granting programs by for-profit private providers, Virginia's higher education system is among the nation's most diverse and accessible. Various colleges and universities in the Commonwealth routinely receive accolades from national organizations and publications that rank higher education institutions based on quality, value and performance. The accolades are welcome indeed, not only because they attest to an educational ideal that has been nurtured from colonial to modern times, but because they have the very practical effect of attracting new business investment, top jobs, and some of the nation's best and brightest minds to the Commonwealth.

Such accolades, however, may also produce a numbing self-satisfaction and cause Virginians to indulge the facile assumption that we will continue to enjoy the many benefits of a top-performing higher education system no matter how aggressively we reduce its public resources, how fast we drive up the cost to students, or how far other states and countries outpace us in embracing opportunities associated with new technologies and new models of service delivery. A dramatic wake-up call is needed.

Countless studies, including the recent comprehensive analysis by the Weldon Cooper Center for Public Service at the University of Virginia,[5] have documented the direct correlation between educational attainment and economic prosperity—between an individual's academic credentials and his or her earning power in the marketplace. It is unsurprising, therefore, that the documented return on investment in higher education is significantly greater than for most, if not all, other governmental programs.

Despite the enormously positive economic impact of college and universities, two recessions during the past decade—one of which has no rival since the Great Depression—have caused the Commonwealth to retrench severely in its commitment to higher education. Per-student funding at four-year public institutions of higher education declined by 40 percent on a constant-dollar basis between 2000 and 2010, while at two-year institutions the reduction was 30 percent over the same period. Additional reductions have been adopted for the 2010-2012 biennium, and the situation will become more acute with the elimination of federal funding under the American Recovery and Reinvestment Act (commonly referred to as "federal stimulus funding").

Recognizing the severe impact of these steep reductions, Governor McDonnell and the General Assembly declined to make additional reductions to higher education while closing the $4 billion budget shortfall that confronted the 2010 legislative session. That action was important symbolically as well as substantively, because it heralded a turning point in the Commonwealth. In meeting with the Commission on October 12, the

[5]Rephann, T. J., Knapp, J. L., & Shobe, W.M. (2009, October). *Study of the Economic Impact of Virginia Public Higher Education.* Charlottesville, VA: University of Virginia Weldon Cooper Center for Public Service.

Governor expressed his determination to reverse the recent pattern of disinvestment in higher education as funds become available.

This shift in priorities is urgently needed. Even with the past decade's economic exigencies, the opportunity existed to maintain a commitment to higher education commensurate with its importance to the Virginia economy. Instead, higher education funding declined sharply as a percentage of total general fund spending in the Commonwealth. As Governor McDonnell has pointed out, if state support for higher education since 2000 had merely matched the growth in spending in the rest of the general fund budget—if it had only kept pace with *average* spending on all other general fund programs—then the Commonwealth currently would be spending $300 million more annually on higher education. With total spending on higher education representing only 10 percent of the general fund budget in 2011-2012, it is apparent that even a relatively modest adjustment in priorities, if sustained over time, can have far-reaching effects.

Demographic trends plainly compounded the difficulties of the past decade. Fueled by a balloon in the number of college-age Virginians, the state's four-year colleges and universities increased enrollment by 24 percent between 2000 and 2010. In contrast to longstanding funding policies that routinely allocated *additional* state resources to institutions that enrolled more in-state students, institutions that chose to help the Commonwealth meet the surging demand for college enrollment in recent years did so against a backdrop of *declining* state support. As the economy has remained stagnant for a prolonged period, many displaced or under-employed workers have returned to school to upgrade their educational credentials, resulting in even higher demand on state institutions, especially the Commonwealth's community colleges. Today, the community college system is serving 22,000 or 13.2 percent more students than it was just two years ago.[6]

Because a college degree is often the lynchpin in gaining a good job, it is especially unfortunate that Virginia's decade-long decline in support for higher education reached its nadir during a time of severe economic stress on Virginians and their families. While the institutions of higher education absorbed a portion of the decade's state funding reductions through various cost-cutting strategies, the largest portion was passed along to students and their families in the form of tuition and fee increases. As a result, Virginia can no longer be considered a low-tuition state; we currently rank among the top ten states in tuition and fee charges for public colleges and universities. Student loan debt also has increased sharply—and with potentially dire consequences, since the prospect of easy repayment through rapid growth in income has dimmed dramatically.

Both access and affordability have suffered in this environment. Out-of-state students now pay on average 151 percent of the cost of their education at Virginia's public institutions, and the institutions rely heavily on those non-Virginia resident tuition and fee payments to hold down costs for Virginia students. While it is a positive sign that the Commonwealth's institutions continue to be a magnet for highly capable students from

[6] *The Case for Change.* (2010). Retrieved from http://rethink.vccs.edu/case-for-change/.

around the country, undue reliance on out-of-state tuition as a major funding source inevitably limits access for Virginia students. Moreover, even out-of-state tuition is subject to marketplace realities, and the ability to generate increased revenue by hiking the price tag for students from outside the Commonwealth appears largely to have been exhausted.

As a result of all these factors, the six-year strategic plans of Virginia's four-year public institutions now contemplate only modest undergraduate enrollment increases—collectively in the three percent range—for the foreseeable future. In a word, the system appears to have reached, and perhaps exceeded, its limits. This has caused many knowledgeable members of the higher education and business communities to express profound alarm about the potential degradation of overall instructional quality and to urge a renewed commitment to stable and predictable state support combined with forward-looking innovation.

Severe financial challenges also confront Virginia's independent colleges and universities, which currently enroll roughly a fourth of all in-state undergraduate students in the Commonwealth. Since 1972, Virginia has provided vital financial support to the not-for-profit independent colleges through the Tuition Assistance Grant (TAG) Program. In 2007-2008, the per-student grant was approximately $3,200, but state budget cuts have reduced the TAG awards by about 19 percent—to approximately $2,600 per student—during a time when both the private institutions and their tuition-paying customers face unprecedented economic pressures.

Virginians seem to understand that the status quo is neither acceptable nor sustainable. According to extensive public opinion research conducted for the Virginia Business Higher Education Council, three-quarters of Virginians believe that a bachelor's or associates degree is essential for success in today's economy. Yet, currently only about 35 percent of college-age Virginians are enrolled in college, and only about 42 percent of working-age Virginians have a two- or four-year college degree. The gap between the expectations of the people of Virginia and the reality on the ground is striking.

In reality, the prognosis appears even worse. When Governor McDonnell echoed the concern of many Virginians that their children and grandchildren might not enjoy the same opportunities as their own generation and those before, he was expressing anecdotally a highly disturbing reality that also can be demonstrated statistically. The United States is one of only two countries in which the college degree attainment of the younger working-age cohort—ages 25-34—is actually *lower* than those in the group aged 45-64. The negative implications for America's competitiveness, and for individual opportunity and fulfillment, could hardly be clearer.

Perhaps the biggest threat to America's long-term economic prosperity and competitiveness lies in our failure to maintain our historic advantage in the vital STEM areas. In a follow-up to its urgent 2005 report entitled *Rising Above the Gathering Storm*, a National Academy of Sciences panel recently painted a dire picture, reporting that America's education system had made little progress in science and math instruction

while much of the world had made dramatic gains.[7] Another panel, a bipartisan federal commission chaired by two former United States senators,[8] reached similar findings earlier in the decade:

> Second only to a weapon of mass destruction detonating in an American city, we can think of nothing more dangerous than a failure to manage properly science, technology and education for the common good over the next quarter century …. The harsh fact is that the U.S. need for the highest quality human capital in science, mathematics and engineering is not being met …. This is an ironic predicament, since America's strength has always been tied to the entrepreneurial energies of its people. America remains today the model of creativity and experimentation, and its success has inspired other nations to recognize the true sources of power and wealth in science, technology, and higher education …. In a knowledge-based future, only an America that remains at the cutting edge of science and technology will sustain its current world leadership…. [O]nly a well-trained and educated population can thrive economically, and from national prosperity provide the foundation for national cohesion.

The United States now ranks 29th out of 109 countries in the percentage of 24-year-olds with math and science degrees. Among the American states, Virginia is comparatively strong in STEM education, ranking 9th nationally in the percentage of degree awards in STEM disciplines from public universities. But the percentage of college degrees in STEM areas has been declining in Virginia in recent years despite expert predictions that by 2016 almost three-fourths of the fastest growing jobs in the United States will be in the STEM fields. To meet anticipated demand, according to one respected economist's presentation to the Commission,[9] Virginia will need to prepare 100,000 additional workers with STEM degrees over the next decade.

The need to dramatically increase college degree attainment in the Commonwealth, with a focus in the critical STEM area and high-demand disciplines such as healthcare, has been noted by an impressive array of respected leaders, organizations, and study panels. The Council on Virginia's Future, chaired earlier by Governor Kaine and now by Governor McDonnell, has made college degree attainment its top priority. Two years ago, the Virginia Business Higher Education Council launched its "Grow By Degrees" campaign and coalition, with additional STEM degrees and innovative instructional strategies among its top policy priorities. Reflecting a degree of bipartisan consensus seldom seen in the Commonwealth, Governor McDonnell, both of Virginia's United

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[7] Members of the 2005 "Rising Above the Gathering Storm" Committee. (2010). *Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5*. Washington, D.C.: The National Academies Press.

[8] United States Commission on National Security/21st Century. (2001, February). *Road Map for National Security: Imperative for Change:* Phase III Report of the United States Commission on National Security/21st Century.

[9] Chmura, C. (2010, August). Job Demand Forecasting. Presentation to the Governor's Commission on Higher Education Reform, Innovation, and Investment, Hampton, VA.

States Senators, and all living former Governors joined as honorary leaders of the "Grow By Degrees" coalition.

An equally impressive succession of executive and legislative branch commissions and initiatives—Governor Gerald Baliles's in 1988; Senator John Chichester's in 1994; Governor Jim Gilmore's in 1998; Governor Mark Warner's in 2002 —have highlighted the central importance of the Virginia higher education system to the Commonwealth's economic progress and quality of life. Yet, not since Governor Mills Godwin championed creation of the Virginia Community College System in the 1960s has a Virginia chief executive elevated higher education and its economic impact to top-priority status and undertaken to enact a long-term strategy and plan into law.

In Virginia, change typically is more evolutionary than revolutionary. Despite the recession-impelled funding cutbacks that have severely challenged colleges and universities in recent times, the stage has been set for a major higher education initiative in part through important reforms that have been instituted over the past two decades. Prominent among these have been the management decentralization pilot projects of the early 1990s, development of the "base budget adequacy" (BBA) funding model under the auspices of the Virginia General Assembly's Joint Subcommittee on Funding Policies in 2000, the concept of institution-specific performance agreements first advanced by the Blue Ribbon Commission on Higher Education in 1998, the ground-breaking Restructured Higher Education Financial and Administrative Operations Act (Restructuring Act) of 2005, and the major research initiative launched by Governor Warner in 2006.

Higher education capital improvements, without which significant improvement in degree attainment would be impossible, have been made at key intervals: through general obligation bond issues in 1992 and 2002, and more recently through the 21st Century Capital Improvement Program legislation Enacted in 2008, this innovative legislation provided the mechanism for a systematically planned and reliably funded program of capital investment in the Commonwealth, including higher education.

These state-level policy reforms have been matched by innovation and creativity at the institutional level. A key attribute of higher education in Virginia is system-wide diversity and institutional autonomy, and much of the progress achieved on Virginia's public and private campuses in recent years is attributable to forward-thinking leadership, an unwavering commitment to quality, and a culture of entrepreneurship at the institutions. Various studies have documented the Virginia higher education system's positive performance and degree output relative to cost. As already noted, the Commonwealth's institutions have earned a steady stream of accolades and high rankings from independent organizations that also affirm their stand-out character in terms of value. These accomplishments are not cause for satisfaction or complacency, however. Rather, they suggest Virginia is well positioned to lead the way in managerial reforms, academic innovations, and new models of instruction that will reinforce and extend America's position as a global higher education leader.

Some may suggest that the current economic crisis and severe pressure on public resources make this a poor time for Virginia to fashion a strategy for long-term investment, innovation and reform in higher education. But the opposite is true. Today's tough times call to mind the quote commonly attributed to the noted physicist and Nobel laureate, Sir Ernest Rutherford of New Zealand: "Gentlemen, we have run out of money. It is time to start thinking." The truth is, Virginians have been thinking about higher education and its indispensable role in society for a long time—going back to the days of Jefferson, and before. The essential task in these challenging times is to think seriously about how to do it better: how to deliver instruction more economically and effectively; how to leverage resources for optimal impact across the higher education system; how to foster the innovation and entrepreneurship that have long set Virginia and America apart; how to realize our colleges' full potential in the economically vital areas of research, workforce training and business recruitment; how to weave predictable and reliable funding for higher education into the fabric of state policy so that our actions match our aspirations in the years ahead.

It is certainly true that the unusually weak economy imposes limitations on near-term funding opportunities. But the lack of a full tank of gas does not make it any less important to decide on a destination; before we can head there, we have to know where we are going. If Virginia's governmental leaders in both political parties will come together to chart that course, the Commission is confident that other essential participants in this initiative—the business and professional community, the larger education community, and ultimately the people of Virginia—will respond with enthusiasm, energy and resolve.

(1) Economic Opportunity

Governor McDonnell has made it "Job One" to grow the Commonwealth's economy and create more good jobs for Virginians. So, too, has our Commission assigned the highest priority to preparing Virginians for the top jobs of the knowledge-based economy. Our economic-related recommendations are three-fold:

- To confer upon Virginians 100,000 additional college degrees from public institutions of higher education, combined with a parallel increase in privately conferred degrees, during the next fifteen years.

- To focus the increased degree attainment in high-demand, high-earning disciplines, such as STEM and healthcare.

- To promote dramatically increased public-private collaboration on university-based research and development.

We address our specific proposals in these three areas in turn.

100,000 More Degrees

The Governor's proposal for 100,000 cumulative additional undergraduate degrees over the next fifteen years is, first and foremost, a plan for the economic revitalization of our state and economic advancement of our fellow citizens. No other major area of expenditure by state government has a documented return on investment that approaches the return the Commonwealth realizes from its higher education system. That return is reflected in increased economic activity (Gross Domestic Product, or GDP), job creation, personal income growth, and the expanded flow of tax revenues back to state and local government coffers.

Numerous studies document the economic impact of higher education, including the recent comprehensive study of Virginia's system by the Weldon Cooper Center for Public Service at the University of Virginia.[10] The report was based on 2007 data, and results were expressed in 2007 dollars. Taking into account only the impact of the *public* institutions—and thus understating the actual return—the Cooper Center documented the following huge impact from each year's higher education spending and degree conferral:

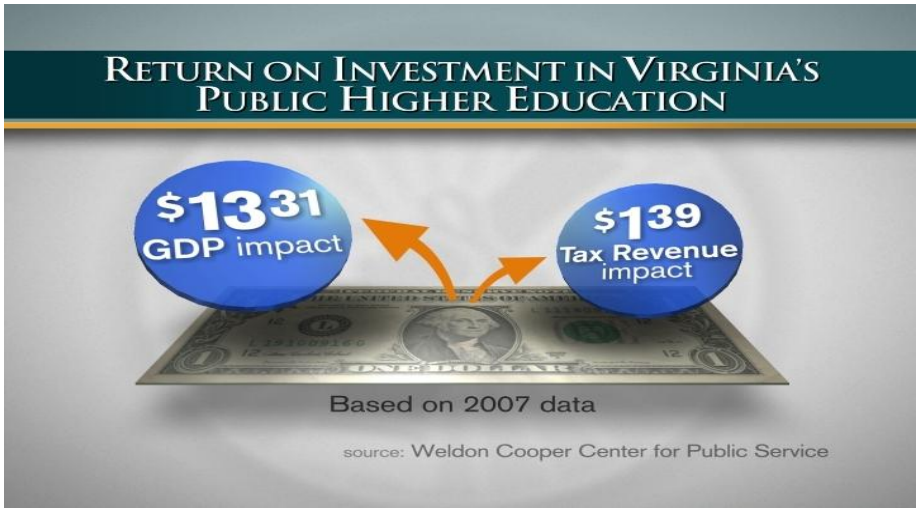
- For every dollar of state investment, $13.31 is generated in increased GDP.

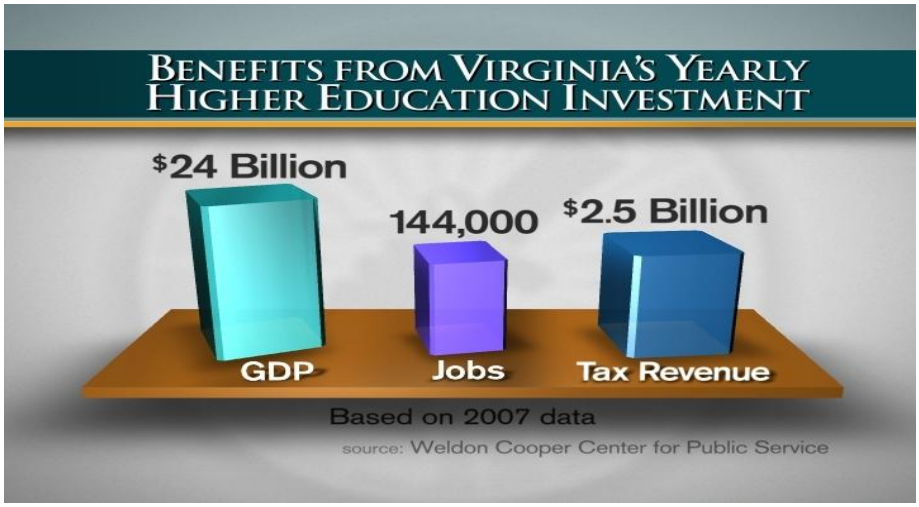
- For every dollar of state investment, $1.39 is generated in increased state tax revenues.

[10] The study, released in 2009, was commissioned by the Virginia Business Higher Education Council (VBHEC). Its full text is available on VBHEC's "Grow By Degrees" website (www.GrowByDegrees.org).

- The system annually accounts for $9.5 billion in purchases of goods and services here in Virginia and supports more than 144,000 jobs.

- Each year's investment contributes $24 billion to the Virginia economy and produces $2.5 billion in new state revenues.





These compelling data show that the public higher education system more than pays for itself. Of course, the benefits in terms of GDP and revenue growth are realized over time, in part through the higher earnings that college graduates receive over the course of their working lives. But since the Commonwealth is making this investment and generating the return each year, the payback on Virginians' investment is constantly cycling through. To put the impact in perspective, the $2.5 billion in new state revenue

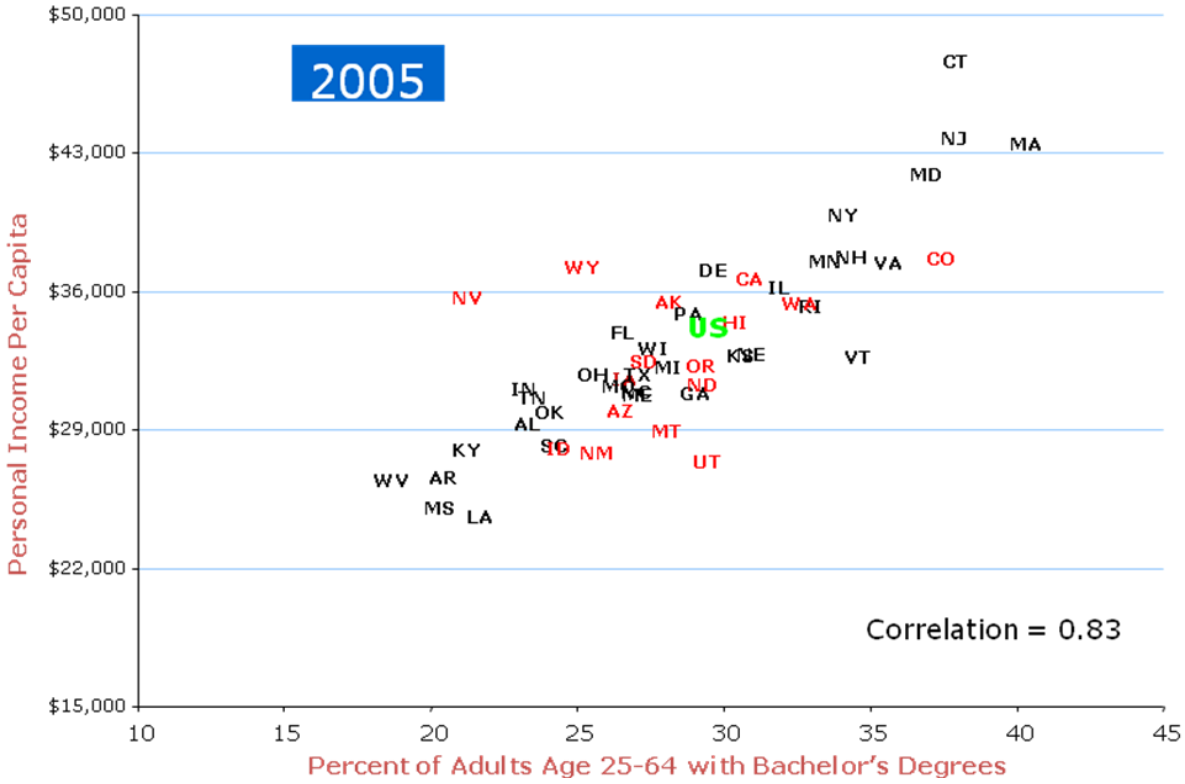
generated by each year's investment is roughly twice the combined annual state general fund appropriation for all the institutions in the system.

Another major beneficial impact from the Commonwealth's higher education investment is lower social costs. Not only do college graduates on average earn significantly higher incomes—in fact, about twice as high[11]—than those without college degrees. They also necessitate fewer expenditures on social services, such as welfare and other forms of public assistance, healthcare payments, and corrections costs. The Cooper Center found that each year's degree production by Virginia's public higher education system is correlated with nearly $350 million in avoided social services expenditures. Those savings go directly to the Commonwealth's—and thus state taxpayers'—bottom line.

Given the high rate of return on investment, one might be tempted to suggest that the more the Commonwealth spends on higher education, the better off it will be. The Commission makes no such sweeping assertion. Indeed, it is important to understand the analytical underpinnings of the 100,000-degree goal and the economic impact projected to result from the proposal.

When Governor McDonnell first articulated the 100,000-degree objective during the gubernatorial election campaign, he based it on an independent study commissioned by the Council on Virginia's Future and conducted by the respected National Center for Higher Education Management Systems (NCHEMS). NCHEMS assessed the additional number of undergraduate degrees it would take to place Virginia in the top rank of states and countries as measured by two key indicators of educational and economic success—college degree attainment and personal income. Based on that analysis, Governor McDonnell called for the Commonwealth's public institutions of higher education to confer 100,000 cumulative additional two- and four-year degrees on Virginia students by 2025 without any diminution in the quality of the degrees. NCHEMS presented an updated version of its analysis to the Commission at the start of our work.

[11] Rephann, T. J., Knapp, J. L., & Shobe, W.M. (2009, October). *Study of the Economic Impact of Virginia Public Higher Education.* Charlottesville, VA: University of Virginia Weldon Cooper Center for Public Service.



NCHEMS Chart Depicting 2005 State Performance based on Personal Income Per Capita and Percentage of Adults with Bachelor's Degrees

As the Governor noted in his charge to this Commission, the state's private colleges and other degree-conferring organizations—for-profits and not-for-profits—also have a vital role to play in increasing educational attainment. In fact, the NCHEMS assessment of the increased degree conferral required from public institutions was premised on comparable percentage growth in the degrees awarded by private institutions during the same 15-year period. When the combined number of additional publicly and privately conferred degrees is calculated, the need is for about 70,000 additional associate and bachelor's degrees over the next decade—and more than twice that number by 2025.

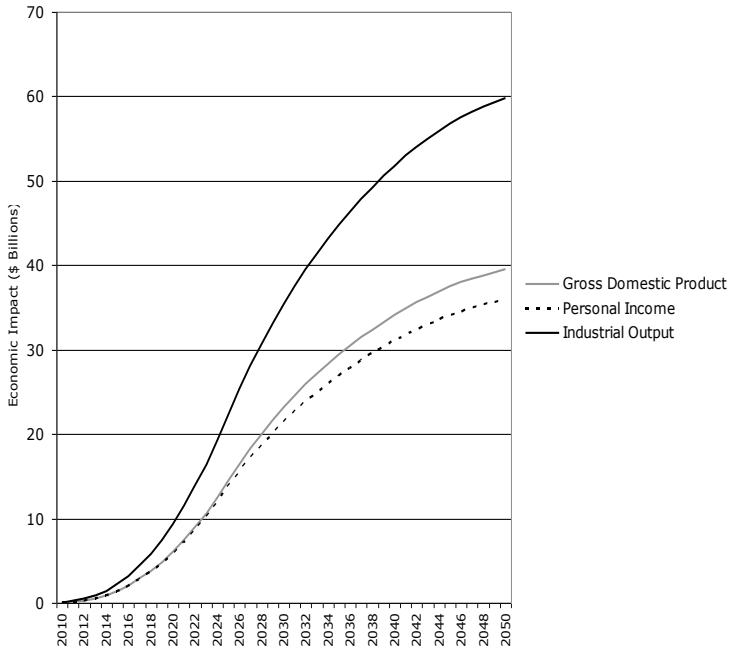
With the demographic pressures on Virginia's higher education system easing due to slower growth in the number of college-age Virginians, the increased degree conferral will have a significant positive impact on the percentage of working-age Virginians with college degrees—moving it from the present 42 percent to roughly 55 percent. A similar effort to promote increased degree attainment has been advanced by the Lumina Foundation, a respected national higher education policy organization whose self-declared "Big Goal" is to have 60 percent of the working-age population in the United

States with college degrees by 2025. Earlier this year, President Obama embraced much the same objective.[12]

The important point here is not that one can project with precision how many more college degrees are needed to reach a certain level of degree attainment in the working-age population, or that one can document the precise level at which Virginia will outperform other states and other countries educationally and economically. Those measures will always be a moving target to some extent. The important point is that Virginia's future global competitive position and the job and income opportunities that our citizens will enjoy depend on achieving significantly higher degree attainment over the next decade and beyond. The Commonwealth urgently needs to make a commitment to this core strategic objective and align its policies to begin achieving it.

We can be confident that significant economic benefits will flow from such a commitment. In its 2009 economic impact analysis, the Weldon Cooper Center documented the significant positive effects of the plan to award 100,000 more public undergraduate degrees to Virginians over the next fifteen years. Its findings understate the projected impact because the study did not take into account any corresponding growth in output from private colleges and other degree-granting entities. Nevertheless, the anticipated impact is extraordinary: $39.5 billion in higher Virginia GDP; $36.0 billion in increased personal income for Virginians; and $4.1 billion in new tax revenues for state government.

[12] Remarks by President Obama on Higher Education and the Economy at the University of Texas at Austin. Washington, D.C.: The White House. Retrieved from http://www.whitehouse.gov/the-press-office/2010/08/09/remarks-president-higher-education-and-economy-university-texas-austin



Weldon Cooper Center Graph Depicting GDP, Personal Income and Industrial Output Impacts from Plan to Add 100,000 Degrees by 2025

The Commission has devoted significant time and attention to developing the strategies and corresponding policies that will position the Commonwealth to achieve the 100,000-degree goal. While our work is continuing, our focus has narrowed to three primary strategies.

- First, we need to enroll more Virginia students at our public and private four-year colleges, at our community colleges, and in other degree-granting programs in the Commonwealth.

- Second, we need to encourage degree completion by those in the workforce who already have partial college credit. According to independent studies, this is a large population. 900,000 Virginians—representing 21 percent of our state's working-age population—already have some credit toward a college degree but no diploma.[13]

- Third, we need to do a better job of retaining and graduating the young people who do enroll at our public and private institutions. Too many students enroll, spend the resources of their families and taxpayers, but fail to complete their work. That is an area that demands improvement.

Enrolling More Virginia Students. The Virginia higher education system currently includes approximately 191,174 full-time equivalent students enrolled in four-year public

[13] The Lumina Foundation. (2010, September). *A Stronger Nation through Higher Education.* Retrieved from http://www.luminafoundation.org/publications/.

institutions, 123,669 enrolled in public two-year colleges, 86,630 enrolled in not-for-profit independent colleges, and about 50,000 enrolled in certificate, associate, and undergraduate degree programs in proprietary career colleges and other for-profit degree-granting institutions. As Governor McDonnell's Executive Order Number Nine states, the Commonwealth's strategy for increasing college degree attainment must "embrace the full array of Virginia's higher education assets—public and private, for-profit and not-for-private, residential and non-residential, physical and virtual—for the purpose of ensuring that all Virginians have affordable access to appropriate post-secondary education, training, and re-training opportunities."

Enrolling more Virginia students in our public institutions will require financial incentives, and the new higher education funding model recommended in a later section of this report so reflects. With many public colleges and universities having absorbed large enrollment increases in recent years without any increase in financial support from the Commonwealth, it is unsurprising that the four-year institutions now project only very modest increases in undergraduate enrollment for the foreseeable future—collectively, only about three percent over the next five years.

To make the public four-year colleges and universities full partners in achieving the 100,000-degree goal, the state must stabilize base funding, reward enrollment growth, and work with each college and university to establish new Virginia student enrollment targets that are consistent with each institution's mission, "market," and means. Independent colleges likewise should be incentivized to enroll more Virginia students. The Virginia Tuition Assistance Grant (TAG) program serves this purpose, and its funding levels should be restored as state revenues permit.

As a means of encouraging enrollment growth, the Commission recommends that the Commonwealth make a specific financial commitment to every Virginia student whose ability and effort enable him or her to meet college entrance criteria in Virginia. Under this "Virginia Promise," a constant increment of state funding—to be set initially at the current TAG funding level—would follow each student to the public or private (not-for-profit) four-year institution of his or her choosing. The payment would be made to the institution and not the student, and it would neither augment nor supplant other forms of student financial assistance. It would be funded initially from the public institutions' existing base funding (or from existing TAG payments, in the case of private colleges), resulting in no net new resources to the institutions. Over time, however, this "Virginia Promise" could have an important positive effect. It would allow student choices and demand to drive institutional funding levels, at least on an incremental and interim basis, and thus provide an incentive for institutions to enroll more students. The fact that it embodies a commitment to every Virginia student would increase the likelihood that its future funding survives the vagaries of the business cycle and political winds, thereby helping to keep the Commonwealth on track toward its long-term educational attainment goal.

Virginia's community colleges, which have experienced especially large enrollment increases in recent years, currently project substantially more robust enrollment and

degrees conferred growth than do the public four-year institutions. While these plans are still in development and it is unclear whether the underlying policy and funding assumptions will materialize, there is no doubt that an expanding community college system—with increases in both two-year degree conferral and transfers to four-year institutions—is an essential component of the state's increased degree attainment strategy. Because the community colleges already provide a more affordable alternative, the "Virginia Promise" commitment for students attending community colleges should be somewhat less than for those attending four-year institutions.

Any consideration of enrollment growth strategies must take into account the important role that community colleges play in producing the bachelor's degrees that are awarded by Virginia's four-year colleges and universities. In 2008, more than a third (36 percent) of Virginia's public and private bachelor's degree recipients had some experience in the community college system, and more than a fourth (27 percent) previously had earned an associate degree. Actions taken pursuant to the 2005 Restructuring Act continue to facilitate transfers from community colleges to four-year institutions whether or not the student first obtains an associate degree. As we discuss more fully later in this report, promoting community college transfer options, and making sure there is room for the transferees at four-year institutions, are essential strategies for providing affordable access to college degrees for an increasing percentage of college-age Virginians.

Finally, the Commission anticipates that enrollment in career colleges and other for-profit degree-granting programs in the Commonwealth will continue to increase. In 2008-2009, nearly 12,000 certificates and associate degrees and more than 2,436 bachelor's degrees were awarded by these institutions in Virginia. A recent report by Chmura Economics & Analytics found that career colleges were growing at an annual rate of nine percent, significantly higher than growth rates at most public and not-for-profit independent institutions.

The Commission believes the approach outlined herein will result in increased admission of Virginia students throughout the Virginia higher education system, including at the public institutions for which demand is highest throughout the Commonwealth. Preliminary anecdotal information suggests that these enrollment increases would equal or exceed the expanded enrollment of Virginia students envisioned in recent legislative proposals that would mandate higher in-state student ratios. The goal of such proposals is, or should be, to increase the admission of deserving Virginia students at our state colleges and universities. This salutary objective should be accomplished without impinging on the governing boards' appropriate authority over out-of-state student admissions, especially given the large subsidy that tuition paid by out-of-state students provides for college-going young people from across the Commonwealth.

Degree Completion by Virginians with Partial Credit. From the Commission's first meeting, it has been apparent that the existence of 900,000 Virginians in the workforce with some post-secondary credit but no diploma represents "low-hanging fruit" in the push to add 100,000 degrees by 2025. Efforts to promote adult education and strategies for serving more non-traditional students should not be, and are not, limited to those

Virginians with partial college credit. But the sheer number of people with some credit toward college suggests that a focused initiative there could yield strong returns for the Commonwealth and significantly improve the earnings opportunities of many Virginians.

A pressing need is to break down this 900,000-person cohort and determine how many who so identify themselves are reasonably close to the number of credits needed for a degree and have acquired those credits relatively recently. Various activities are underway in this area and should be strongly supported by the Commonwealth:

- Through the "Win-Win Project," the Lumina Foundation will provide $100,000 over three years to assist six community colleges—Germanna, New River, Northern Virginia, Thomas Nelson, Tidewater, and Virginia Western—in identifying "near-completers" and assisting them in obtaining an associate degree. This project can serve as a model for broader efforts in the Commonwealth to identify and assist returning students.

- For Virginians who possess 60 or more credits toward a bachelor's degree, the State Council of Higher Education for Virginia (SCHEV), as part of the Commonwealth's federal College Access Challenge Grant, will be undertaking a study of: (1) the scope and demography of the potential pool of adults who could enroll in a baccalaureate degree completion program; (2) the number of adults enrolling in and attaining degrees from adult degree completion programs and other nontraditional offerings at four-year institutions; and (3) whether these programs are aligned with the needs of employers and the economic development needs of the state. The opportunity may exist to use grant funding for this purpose on a broader basis in the future.

- SCHEV has created a link on its website for "Adults Completing their Bachelor's Degree." The site links visitors to institutions that offer degree-completion programs, adult education programs, courses offered in evenings, on weekends, and online, as well as programs certified by military Servicemembers Opportunity Colleges, programs in high-demand fields, and information about financial aid. This site can be enhanced or spun off as a free-standing electronic portal of the Commonwealth, similar to the "Education Wizard" portal of the Virginia Community College System, which likewise can be enhanced and marketed for this purpose.

- Virginia was selected by the National Governors Association to host a Governor's Forum on Postsecondary Credential Attainment by Adult Workers. In October 2010, this forum brought together policy-makers and practitioners to explore best practices in and scaling-up of successful efforts. A Post-Forum Action Plan contains strategies to continue the conversation in Virginia and move forward with key program initiatives.

- The regional higher education centers across the Commonwealth provide convenient degree-completion opportunities to citizens in their local communities. These centers represent significant opportunities to expand course and program offerings targeted at

the needs of local employers. A "completion consortium" of public and private institutions could help provide instructional content to these centers.

In addition to conducting a comprehensive analysis to help determine how many of the 900,000 Virginians with partial credit are close to the obtaining a degree and how they can best be encouraged and assisted to that end by the Commonwealth, the Commission believes that a consortium (or consortia) of public and private institutions can provide valuable assistance in this area. Both in-person and online course offerings have a role to play in meeting the need and could be the object of such joint effort.

Several public college presidents, including members of the Commission, have discussed opportunities for their institutions to collaborate in providing online course content, perhaps even complete degree programs in several core disciplines, targeted at the non-traditional student population. They envision the degrees would be conferred by a separate entity—either an existing institution or another organization created for this purpose—rather than their own universities. This is one of several ways that colleges and universities can put their instructional resources to use beyond their own campuses, resulting in more high-quality instruction at remote locations and a more cost-efficient leveraging of scarce higher education resources—an area of innovation discussed in greater detail in a later section of this report. The Commission intends to explore both the need for such collaboration and the potential logistics in the coming months.

Improving Retention and Graduation Rates. The third major strategy for increased degree attainment focuses on the other side of the coin just discussed—reducing the number of people who leave college with some credit but no degree. To state the matter positively, incremental improvement in the retention and graduation of students who enroll in college in Virginia can have a very positive impact on college degree attainment while reducing cost—indeed, waste—currently incurred throughout the system.

The "waste" occurs when students enroll in college, consuming their families' earnings, state tax dollars, institutional resources, and often their own money, only to drop out before completing a degree. Studies identify various causes for this attrition—the need to work because of financial pressures, academic unpreparedness, transition adjustment difficulties, and uncertainty about education and occupational goals —but there is no doubt that when it occurs, for whatever reason, an opportunity is missed and resources are wasted. A recent report by the American Institutes of Research documented that Virginia taxpayers spent more than $177 million over five years (2003-2008) on 35,461 college students who did not return after their first year.[14] This statistic is unsettling, and it is little consolation that the same organization found that Virginia is outperforming many other states in both retention and graduation rates.

Using the graduation metric that is standard in America higher education—the six-year freshman cohort graduation rate—Virginia's four-year institutions have an average 68.3

[14] Schneider, M. (2010, October). *Finishing the First Lap: The Cost of First-Year Student Attrition in America's Four-Year Colleges and Universities.* American Institutes for Research. Retrieved from http://www.air.org/news/index.cfm?fa=viewContent&content_id=989

percent completion rate, compared with a national average of 55.9 percent. Among those four-year institutions, the rates range widely—from a low of about 32 percent to a high of 93 percent. Some of these variations are expected, as the institutions have different missions and enroll students with differing socioeconomic profiles and academic credentials. A more useful comparison may be with peer institutions that serve similar student populations.

SCHEV has analyzed the potential impact on degree attainment from improvement in completion rates by Virginia's public four-year college and universities. If those institutions were to improve so that all at least match the median graduation rates of their designated peer institutions, the aggregate result would be the conferral of approximately 8,000 additional degrees by 2025. Focusing only on the public four-year institutions in Virginia with graduation rates below 75 percent, SCHEV finds that every one-percent improvement in graduation rates across those institutions by 2025 would result in 1,100 more degrees system-wide.

The Commission believes improved graduation rates should be a high priority in Virginia's overall higher education reform and investment strategy. A comprehensive Virginia-specific study of the causes of attrition and the corresponding remedies should be commissioned, and the extensive body of literature and policy recommendations on this subject from respected organizations should be mined further. Three key recommendations, however, need not await that further study:

- First, the Commonwealth's new higher education funding model should incorporate financial incentives for improved completion rates, with a focus on meeting or exceeding peer institution performance.

- Second, the next set of restructuring reforms (discussed later in this report) should establish a collaborative and consultative process through which specific—and increasing—expectations are set for each institution regarding the number of degrees to be conferred on Virginia students by the institution.

- Third, for enrollment-related funding purposes, the Commonwealth should transition to enrollment calculation methodology that is based on end-of-term data, thereby excluding from the calculation students who withdraw or otherwise do not complete their work.

Setting degree expectations for each institution, providing incentives for improved retention and graduation rates, and taking retention into consideration in measuring enrollment are sensible steps that will help move the Commonwealth cost-efficiently toward its overall degree attainment goals.

As they respond to completion incentives and pursue specific degree-conferral goals, some Virginia higher education institutions will want to take a close look at enhancing targeted student services that support academic performance and adjustment to college study. In a recent analysis commissioned by the Virginia Business Higher Education

Council, the National Center for Higher Education Management Systems (NCHEMS) noted the well-documented impact of such services in improving retention. Tutorial assistance and other student services have been shown to make an especially significant difference in the success of low-income students and under-represented student populations following admission to college. While NCHEMS noted that data reported by Virginia institutions may not fully reflect the level of current expenditures, it reported that Virginia's colleges appear to spend considerably less on these services than their peer institutions—approximately $500 per student less on average at four-year institutions, and about $600 per student less at community colleges.

The Commission is continuing to assess the impact of the various strategies for higher degree attainment described in this section of the report. To match the top-performing states and countries in college degree attainment and personal income, NCHEMS projects that Virginia will need to confer 735 more public college degrees and 315 more private college degrees each year, year over year, through 2025. Of course, the mix of public and private degrees can, and likely will, vary in practice, as will the actual yearly progress. Nevertheless, those numbers provide a point of reference by showing the magnitude of the incremental annual progress that must be made to reach the Governor's cumulative 100,000-degree goal for the public institutions and the corresponding private degree increase.

The potential of various degree-attainment strategies is readily calculable for illustrative purposes. A five-percent increase in public institution enrollments at current graduation rates would yield 5,000-10,000 additional degrees by 2025, depending on the timing and location of the enrollment increases. If the Commonwealth can identify just 5% of the 900,000 citizens with partial college credit and help them complete a degree, that would create another 45,000 degrees. Improving graduation rates so that Virginia's public institutions match the median performance of their peers by 2025 would yield roughly 8,000 additional degrees. Indeed, taking into account completion progress only at the public institutions with graduation rates currently below 75 percent, every one-percent improvement at those institutions would result in approximately 1,100 more degrees system-wide. Similarly, each one-percent increase in the graduation rate for community colleges with rates below 25 percent would yield approximately 1,500 new degrees.

The actual segmentation showing the locus of additional degree conferral at specific public and private institutions will, of course, be an iterative process influenced by the policies and incentives that are adopted, local initiatives, and the planning discussions among institutional managers and state-level policymakers that ensue. The Commission believes the Commonwealth's policies, including its codified funding model and the incentives incorporated therein, should be designed to promote progress in all three key areas—enrollment growth, partial credit completion, and improved graduation rates. While it is desirable and perhaps inevitable that particular policies, practices and incentives will be adjusted in coming years in light of results, it is clear that progress in moving Virginia to a significantly higher level of college degree attainment over the next decade-and-a-half will require simultaneous and sustained effort on all three fronts.

STEM Degree Initiative

Closely connected to the 100,000-degree goal is Virginia's crucial focus on raising educational attainment in high-demand, high-earning disciplines, such as science, technology, math, science and healthcare. Before addressing the need for a major STEM degree initiative in the Commonwealth and the Commission's recommendations in that area, it is important to note the pervasive importance of introducing economic opportunity metrics into all facets of higher education reform and investment in Virginia.

The Commission does not gainsay in the least the non-economic benefits from a college education. Indeed, when it is done well, much of what occurs in the course of obtaining a college degree, as in earlier and later stages of education, contributes to the development of character and other qualities that are vital for good citizenship and personal fulfillment—benefits not ordinarily or easily expressed in economic terms. Since the earliest days of the American Republic and well before, our colleges have played an indispensable role in developing the whole person, in equipping him or her to think critically, and in supplying the broad context in which women and men of goodwill can move consequentially in their time, weaving their own bright threads into the rich fabric of experience and progress that is civilization. The Commission's proposals for long-term investment and reform in Virginia's higher education system are as essential for future excellence in liberal arts education generally, including in the humanities, as they are for progress in scientific, technological and vocational realms. This understanding has guided the Commission throughout our work to date, and will continue to guide us as we complete our charge.

A keen sense of our time's distinctive challenges and opportunities requires, however, that we keep one eye firmly fixed on the economic implications of what Virginia produces through its higher education system. The Governor has aptly noted that some degrees in some disciplines can be expensive to provide and costly to obtain yet yield relatively little in the form of enhanced earning potential. Given the times' competitive pressures and scarce resources, it is vital that the Commonwealth have access to the economic impact information necessary to target its investments where they will produce the greatest returns. Likewise, policymakers and administrators at our higher education institutions need to know the marketplace impact of various degree programs so they can allocate resources optimally. Perhaps most important, the students and families who invest their precious income, savings and time in pursuit of a college degree must be equipped to make prudent choices that will lead to expanding economic opportunity.

The Commission thus recommends that the Commonwealth and its colleges and universities, assisted by knowledgeable experts, develop a robust set of assessment tools—"economic opportunity metrics"—that will enable everyone involved in the higher education enterprise to better understand the economic impact of particular degree programs at particular institutions. At the request of the Virginia Business Higher Education Council, NCHEMS has already done some important preliminary work for

Virginia institutions in this arena, including developing a "cost per degree" assessment that reflects economic value based on degree holders' median earnings. A one-size-fits-all approach is not advisable given the diversity of Virginia institutions, programs, and constituencies. Instead, a range of performance measures should be developed, included various gauges of marketplace demand, earnings potential, employer satisfaction, and other indicators of historical and projected value. The bottom line is that better information about the absolute and relative economic value of degree programs, provided transparently to all participants in the process, is calculated to produce better resource allocation decisions and a higher return on investment for the Commonwealth and individual citizens alike.

Such analyses have already been well documented, broadly speaking, the high return on investment associated with increased degree attainment in the STEM are as well as the multiplier effect that STEM jobs have on non-STEM related employment. As noted in the previously cited follow-up to the National Academy of Science's *Gathering Storm* report, the innovation that drives the American economy will come largely from advances in science and engineering. "While only four percent of the nation's work force is composed of scientists and engineers, this group disproportionately creates jobs for the other 96 percent."[15]

The President's Council of Advisors in Science and Technology recently released a strategy for K-12 STEM education in which the Council commented that the "success of the United States in the 21st century—its wealth and welfare—will depend on the ideas and skills of its population. These have always been the Nation's most important assets. As the world becomes increasingly technological, the value of these national assets will be determined in no small measure by the effectiveness of science, technology, engineering, and mathematics (STEM) education in the United States."[16] While the recent report focused on K-12 education, a future report will focus on post-secondary STEM education. One of the report's key recommendations is that ALL students should be inspired and prepared to learn STEM subject matter.

The Commission recognizes that many important STEM programs and initiatives underway at the local level are already inspiring and preparing young people to study math and science and are strengthening the skills of teachers to develop and deliver innovative and effective STEM-related curriculum. In secondary education, we have STEM high school academies, Governor's schools, FIRST LEGO League and Robotics programs in addition to programs that bring K-12 and higher education together to foster interest and STEM skill development. The Virginia Mathematics and Science Coalition, Space Grant Consortium and other partnerships with business and industry, such as the SySTEMic Solutions Initiative with Northern Virginia Community College in Prince

[15] Reference National Science Board, Science and Engineering Indicators 2010. Arlington, VA: National Science Foundation (NSB 10-01, Figure 3.3)

[16] Prepare and Inspire: K-12 Education and Science, Technology, Engineering, and Math (STEM) for America's Future (Report to the President) by the President's Council of Advisors on Science and Technology, September 2010.

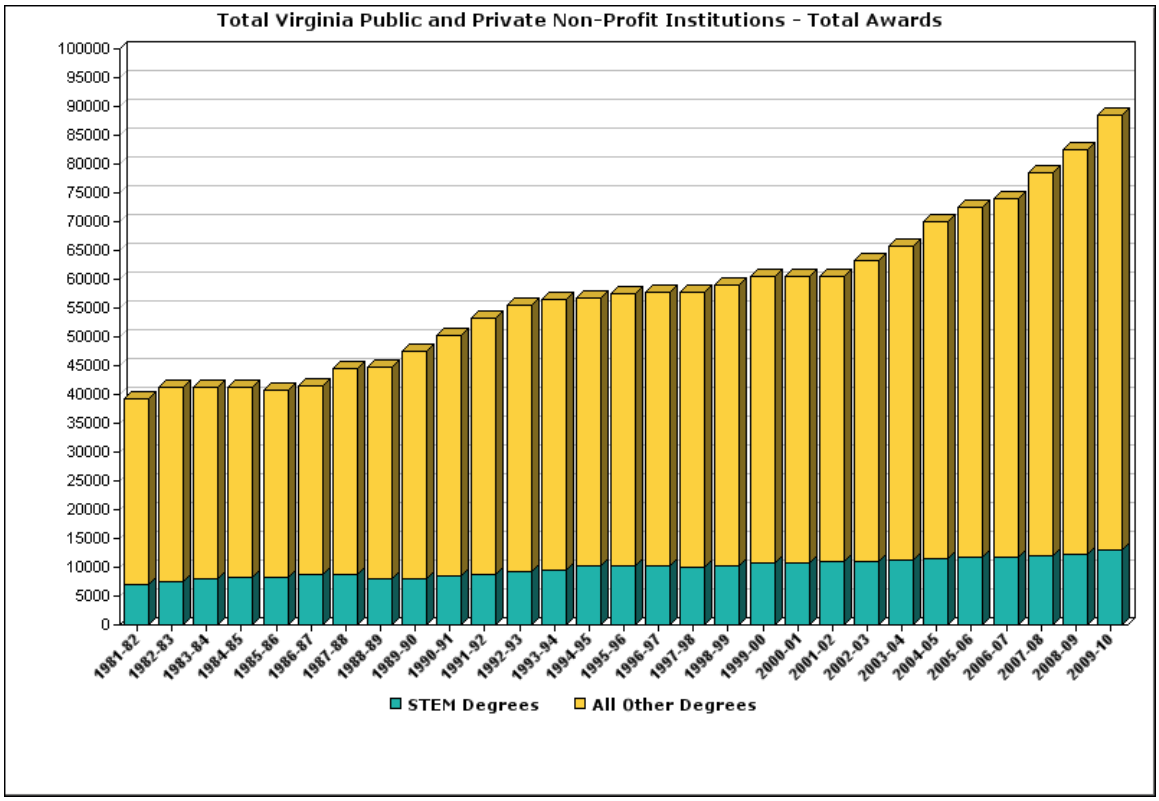
William County and NASA Langley's K-20 education programs in Hampton, are all having a positive impact.

Enhancing professional development in science and math for K-12 educators is a priority that various projects are addressing. Among these efforts is the grant-funded Virginia Initiative for Science Teaching and Achievement (VISTA), a partnership among 47 school districts, six universities, and the Virginia Department of Education that is building a comprehensive professional development model to improve K-12 science teaching and increase student performance. The initiative holds promise for bringing the strengths of post-secondary research programs and STEM expertise into high school classrooms. Secondary school science teachers will be given on-the-job and graduate-level classroom professional development supported by online resources. The higher education partners participating in the initiative include George Mason University, James Madison University, College of William and Mary, University of Virginia, Virginia Commonwealth University, and Virginia Tech.

The Virginia Council of Graduate Schools is another resource for strengthening the skills of aspiring teachers, future college faculty, and professionals. The Virginia Math and Science Coalition's Statewide Masters Program and the Commonwealth Graduate Engineering Program are two examples of collaborative masters programs that strengthen advanced STEM knowledge throughout the Commonwealth by leveraging existing institutional strengths rather than duplicating coursework and programs.

The Commonwealth offers 113 STEM programs at our public and private higher education institutions, ranging from agricultural business technology, to human genetics, to toxicology. Despite Virginia's relatively high ranking on the percentage of STEM degrees awarded from public and private institutions, that percentage has been declining in recent years, causing STEM degree production in Virginia to remain fairly flat despite significant enrollment increases. This trend is highly disturbing given the rapidly growing demand for STEM skills and knowledge in the Commonwealth. A recent report from the Virginia Employment Commission projected a 41-percent increase in the professional, scientific and technical sectors, including engineering and computer science jobs, through 2018. Sizeable increases are also projected to occur in health-care related fields.[17]

[17] Virginia Employment Commission,"Industry and Occupational Projections, 2008-2018," Occupational Employment Statistics (OES) Survey, 2009.



In addition to the salutary goal of increasing the overall number of college degrees granted in Virginia, the Commission recommends that concerted action be taken specifically to increase the number of students completing degrees in STEM fields, including medicine and other health-related areas of study. To help develop and guide implementation of a comprehensive plan for higher STEM degree attainment in Virginia, the Commission recommends formation of a public-private entity (similar in some respects to the National Science Foundation) comprised of private-sector leaders, distinguished representatives from the scientific community (including retired military, government scientists, and researchers), educational experts, and responsible government officials, among others. Its charge would be to help devise, coordinate and support state efforts to make Virginia a national leader in science and technology and in STEM scholarship and research. Among the priority issues to be addressed would be the need for additional STEM enrollment, capacity, and resources at colleges and universities, greater coordination, innovation, and private sector collaboration in K-12 STEM initiatives, and the assessment of, and alignment of policies with marketplace demand.

The Commission commends efforts already underway to strengthen math and science education in grades K-12 and believes that future success in increasing STEM degrees in Virginia will require stepped-up efforts, including:

- Early diagnosis of math and science deficiencies;
- Remediation programs;
- Acceleration programs;
- Enrichment opportunities;
- Advisory programs;
- Incentives for getting students interested in math and science fields; and
- Leveraging private resources to assist with scholarships, scientific equipment, and youth programming.

A number of these areas will require harnessing private-sector assistance and promoting public-private partnerships like several that have achieved initial success in communities across Virginia. The recommended public-private entity would assist in coordinating and mobilizing these efforts.

The Commission believes that the following measures could substantially help in promoting STEM degree production in Virginia:

1. Increasing the number of STEM K-12 academies, including elementary and middle school programs (currently nine localities have high school academies: Halifax, Hampton, Arlington, Suffolk, Russell, Stafford, Loudoun, Chesterfield, and Richmond);

2. Establishing a process to create regional academic-year Governor's Schools for gifted students in grades six through eight focusing on science, technology, engineering and mathematics. This concept is an extension of the current network of academic-year Governor's Schools for gifted high school students;

3. Initiating an Early College Mathematics and Science Scholars Program similar to the existing Early College Scholars Program to encourage high school students to earn at least 15 hours of transferable college credit with a concentration in mathematics and science while completing the requirements for an advanced studies diploma;

4. Expanding advanced placement course offerings through Virtual Virginia—the Commonwealth's online program;

5. Implementing the recommendations of the Virginia STEM Survey of Lab Skills Report sponsored by the Center for Excellence in Education to determine where improvement in teacher preparedness can be made for laboratory courses, including the feasibility of creating regional laboratory facilities (especially in rural areas of the state, where secondary schools

could use facilities of the Virginia Community College System and/or corporate laboratories for instruction or training);

6. Encouraging a Virginia university to establish an "Early College Mathematics and Science Lab School" as authorized in the College Partnership Laboratory School legislation passed by the 2010 General Assembly;

7. Expanding professional development opportunities to assist teachers with the acquisition of knowledge, skills, resources for helping students become STEM literate;

8. Establishing the Center for Training and Teaching, or similar programs, with the aim of enriching and diversifying instruction in K-12, undergraduate, and graduate education in science, technology, engineering, and mathematics (as proposed by Hampton University);

9. Creating a statewide STEM industry internship program to operate in partnership with industry throughout the Commonwealth. The program could be modeled after the Virginia Space Grant Consortium program and would offer undergraduates an opportunity for real-world work experience and provide Virginia's industries with access to qualified interns. Regional technology councils could serve as the program's conduit to industry with advertising and linking to interested industry partners; and

10. Developing a STEM certificate for undergraduate liberal arts majors.

The Commission recommends that consideration be given, as resources permit, to targeting some component of tuition assistance to incentivize college students to pursue and complete STEM degrees, and to establishing a program to provide matching grants to public and non-profit private colleges to assist these institutions in constructing or renovating facilities used primarily for the teaching of STEM subjects and acquiring scientific equipment to be used primarily for such STEM instruction.

To meet anticipated demand for STEM degrees, according to one respected economist's presentation to the Commission,[18] Virginia will need to prepare 100,000 additional workers with STEM degrees over the next decade. To better understand what types of degrees will meet the demand, the Commission recommends conducting a degree demand analysis for careers that require science**,** technology and engineering-related degrees. (A math degree analysis was presented during the Degree Attainment Committee's meeting on August 31.) The analysis also would entail preparing a corresponding occupation demand analysis to project growth trends for the industries that will employ these 100,000 STEM job seekers in Virginia over the next 15 years. The analysis should specifically address the industries and market sectors the Commonwealth

[18] Chmura, C. (2010, August). Job Demand Forecasting. Presentation to the Governor's Commission on Higher Education Reform, Innovation, and Investment, Hampton, VA.

Innovation Index and the Virginia Economic Development Partnership ("VEDP") identify as centers of growth in the 21st century, including aerospace, automotive, plastics and advanced materials, energy, global logistics, life sciences, and technology, modeling and simulation.

Research and Development Initiative

The third major component of the Commission's Economic Opportunity recommendations relate to university-based research and development activities.

In March 2010, the Nelson A. Rockefeller Institute of Government at the State University of New York (Albany) released an important study entitled, "A New Paradigm for Economic Development: How Higher Education Institutions are Working to Revitalize Their Regional and State Economies" (authors David F. Shaffer and David J. Wright). The report opens by noting two major turning points for the country that were the direct result of higher education. First was passage of the Morrill Act in 1862, which created the land grant university and its mission of education and economic development through agriculture and the mechanical arts. The second turning point occurred with the passage of the GI bill, which provided higher education opportunities to more than a million veterans, resulting in a more educated workforce that dramatically increased the growth of our economy. The study's authors suggest that a third major turning point is occurring with the transformation of higher education institutions into economic development engines. "In states across America, higher education systems, universities, and community colleges are working to help their regions and states advance in the new knowledge economy. They are marshalling each of their core responsibilities—education, innovation, knowledge transfer, and community engagement—in ways designed to spur economic development."

In addition to their educational missions, Virginia's public and private higher education institutions conduct important research and development in science and technology to enhance the health and well-being of our citizens and growth of our economy. Six doctoral public institutions as well as a growing number of comprehensive institutions conduct research on topics ranging from aerospace engineering to nanotechnology. In addition, Hampton University and George Washington University both have strong research programs in the Commonwealth. Each of the public research universities maintains a university-sponsored research park that provides opportunities for private companies to co-locate and partner on major research initiatives. These six parks plus two federal facilities provide a significant resource for further strengthening research capabilities throughout the state.[19]

The Commonwealth also supports or contributes to the support of a number of research facilities, including the Jefferson Lab, the Institute for Advanced Learning and Research, Virginia Institute for Marine Science, and the network of twelve Agricultural Experiment Stations scattered throughout the state. Some universities have leveraged state support with other funding sources to create research university facilities like Old Dominion

[19]See http://www.yesvirginia.org/whyvirginia/innovated_RandD/university_parks.aspx.

University's Virginia Modeling, Analysis and Simulation Center. Research also has been a priority of the Tobacco Indemnification and Community Revitalization Commission, which funded over $37 million in research projects in the tobacco region in the past decade. Last year, the Tobacco Commission provided funding for five regional energy research centers to strengthen the link between innovation and job creation with partnerships from industry and Virginia educational facilities.

Virginia's colleges and universities serve as a powerful economic engine for the Commonwealth through research and development activities. The Weldon Cooper Center economic impact study described earlier in this report documented the economic impact of university research programs at the public institutions—nearly $600 million annually in increased GDP, nearly 13,000 jobs, and approximately $72 million in tax revenues to the state. This does not include the significant documented impact of start-up companies that have resulted from commercialization of university research.

The Commonwealth is fortunate to be home to the largest concentration of federal R&D establishments in the nation, including 25 percent of the total number of federally funded R&D research centers. This concentration also includes more than 20 defense-related labs and R&D centers and 19 federal civilian research centers, including the new Homeland Security Institute, NASA's Langley Research Center, and the federal Department of Energy's unique Thomas Jefferson National Accelerator Facility (Jefferson Lab).[20] Despite our close proximity to many federal agencies, however, Virginia ranked only 15th in the nation in 2008 total R&D expenditures, and only two of our research institutions ranked in the nation's top 100 (Virginia Tech at 46th and the University of Virginia at 70th.) Virginia Commonwealth University was close behind at 108th.

The most notable state investments in university-sponsored research in recent years began with Governor Gilmore's creation of the Commonwealth Technology & Research Fund in 2000. The impact of this program, though curtailed by the recession early in the past decade, created momentum for increased research funding. Governor Warner then expanded the effort significantly through a mulit-faceted Commonwealth Research Initiative in the 2006-08 biennial budget. This initiative provided $83 million for research-related buildings at four Virginia doctoral institutions and $65 million for directed research, including $3 million for the Commonwealth Technology Research Fund.

When the Commonwealth Research Initiative was passed, language in the Appropriations Act required institutions receiving the research funding to report annually on the use of funds. Thereafter, the University of Virginia reported a 400-percent return in FY2009 from its $2.2 million state investment, receiving an additional $13.74 million in external federal and private funding. The University of Virginia initiative substantially increased research capabilities in bioscience and bioengineering. Other noteworthy success stories

[20] Praxis Strategy Group and Joel Kotkin, "Enterprising States- Creating Jobs, Economic Development, and Prosperity in Challenging Times," U.S.Chamber of Commercen and the National Chamber Foundation, May 2010. http://ncf.uschamber.com/enterprising-states/.

were reflected in the reports of George Mason University (expansion of bioengineering program) and Virginia Tech (infectious disease research).

In 2006, the Commonwealth provided support to establish SRI Shenandoah Valley and the Center for Advanced Drug Research in Harrisonburg, a partnership with James Madison University (JMU), Rockingham County, the City of Harrisonburg, the Virginia Economic Development Partnership, and the Shenandoah Valley Partnership. In addition to biosciences research, SRI researchers have also been working on regional economic development and educational needs through a variety of grant projects.

In 2008, the General Assembly merged the Innovative Technology Authority and the Virginia Research Technology Advisory Committee, creating the Innovation and Entrepreneurship Investment Authority ("IEIA") and charging it with establishing a statewide research and development strategic roadmap. The roadmap will identify common themes among the state's research universities and result in recommendations for alignment of R&D and economic growth in the Commonwealth. In addition, IEIA is charged with creating the Commonwealth Innovation Index. The purpose of the Index is to foster the formation, retention, and expansion of technology-based economic development opportunities. The Center for Innovative Technology, which is the operating arm of the Innovative Technology Authority, has been working with the Commonwealth's ten regional technology councils and with other local leaders to better understand the innovations envisioned in each of the regions and establish the strategic planning and management tool.

Despite the documented high return on research investment, funding for the Commonwealth Research Initiative has been reduced by almost two-thirds in response to the current recession—from a high of $32.4 million in operating support in FY 2007 for to a low of $11.7 million in FY 2012. Further, the Commonwealth Research Commercialization Fund, Virginia's principal entity for supporting commercialization of research by Virginia's institutions, is not currently funded at all.

Some targeted investments have been made. State support was provided to two research institutions to help recruit a large advanced manufacturer to the state to build a major manufacturing facility and to create a not-for-profit entity focused on applied research—a first for Virginia's Economic Development Partnership. In 2007, the Commonwealth put together an attractive package of incentives to entice Rolls Royce to build an advanced manufacturing plant in Prince George County. A significant aspect of the package was funding for a major research partnership with Virginia Tech and the University of Virginia. The Virginia Community College System also was included in the incentive package to assist with workforce development, and Virginia State University received funding for a manufacturing and logistics program. Two major research facilities were proposed in the incentive package—the Commonwealth Center for Advanced Manufacturing (CCAM) and the Center for Aerospace Propulsion Systems (CAPS). CCAM is under construction and will open in late 2011. It is a not-for-profit, membership-based scientific, research and educational 501(c) (3) corporation that is focused on physical applied research for Rolls Royce, but it also offers a unique

opportunity for additional industry partners and higher education institutions to participate in applied research.

Virginia's higher education system continues to help the Commonwealth attract companies that need cutting-edge research expertise and a well-trained workforce. In April 2010, for example, Northrop Grumman Corporation executives cited opportunities to partner with George Mason University as a reason they chose to move the company's headquarters from Los Angeles to Fairfax. Future business recruitment will include more partnerships between higher education institutions and companies interested in building innovation and accessing an educated workforce.

Against this backdrop, the Commission's work, through the Regional Strategies Committee, has focused on evaluating current research programs and partnerships and providing recommendations for policy changes and future funding. The objective is to increase the economic return on investment by encouraging formation of public-private research partnerships and by growing our higher education institutions' research capabilities—actions that have a direct positive impact on job creation and economic development. We have followed closely the parallel work on research by the Governor's Commission on Economic Development and Job Creation, and many of the strategies included in its recent Final Report align with the recommendations contained herein.

Statewide R&D Strategic Roadmap. The Innovation and Entrepreneurship Investment Authority (IEIA) should continue work on the development of a statewide R&D strategic roadmap that identifies strategic direction from university research assets, capabilities and activities, particularly those related to federally-funded research, and aligns Virginia's economic development activities with additional R&D investments. The Board of IEIA's operating arm, the Center for Innovative Technology (CIT) established the Strategic R&D Committee to oversee this activity. The Committee envisions developing the roadmap through a collaborative process and will engage private and public institutions of higher education as well as the private sector. Once complete, the Commonwealth will have a better understanding of common themes among the state's research universities and how research activities can be directed for maximum effect.

The Commission recognizes the need for a champion to create visibility for research initiatives, highlight strengths, facilitate partnerships with business and industry, and seek out major federal research opportunities. Greater coordination among VEDP and the research universities would assist in exploiting synergies among the higher education institutions' research programs and in bringing those resources to bear most effectively in the business recruitment process and other economic development efforts.

Federally-Funded Research. Virginia needs a more aggressive, coordinated, and sustained effort to pursue federally funded research projects. Such projects offer the most immediate opportunity to significantly improve our universities' national rankings as premier research institutions. To accomplish this goal, the Commonwealth's highest elected officials—state and federal—should make it a priority to help Virginia

universities attract more research through key agencies such as the National Institutes of Health, National Science Foundation, Department of Defense and Department of Energy.

A coordinated statewide federal research strategy should take full advantage of the existing strengths and priorities reflected in the statewide R&D strategic roadmap and the Commonwealth Innovation Index. For example, the Southeastern Universities Research Association (SURA) offers an immediate opportunity for a coordinated effort advocating the continuous upgrading of the Jefferson Lab in Newport News through the Department of Energy. Investments in the Jefferson Lab yield short-term benefits in the form of construction and technology jobs, and they greatly increase the long-term possibilities for technology transfer and high-tech business development on the Peninsula and through the universities that conduct research at the Lab.

Emerging Technologies Fund. The Commission recommends establishment of an emerging technologies fund as a vehicle for bundling and strengthening research-enhancing initiatives—including eminent scholar attraction, research and commercialization funding, seed-stage funding and the higher education equipment trust fund—that are currently underway to some degree in the Commonwealth. These programs mirror the core components of Texas's Emerging Technology Fund, and they require a sustained commitment:

- STEM Eminent Scholars Program: Within the proposed emerging technologies fund structure, the Commonwealth should provide eminent-scholar funding so that in STEM and other high-demand disciplines universities have the resources to attract and retain key faculty with a proven track record of (i) obtaining research funding and (ii) commercializing technology.

- Commonwealth Research Commercialization Fund: The Commonwealth Research Commercialization Fund, previously known as the Commonwealth Technology Research Fund, should be a priority for new resources. The Fund's emphasis is translational research funding for targeted, promising technologies that offer opportunities for commercialization. Sectors and activities identified as eligible for funding should align with the Commonwealth's strategic priorities. Proposals for grants from the Fund should be peer reviewed by subject-matter experts. Criteria for awards should incorporate incentives for collaboration among Virginia universities, partnering with the private sector, and attracting matching funds that may be required for large federally funded research projects. The matching component is critical to the emerging technologies fund structure so as to allow for a source of matching funds for higher education and companies seeking grant and other funding sources for commercialization activities.

These programs complement the emerging technologies fund concept, and the Commission recommends their continued support:

- Seed Stage Funding: The Commonwealth should support CIT's existing convertible debt funding mechanism in order to exponentially increase new

technology company formation, including proof-of-concept start-up companies based on research and commercialization at Virginia universities. This mechanism—CIT GAP Funds—is a family of seed stage funds developed and managed by CIT that addresses Virginia's early seed stage funding "gap" by placing investments in high-potential start-up companies across a range of sectors, including information technology, biotech and life science, energy, advanced materials, sensors, and electronics.

- Higher Education Equipment Trust Fund: The Commonwealth should commit to providing the Higher Education Equipment Trust Fund with sufficient funding to assist universities in acquiring equipment needed to support world-class research.

IP Commercialization Incentives. Commercializing intellectual property (IP) developed by Virginia's higher education institutions is an essential component of innovation-based economic development. Virginia has a far better chance of creating and growing a company if the basic intellectual capital for the new company is generated within the Commonwealth. Improving the speed and ease in which university-based research can be commercialized is critical. University IP offices, which are the front line in research commercialization efforts, need resources adequate for their mission. The Commission recommends creating a fund to support university IP offices based on competitive performance metrics tied to success in commercializing intellectual property and in stimulating private-sector job growth and economic activity. Such a fund could provide a cash incentive to universities that license IP to small companies in exchange for equity in those companies, provided the university agrees to share a percentage of the equity with the Commonwealth. This approach has the potential to unleash new commercialization opportunities that may not provide an immediate return but in time prove to be smart investments.

Regional Centers of Excellence. A number of centers of excellence already reside in the Commonwealth. Regional research centers can help leverage the research assets that exist across the state and align them with the Commonwealth's statewide R&D strategic roadmap. The Commonwealth Center for Advanced Manufacturing and Areva's Chemistry and Materials Center are models of regional research centers that expedite research and development. A proposal by Hampton University to establish four centers of excellence across the state also deserves close attention. Such centers are driven by the private sector and can be a valuable tool in increasing overall research investment in the Commonwealth.

R&D Income Tax Credit. The Commission also recommends modification of Virginia's current tax laws to encourage private sector funding of research and development. The Commonwealth has an opportunity to increase the amount of corporate-funded directed research at Virginia's higher education institutions by creating a tax credit for joint research projects by businesses and universities. Currently, Virginia only has a sales tax exemption that is limited to purchases used directly in research and development; we need an income tax credit for research and development expenditures. As noted in the Final Report of the Governor's Commission on Economic Development

and Job Creation, 38 other states provide this tax credit. Virginia is at a significant competitive disadvantage in this crucial area, and a correction is overdue.

(2) Reform-Based Investment

With a top-performing higher education system that routinely receives high marks for quality, cost-efficiency and value, all Virginians—including those most directly involved in the higher education enterprise—have much reason to be proud, and grateful. The successes and accolades have come only through much dedication and effort at all levels.

With success, however, comes the tendency toward complacency. If we mean to be a pace-setting performer nationally and competitive internationally, we cannot rest on our laurels. And we certainly cannot continue to draw away from the higher education system the vital resources that are necessary to preserve excellence and serve more students. In the most basic sense, it is irrational and self-defeating to respond to a time of unprecedented economic hardship by gutting the state program with the highest demonstrated economic return and by driving up the cost for students and parents at the time when they can least afford it and most need it. All Virginians appreciate that tough decisions have been necessary to balance the books, whether it is the family checkbook or the state budget. But as the Commonwealth turns the corner on these unprecedented difficulties, a renewed commitment to higher education and its economic benefits must be a top priority.

The need to reverse the recent pattern of deep disinvestment in higher education is clear, but so is the infeasibility of delivering educational services the same way it has been done before. Simply stated, there is no realistic prospect of sufficient additional funding adequate to provide a high-quality college education to significantly more students relying wholly on traditional approaches. The need for innovation and reform therefore has occupied much of the Commission's attention. Because we have an excellent and resilient higher education system full of imaginative and talented people, we believe Virginia is ideally positioned to lead the way for the nation in implementing innovative new instructional approaches and models of service delivery.

Higher education cost-containment strategies in Virginia have taken various forms during the past decade as state resources have ebbed sharply. Savings have been pursued primarily in the areas of energy management, facilities and infrastructure, business services and processes, personnel, and academic programs, and the Restructuring Act has facilitated progress on these fronts consistent with the distinctive situations of the institutions. The colleges (public and private) have reduced costs through various collaborative approaches. For example, a number of public institutions collaborate on procurement through the Virginia Association of State Colleges and University Purchasing Professionals, and the Council of Independent Colleges in Virginia likewise pools the resources and purchasing power of member institutions in areas such as healthcare. The Virtual Library of Virginia enables academic libraries at public and private not-for-profit institutions to avoid duplication, leverage resources, and maximize purchasing power. Many more examples could be cited.

While it is beyond the scope of this Interim Report to catalog all ongoing and anticipated cost-saving and collaborative initiatives, it must be emphasized that a plethora of partnership arrangements between and among higher education institutions, state and local government agencies, businesses, associations and other organizations have allowed Virginia to leverage its higher education investment broadly. This has enabled the system, despite its decentralized character, to perform at a high level with comparatively low cost to taxpayers. Ultimately, that leveraging of private resources accounts to a large degree for the high return on investment documented earlier in this report.

The Commission's exploration of opportunities for reform and innovation has led it to examine a wide range of best practices nationally and internationally as well as the thoughtful suggestions of many experts, think-tanks, and experienced participants and observers within the state and without.[21] While cost-containment efforts must continue to wring the maximum from every tax and tuition dollar, the Commission has concentrated its efforts in four areas where we see the greatest potential for innovation and improvement:

- Optimizing utilization of physical and instructional resources on a year-round basis;

- Using technology-enhanced instruction to deliver greater value to traditional and non-traditional students;

- Creating innovative and economical degree paths to enable more Virginians to complete degrees; and

- Taking system-wide restructuring to the next level and creating an atmosphere of trust and collaboration.

In addition to these four major areas of reform, which apply to virtually all higher education institutions and to the system as a whole, the Commission has closely followed the progress of the Virginia Community College System's Reengineering Task Force, which has developed a number of proposals specific to the community colleges and their distinctive role in achieving Virginia's educational and economic policy goals. The following paragraphs elaborate first on the four cross-cutting areas of initiative and then provide recommendations relating specifically to the community college system.

Year-Round Utilization. With course work primarily concentrated between the months of late August and early May throughout American higher education, few would argue that we are making optimal use of our physical or instructional resources. The Commission has been impressed by the widespread emphasis internationally on year-round instruction and has also considered various promising models for year-round instruction in the United States. In calling on Virginia's higher education community to focus on enhanced utilization of physical and instructional resources throughout the year,

[21]See, e.g., Kathryn Webb Farley, Boris Bruk and Emily Swenson Brock, "Strategies for Achieving Productivity and Efficiencies in Higher Education," November 18, 2010.

the Commission does not suggest a mandated or uniform approach. Given the diversity among higher education institutions and programs in Virginia, optimal utilization will not look the same on every campus.

Tapping unused seasonal capacity at existing institutions promises multiple benefits, from enabling the colleges to enroll more students cost-effectively to enhancing opportunities for timely or expedited degree completion, with cost-saving benefits to tuition-paying students and their parents. The Commission has received informal input from a number of institutions but does not yet have sufficient information to forecast the impact of this initiative. Representatives of some colleges and universities have expressed interest in having their governing boards consider substantial schedule adjustments that could markedly expand summertime instruction. Other institutions have well-established programs and schedules that would be less amenable to significant alteration. Virginia Military Institute (VMI), for example, has a highly refined and long established four-year program of mandatory residential, military-style instruction that could not easily be replicated on a year-round basis. VMI nevertheless has undertaken to make extensive use of its facilities during the summer months, with one third of its cadets taking summer course work and more than half of each entering cadet class voluntarily attending a pre-enrollment summertime transition program on Post that has proven successful in materially improving the first-year retention rate.

While the opportunities for innovation vary, what every institution can do is carefully assess its programming and assets and develop a plan to make the best possible use of its facilities and teaching resources during four seasons of the year rather than only three. The Commission recommends that such an assessment and plan be required of every public institution. Few businesses in today's competitive environment can afford to under-utilize their assets for a third or fourth of the year, and neither can our higher education system.

Technology-Enhanced Instruction. The development of new technology and its acceptance by students and instructors alike has opened many new opportunities for sharing academic resources across the higher education system and delivering enhanced instruction at lower cost. Far from requiring compromises in quality to reduce cost, new methods of technology-enhanced instruction offer opportunities to make high-quality instructional resources available more broadly to students throughout the higher education system. For a generation raised in a dynamic digital environment, appropriate uses of instructional technology also have the advantage of communicating with students through methods and media by which they have become accustomed to receiving information. As an added benefit, once the up-front developmental cost of some forms of technology-enhanced instruction is absorbed, significant ongoing cost savings can also result.

The Commission has embraced a concept that, for shorthand purposes, we have labeled "virtual departments." By this we mean moving toward an environment in which a wider array of instructional resources is made available to students, regardless of institution and location, through the aid of sophisticated (and sometimes interactive) communications

technology. The most immediate potential applications for this new and more robust form of distance learning appear to be in two contexts at opposite ends of the instructional spectrum. At one end are introductory-level courses that, at many universities, already enroll hundreds of students and are taught largely in a lecture format. At the other end of the spectrum are courses in which the total student enrollment is small, including highly specialized fields of study and/or advanced-level courses. At one end of the spectrum, think of Dr. Larry Sabato's Introduction to American Politics course at the University of Virginia, which routinely enrolls 400 students per semester with a waiting list. At the other end, think of a course of study in Arabic language and culture, an undeniably important subject but one that now lacks sufficient demand to justify hiring a professor on every campus. For divergent reasons, both of these situations lend themselves to distance learning applications.

Faculty members often prefer to teach higher-level courses that are closely connected to their own areas of scholarship and expertise and that afford better opportunities for meaningful interaction with students. As a result, some institutions report increased reliance on adjunct professors and graduate students to teach large introductory-level lecture courses. Could overall instruction be improved if students throughout the higher education system could access introductory-level courses taught by the most accomplished and effective lecturers? The answer would seem to be "yes." Would such a resource be utilized on every campus, including smaller liberal arts colleges that typically rely little on large lecture courses? The answer likely is "no." Should Virginia be moving toward a model where more high-quality lectures are available to more students regardless of institution or location? The Commission believes the answer clearly is "yes."

Similarly, in the situation at the other end of the spectrum—the course that is important but not yet in sufficient demand to justify in-person instruction on every campus—technology provides a vehicle for extending academic offerings and opportunity to students regardless of where they choose to enroll. There are many examples around the country today where technology has enabled consortia of institutions to collaborate on instruction, and a few exist in Virginia.

Importantly, Virginia does not start from scratch with distance learning. Successful examples of remote instruction abound, whether it is through Teletechnet at Old Dominion University, the Electronic Campus of Virginia or the Commonwealth Graduate Engineering Program, a graduate education partnership with George Mason University, Old Dominion University, Virginia Commonwealth University, Virginia Tech, and University of Virginia. These and others provide a proven platform on which to build. To do so, however, requires the convergence of instructional resources and communications technology on a much broader basis than is occurring currently.

The Commission believes that every institution of higher education has a role to play in the process of leveraging instructional resources across the system. Each can be a provider of such resources, a consumer, or both. Each institution therefore should be exploring its assets and opportunities and developing a plan to participate. At the same

time, no one should expect valuable instructional resources to be conveyed electronically to other campuses and venues without compensation; a system of payment must be developed. Finally, it is unlikely that the technological infrastructure necessary to make broad-based resource-sharing feasible can be put in place without initiative from the Commonwealth, most likely in the form of an innovative public-private partnership. The Commission, therefore, recommends a three-fold approach:

- Development of a system of financial incentives to encourage instructional resource-sharing across institutions;

- An obligation on the part of each public institution to commence planning its preferred form of participation; and

- A state-level initiative to help provide the needed infrastructure.

A second distinct area of opportunity in the realm of technology-enhanced instruction is course redesign. Here we refer primarily to enhancing instruction by incorporating technology into courses provided through existing two- and four-year degree programs. This includes but is not limited to development of wholly online courses and even online degree programs. It also includes innovative forms of instruction, such as the math emporium at Virginia Tech, that combine online and in-person instruction. At the math emporium, students take a variety of math courses in a computer laboratory environment on a schedule largely of their choosing, solving problems online but having the ability to call upon the assistance of on-site instructors as needed. Virginia Tech acquired and converted a large department store to a high-tech learning environment for this purpose. Although the cost of developing and transitioning instruction from the traditional approach to the math emporium was significant, the university reports that student satisfaction is high, academic performance is enhanced, and the cost of instruction for those courses has declined. In the case of linear algebra, for example, the cost reduction has been from roughly $91 per student to $21 per student.

Because the developmental and transitional costs pose a substantial barrier to course redesign, the Commission recommends that Virginia's new funding model for higher education include incentives, perhaps in the form of matching grants, to support institutional efforts to enhance instruction through innovative technology. The Commission further recommends that the Commonwealth enter into a relationship with the accomplished Center for Academic Transformation to advise and assist in the development, implementation and assessment of course redesign strategies and proposals.

A third area of focus related to instructional technology is the provision of online course options for non-traditional students. Given the importance the Commission attaches to increasing degree attainment by students with partial college credit, it is noteworthy that online course offerings are often the only viable option for students who have job obligations, must support and care for family members, or for other reasons cannot attend college classes in person at the times they are offered.

An increasing variety of online course offerings are available to Virginians through private and career colleges. Liberty University, for example, has been a pioneer in online learning. In the 2009-2010 academic year, Liberty enrolled 53,000 students in online courses and it projects reaching 60,000 students this academic year. At least 18 for-profit colleges and other organizations certified by SCHEV provide online programming in the state. As noted previously, leaders of several public universities in Virginia have expressed interest in collaborating to provide instructional content that could support online degree programs in several basic areas of study. Yet, the adequacy of online course offerings compared to the current and potential demand is unclear.

The Commission recommends that the Commonwealth undertake a comprehensive assessment of the availability and affordability of online courses, determine the potential demand for online instruction (among "returning" college-goers, military personnel and veterans, and other non-traditional students), and explore avenues for greater collaboration between online course providers and existing public and private undergraduate programs in the state. Virginia needs an achievable plan for maximizing the opportunities for college completion and degree attainment by non-traditional students through online programming.

A fourth area where technology can enhance instruction is the use of electronic textbooks and other online curriculum. Even in the short time since Governor McDonnell called attention to these opportunities—and their positive impact on college affordability—during the gubernatorial campaign, the development of new technologies and their use on college campuses has expanded rapidly. The pilot project partnership between Amazon.com and the Darden School of Business at the University of Virginia for educational use of the "Kindle" is an encouraging example. Another notable example is at the School of Business at Virginia State University (VSU), where students will need nothing more than a computer, an iPad, an e-bookreader, or a mobile phone to gain access to the courses in their core curriculum and all the required texts. VSU's School of Business has created an online portal through which the content for nine integrated core courses can be digitally delivered, and where the textbooks are available for free download. This digital delivery mechanism is designed to increase access and affordability to the student. The Commission believes that ongoing technological innovation, the imperative of cost control, and student facility with electronically conveyed information will combine to produce rapid movement toward electronic texts and course materials in the years ahead. While the Commission does not believe a state-level initiative is necessary to encourage this trend, institutions should be alert to opportunities to facilitate the transition.

Degree Path Initiatives. The third major area of reform-based investment advocated by the Commission is the development of more innovative and economical degree paths. The goal is to decrease the cost and reduce obstacles to timely degree completion for Virginia students while maintaining and enhancing academic quality. The strategies recommended here address early college credit opportunities, the community college transfer program, expedited degree options, and developmental (i.e., remedial) initiatives to increase the percentage of college-ready graduates from Virginia's secondary schools.

The Commission believes that opportunities for Virginia teens to earn economical college credits and/or advanced-placement status during high school should be encouraged, expanded, and enhanced. The means exist in some locales for students to complete simultaneously the work required for an associate degree and high school diploma, and programs of this kind should be expanded to more high schools throughout the Commonwealth. At the same time, the rapid increase in the number of high school students taking dual-enrollment courses makes it important that steps are taken to ensure uniformity of quality and outcomes that do not impede academic success once in college. The success of dual enrollment, particularly for low-income and minority students, in the Halifax County Public School System can serve as a model for scaling up opportunities in other school divisions.

Similarly, opportunities for high school students to take AP (Advanced Placement) and IB (International Baccalaureate) courses and exams should be expanded (including via electronic delivery). Where consistent with successful student outcomes once in college, public institutions of higher education should be encouraged to accept more of these pre-college credits, to count them towards degree completion as set forth in the Commonwealth College Course Collaborative, and to promote these options. The Virginia Advanced Study Strategies, a partnership in Southside involving the Commonwealth and the National Math and Science Initiative, has yielded positive results in enrolling more students in Advanced Placement classes and can serve as a resource for efforts in other regions. Virginia's track record in this area overall is strong—only two other states, New York and Maryland, had higher percentages of seniors earning grades of 3 or better on AP tests during 2009.

Programs that combine opportunities for pre-college credits with student support services further increase the likelihood of post-secondary participation and success, especially among low-income, first-generation, and minority students. Current efforts along this line in Virginia include the community college system's Middle College and the Career Coaches program, the Pathways to the Baccalaureate Program at Northern Virginia Community College, and the Appalachian Inter-Mountain Scholars (AIMS) Program at University of Virginia-Wise. The success of these and similar programs should continue to be tracked, and where appropriate they should be supported, publicized, expanded, and replicated in order to broaden their impact.

The Commission believes the following specific steps would be beneficial in promoting additional pre-college study in the Commonwealth:

- The Commonwealth should set the objective of making opportunities for AP, IB, and dual enrollment available to all high school students across the state. As student interest exhausts capacity, the Virginia Department of Education should expand online AP course capacity to ensure that all interested and capable students can take classes either through the Virtual Virginia program or through local partnerships with online content providers, as envisioned in the virtual school programs legislation enacted earlier this year. Local school divisions

should continue to create and extend partnerships of high-school-to-college programs, such as Early College High School, College Career Academies (Halifax County), Governor's STEM academies, the Pathways to Baccalaureate program, Project Lead the Way, and the Governor's College Partnership Laboratory School Initiative, so that all regions of the state afford students enhanced opportunities for success at the post-secondary level.

- The Commonwealth should provide incentives that support K-12 schools' work to enhance student achievement, increase the number of students earning advanced studies diplomas, and better prepare graduating students for college and career pursuits. The Board of Education's Virginia Index of Performance (VIP) incentive program currently provides incentives for schools and divisions to increase the number of students who achieve at the advanced proficient level. Local school divisions should be required to release students from compulsory school attendance requirements upon completion of the state's advanced studies diploma requirements and acceptance into a post-secondary program. In addition, the Department of Education should increase its goals for the percentage of students who graduate from high school with an advanced studies diploma, the percentage enrolled in one or more AP, IB, or dual enrollment classes, and the percentage who earn at least a 3 or higher on at least one AP exam.

Beginning study in a community college is an effective strategy for reducing the cost of obtaining a four-year degree. Especially since the Commonwealth made community college transfers a clear policy priority through the Restructuring Act in 2005, Virginia and its higher education institutions have made important strides in promoting this convenient and affordable alternative. More than 7,000 students from Virginia's two-year colleges now transfer to four-year institutions each year. About two-thirds transfer prior to completing an associate degree. Obtaining a two-year degree prior to transfer tends to facilitate smoother academic transition, including acceptance of more/all credits and receipt of junior class status. In addition, all but one four-year public institution currently guarantees admission for transfer students who complete an associate degree.

The Commonwealth has provided a further financial incentive for students to follow this pathway by establishing the Two-Year College Transfer Grant program. It encourages associate degree completion before transfer by offering a $1,000 annual award for associate degree completers who meet need-based eligibility requirements. The program awards an additional $1,000 annually to those who transfer into programs in the high-demand fields of science, engineering, mathematics, teaching or nursing. In addition, a Uniform Certificate of General Studies currently is being developed by SCHEV, the community college system and the public four-year institutions. It will allow community college students to complete a one-year certificate and transfer all of those credits to a public senior institution.

The Commission recommends that the Two-Year Transfer Grant Program and, when developed, the Uniform Certificate of General Studies be fully funded and aggressively marketed throughout the Commonwealth. The Uniform Certificate of General Studies should also be made available to high school students who earn an associate's degree while completing high school graduate requirements. The potential of the community college transfer program to boost degree attainment, enhance affordability, and foster more STEM-related study remains insufficiently realized. Collaborative planning efforts by the Commonwealth and higher education institutions must ensure that, as more students pursue studies in community colleges and perform at a level warranting transfer to a four-year institution, space exists at those senior institutions to accommodate them. The new higher education funding model should incorporate the community college transfer grants and their full funding on a priority basis.

Students enrolling in four-year institutions also can benefit from various options that help hold down costs, expedite degree completion, or both. Several private institutions, including ECPI in Virginia, have developed successful models for undergraduate degree completion that are convenient for the student and that can be finished in less than four years. Public institutions should be encouraged to explore such models and offer options for expedited, "no frills" degree completion. Enhanced opportunities for students with proprietary degrees to transfer to public institutions also should be explored. And, as noted in the preceding section, expanded use of technology—from incorporation of technology in classroom course work to providing fully online degree options—can assist traditional and non-traditional students alike in containing costs and accessing a broader array of course and program offerings, often on an expedited basis.

A recurring problem confronting higher education in Virginia and elsewhere is the number of students who take more than four years—in some cases, considerably more—to complete their degree work. This adversely impacts both taxpayers and tuition-paying families, and the General Assembly has determined that a tuition-based incentive for timely completion is needed. In 2006, the General Assembly modified the Code of Virginia to require assessment of a surcharge for each semester that a student continues to enroll after such student has completed 125 percent of the credit hours needed to satisfy degree requirements for a specified undergraduate program.[22]

The Commission agrees that creating a greater incentive for students to complete their course work on time (or within a reasonable time) is especially important given the pressing economic objectives and severe resource limitations impacting Virginia's higher education system. At the same time, the Commission is sensitive to the varied circumstances of students (some of whom need to work part-time to pay for college), to factors beyond student control (such as limited availability of needed courses), and to the demanding nature of certain degree programs for which completion time nationally is higher (including some STEM degrees). Care should be taken, therefore, in fashioning timely completion incentives so that unintended adverse impacts on degree attainment (especially in the STEM area) and affordability do not result.

[22] Virginia Code § 23-7.4. Eligibility for in-state tuition charges

A particular problem facing higher education, with negative implications both for timeliness of completion and retention/graduation rates, is the widespread need for developmental (i.e., remedial) programming at the post-secondary level. In addition to providing opportunities for students to receive college credit in high school, thereby saving time and money toward a post-secondary degree, the Commonwealth must ensure that high school graduates emerge ready to pursue a successful course of study at a two- or four-year college. Remedial courses are expensive for the student, the Commonwealth, and the higher education institution involved. They postpone student advancement and often have a discouraging effect, leading a disturbingly large number of students to drop out with no credential to show for their investment of time and money. According to the community college system, just under half (45 percent) of recent high school graduates enrolled in a community college required at least one developmental education course in 2008—a percentage that has remained relatively constant over the last five years.[23]

The Commission recognizes the ongoing work of the College and Career Readiness Initiative, a partnership including SCHEV, the community college system, and the Virginia Department of Education, which is endeavoring to establish college- and career-ready learning standards in reading, writing, and mathematics and to ensure that instruction in every Virginia high school classroom measures up. In order to understand fully the implications of college readiness in achieving the 100,000-degree goal and develop a concerted plan of action, the Commission recommends that a work group be created with representatives from SCHEV, the community college system, four-year public and private higher education institutions, the Department of Education, the Council on Virginia's Future, the Secretary of Education's Office, and other appropriate parties. By summer of next year this group should:

- Develop a collaborative understanding of workforce and college readiness in Virginia that relies on federal and state definitions and addresses research, policy and higher education-driven demands for a better-prepared college entrant;

- Assess current readiness assessments and remediation efforts between high school and post-secondary institutions, including the work of the community college system's Developmental Education Task Force and the College and Career Readiness Initiative;

- Identify national best program practices, early alert measures, and appropriate performance indicators; and

- Make recommendations on a comprehensive plan to phase out reliance on developmental/remedial programs at the college level by enhancing student readiness and providing necessary diagnostic and remedial attention at the secondary level.

[23] Virginia Community College Reengineering Task Force, "Making the Case for Change," http://rethink.vccs.edu/wp-content/themes/vccsrethink/docs/CaseforChange.pdf

Restructuring Refinements. The fourth major area of reform focus is the continued restructuring of the relationship of the Commonwealth and its public higher education institutions. All parties expressing views to the Commission on this subject have cited achievement of important progress in institutional efficiency, productivity and cost containment as a result of the Restructuring Act enacted in 2005. The benefits of the legislation vary among institutions, just as the levels of managerial autonomy and flexibility vary.

At the same time, the fiscal pressures associated with the recession have impeded realization of the Act's full potential. Actions taken to balance the state budget in some cases have disappointed expectations of the institutions. Hopes for effective collaboration between the Commonwealth and institutions on academic and financial planning have not been fully achieved. The goal of enhanced outcome measurement and less overall reporting and paperwork remains elusive. The incentive regime associated with the state's policy goals (i.e., the "state ask") appears to have little punch in practice. In short, five years into this important reform there is much to applaud and also room for improvement.

The most important ingredient for success in restructuring is the least easy to legislate. In a word, it requires *trust*. Virginia's system of higher education draws its distinctiveness and excellence from the diversity of its institutions and from the state and local educational and entrepreneurial decisions over time that have made those institutions, and the system as a whole, what they are. The decentralized approach serves Virginia well. To achieve the Commonwealth's ambitious goals for economic opportunity, reform-based investment, and affordable access in the future, however, close coordination will be required in an atmosphere of trust. The bottom line is there must be agreement on the mutual commitments that define the relationship between the Commonwealth and higher education institutions, and then those commitments must be kept to the fullest extent possible. Perhaps nothing is more dispiriting than to go through the arduous process of crafting new approaches and understandings only to have them change with the perspective of the next administration, the vagaries of the legislative process, or the prevailing winds on campus. Continued restructuring must be built on a firm foundation of mutual confidence.

The Commission's recommendations for refinement to the restructuring process and legislation are three-fold:

- An effective collaborative and consultative process must be established for the development, refinement and endorsement of institutional performance plans with appropriate participation by executive, legislative and institutional representatives.

- Performance metrics and corresponding incentives should be streamlined and more robust, tailored to specific outcomes on state policy priorities, and more focused on economic impact and innovation.

- A working group comprised of institutional and state-level representatives should be tasked with identifying additional opportunities for cost-saving or productivity-enhancing reforms in the relationship of Commonwealth and its higher education institutions.

Effective planning is the key to the success of strategic initiatives and to operational efficiency. In Virginia's system of higher education, effective planning depends on collaboration and consultation primarily between and among the institutional administrators, executive branch officials and agencies, and legislative money committees. Given the distinctive constitutional and statutory roles of each, the process must be informal and flexible, providing opportunities to present plans, proposals and funding requests, receive timely feedback, and forge a consensus path forward to the greatest extent possible. It must be a candid and transparent process and occur in a timeframe that makes it relevant and useful in the executive budget development and legislative appropriations processes.

There are numerous models for such a collaborative process already in Virginia, including the approach taken in capital outlay pursuant to the 2008 legislation, the determination of peer institutions for faculty compensation purposes, the setting of institution-specific enrollment and graduation targets, and others. To the extent possible, such planning processes for each institution should be integrated and consolidated so that interrelated academic, financial, and operational matters are addressed in a coordinated manner. Whether the output is characterized as an agreement, a plan, or some other term that embodies consensus, the important thing is that it reflects the considered input and buy-in of the key players identified above. The Commission views achieving this objective as a lynchpin for success of the initiatives proposed in this report.

A second area of refinement needed in restructuring relates to performance metrics and incentives. Currently, colleges and universities must set targets and report progress with respect to the "state ask" embodied in the Act's "Institutional Performance Standards." Benefits in certain areas prescribed by statute inure to those institutions that earn a passing grade. While the benefits are important to the institutions, most of the comment received by the Commission suggests the pooled incentive approach, with its pass-fail aspect, has little discernible impact on performance. The all-or-nothing approach results in the setting of more modest goals than actually may be achievable since, as a practical matter, failure is not an option.

In addition to remedying these shortcomings in the current regime, the Commission believes that more far-reaching changes are needed as part of the "Top Jobs" legislative initiative. As discussed in an earlier section of this report, performance metrics should focus to a greater extent on outcomes relating directly to economic opportunity and impact. Institutional managers, state-level decision-makers, and—perhaps most important—tuition-paying students and parents all should be armed with information about the earnings potential and value in the job market of particular degrees from particular institutions. Improvement according to such economically salient metrics

should be among the top performance objectives for individual colleges and universities and for the system as a whole.

The objectives of better outcome-focused performance metrics and a more effective and robust performance-based funding system are closely connected. Throughout this report we offer specific recommendations for initiative and improvement in the areas of economic opportunity, reform and innovation, and affordable access. For the most part, our recommended approach does not involve mandating these changes, but rather calls for creating incentives to which the institutions can respond entrepreneurially based on their distinctive missions, situations, and opportunities. For this approach to work, however, the incentives must be a material component of the funding model and must be tied directly to specific performance objectives. The modest, pooled incentives currently in the Restructuring Act seemingly fail both of these tests.

As we discuss more fully in the later section of this report describing the Commission's funding model recommendations, performance-based funding should be connected to each of the Commonwealth's major policy priorities, including increased enrollment of Virginia students, increased degree completion by returning students, improved graduation rates, STEM degree production, research investment, year-round utilization of resources, technology-enhanced instruction and resource-sharing, the creation of innovative and affordable degree paths, and so forth.

A third area of restructuring refinements—one requiring ongoing attention—is the effort to eliminate obstacles to efficient management that may still inhere in the regulatory and reporting relationship between the Commonwealth and its higher education institutions. The Commission has received anecdotal information regarding opportunities for additional cost-saving and/or productivity-enhancing changes. The efficacy of such ideas generally cannot be explored without better dialogue between the institutions and responsible officials and agencies at the state level. One model for such dialogue may be Virginia's public-private partnership laws for infrastructure development. Since the adoption of the more wide-ranging statute in 2002, a working group consisting of executive and legislative branch officials and knowledgeable members of the business and professional community has met each year to take stock of how the program is functioning, implement legislated changes, and suggest refinements in state laws and implementing guidelines to improve its operation. A similar approach could help achieve additional benefits in higher education restructuring.

Community College "Reengineering." Facing unprecedented double-digit enrollment increases and significant general fund support decreases, the Virginia Community College System embarked on a reform initiative of its own in November 2009. It created the "Reengineering Task Force" to critically examine and rethink every aspect of the system's organization and operations so as to support its strategic plan (*Achieve 2015*) goals focused on access, affordability, student success, workforce, and raising private resources.

Pervasive throughout the deliberations of the Task Force were three themes: the need to reinvest in VCCS's people as the centerpiece for accomplishing the system's strategic goals; the need to leverage the power of technology to improve productivity; and the need to provide personnel with tools and training that will enable them to manage "with productivity in mind" as a matter of course in everyday activities. Equally important were discussions about the lessons learned from colleges participating in "Achieving the Dream" initiatives—especially the lesson that fostering effective change requires data-driven decision making within a culture of evidence.[24] After a year of intensive meetings, debate, emails, feedback from various groups, and town hall meetings held by the Chancellor, ten "Big Ideas" emerged from the Task Force's work.

The Commission has followed the "Reengineering" process closely and applauds the effort. Many of the Task Force's "Big Ideas" and corresponding recommendations coincide and resonate with the goals and interim recommendations outlined in this report. The Task Force's work is ongoing, as it this Commission's, and we anticipate continuing collaboration.

The Commission recommends that the Commonwealth support the "Reengineering" process and its reform and innovation efforts focused in the following ten key areas: (1) to redesign developmental education; (2) to implement Shared Services (e.g., centralizing "Back Office" functions such as financial aid; leveraging VCCS purchasing capacity; piloting shared distance learning services; expanding opportunities for development of consortia); (3) to strengthen and diversify the VCCS resource base; (4) to articulate course/program learning outcomes to enhance student success; (5) to foster a culture of high performance; (6) to automate student success solutions and develop public-private partnerships for student success; (7) to expand the teaching employment spectrum; (8) to conduct credit audit of academic programs; (9) to reposition Workforce Services as a high-performance operation to meet employer needs and contribute to the financial strength of the VCCS; and (10) to continue Reengineering efforts.

[24] Virginia Community College Reengineering Task Force, "Making the Case for Change," http://rethink.vccs.edu/wp-content/themes/vccsrethink/docs/CaseforChange.pdf

(3) Affordable Access

The Commission believes Virginia must renew its longstanding commitment to affordable access to a college education for every capable and determined Virginian. College is not right for everyone, but it is right for many more Virginians than are now obtaining degrees, and that is the gap that must be addressed.

It was Thomas Jefferson—the product of one of our Virginia universities and founder of another—who articulated the distinctively American vision of education's central role in a free society. He spoke of a "natural aristocracy" based on merit, with education as the means to enlightened citizenship and economic opportunity *for all*, not just a privileged few. Virginia has made that vision a reality by developing a public-private system of higher education whose hallmarks are excellence, diversity and access.

Access, however, depends on affordability. While the Virginia Constitution guarantees citizens a free public education, that assurance has never included post-secondary study. College-going students and their parents have always been expected to pay part of the tab, assuming they are financially able. Striking the appropriate balance between the contributions of state taxpayers and tuition-paying students and parents is the recurring challenge. And with the vast majority of Virginians now believing that a college degree rather than a high school diploma is the educational credential required for economic success, it is perhaps time to consider updating the state Constitution to embrace the principle of affordable college access.

As state resources allocated to higher education have declined sharply during the severe recession, the burden of financing college-level study has shifted decisively to students and their families. This trend, while pronounced in Virginia, is not limited to this state. The federal government has implemented a two-pronged response—providing so-called "stimulus" funding to the states in the hope of maintaining government support for higher education while catalyzing economic growth, and assuming direct responsibility for administering student loan programs. The former will run its course in 2012, and the disappearance of "stimulus" dollars will create a funding cliff that institutions across the country will have to offset in large part through further tuition and fee increases. The latter measure—replacement of federal guarantees with direct student loan funding and administration—was enacted earlier this year, and its effects are unknown.

In the face of this daunting and uncertain future for those seeking to attend college, the Commission has considered various affordability strategies. In a broad sense, the reform and innovation described in the preceding section bears on affordability, since our recommendations all seek in one way or another to contain costs and deliver greater value. Year-round utilization of resources, applications of new technology in instruction, development of innovative and affordable degree paths, and further restructuring reforms will assist in holding the line on college costs while helping to preserve and enhance educational quality. A system that is already lean and efficient will perform even better if our recommendations are adopted.

More is needed, however. Virginia must couple these cost-saving and value-enhancing innovations with changes in state funding policies that put the Commonwealth on a sure path toward higher educational attainment and the personal income growth that accompanies it. As we have already acknowledged, there is no prospect of a big infusion of additional state resources or a quick recovery of lost funding. Instead, as we contemplate a future beyond the near-term funding cliff and its tuition impact, the Commonwealth should make a commitment to long-term policies that will reduce reliance on tuition in funding the Virginia higher education system and keep college within reach for low- and middle-income families. Our Commission has a four-part recommendation with respect to that long-term policy change:

- First, the Commonwealth should craft and codify a funding model that embodies its commitment to sustained investment in higher education, with the corresponding effect of relieving the upward pressure on tuition over time.

- Second, the Commonwealth should provide an incentive for increased access by promising to every capable Virginia student that a significant increment of state resources will follow the student to the public or private not-for-profit college of his or her choice.

- Third, the Commonwealth should invest more in student financial assistance—in the form of direct aid and low-interest/forgivable loans—to ensure that college remains affordable for middle-income families as well as for the low-income families that traditionally have received aid.

- Fourth, as growth revenues rebound, the Commonwealth should set some of them aside in a rainy day fund reserved for higher education, so that colleges in the future are less subject to dramatic swings in state support and students and parents are not burdened by large and often unexpected spikes in tuition and fees.

Codified Funding Model. The central benefit of a codified funding plan is that it will embody the Commonwealth's strategic commitment to higher degree attainment and knowledge-based economic growth and help ensure that the state's actions over time match those aspirations. A parallel benefit is that it will enhance affordability by reducing reliance on tuition over time.

To achieve these objectives, the model must be understandable, and the funding it provides must be as predictable and reliable as possible. One of the biggest obstacles to cost-efficient management of colleges and universities—and to the systematic pursuit of innovation and reform at those institutions—is the impediment to strategic planning and execution posed by gyrations in government policy and funding. A related impediment, at least in Virginia, is the lack of an effective mechanism by which institutional leaders and state policymakers can come together to fashion agreement on key initiatives. A

well-conceived state policy, plan and corresponding funding model for higher education can build on methodologies and innovations that have contributed to the system's success to date, establish protocols for effective policy collaboration going forward, and provide incentives for improvement in the priority areas outlined elsewhere in this report (economic opportunity, reform-based investment, and affordable access).

We take as a given that such a new funding model will not be "fully funded" initially. There is nothing to be gained from premising a model on current per-student funding levels that are worth barely half of what they were just a decade ago, that over-burden students and their families, and that does not reflect or contemplate the level of investment necessary to achieve the state's ambitious goals for educational attainment and personal income growth. Instead, the funding model should serve as a roadmap for improvement and a magnet for investment as revenues gradually rebound. As Governor McDonnell has observed and we noted earlier in this report, even a relatively modest change in state spending priorities, if consistently maintained over time, can have a dramatic impact on the level of investment in higher education. The course must be set so that incremental progress actually follows.

As a conceptual framework for the funding model, the Commission recommends four main categories, or building blocks, that capitalize on existing strengths and incorporate the various initiatives recommended in this report. They are:

1. Basic Operations and Instruction
2. The Virginia Promise (Per-Student Funding)
3. Need-Based Financial Aid
4. Incentives for Economic Impact and Innovation

While the enrolling college or university is the funding recipient regardless of the category, two of the four categories (first and fourth) would be calculated based on the institutions' operations, programs, and initiatives. The other two categories (second and third) would follow the student based on factors specific to the individual, such as where he or she applies and gains admission, where he or she chooses to enroll, and what his or her financial needs are. Because the funding in the second and third categories follows the student, the policies applicable to those building blocks have implications for both the public institutions and the independent (not-for-profit) colleges in the Commonwealth.

Basic Operations and Instruction. In developing a consistent, reliable approach for funding the public institutions' basic operations and instruction, the Commission believes the proper starting point is the "base budget adequacy" (BBA) model developed initially in 2000 pursuant to the work of the Virginia General Assembly's Joint Subcommittee on Funding Policies ("Chichester Commission") and used for limited purposes during the past decade. Primarily a peer-based cost reimbursement model, the BBA regime was fashioned through a collaborative approach that included experienced finance officers from several of the public colleges and universities, staff of the legislative money committees, SCHEV representatives, and others. The model's salient feature is a set of formulas for calculating instructional cost on faculty-student ratios for different

disciplines. It also calculates funding needs for non-faculty academic support, student services, and operation and maintenance and physical plant.

Although the BBA model has not been updated since its adoption more than a decade ago, the Virginia Business Higher Education Council commissioned an independent study by NCHEMS to review and largely validated its accuracy.[25] NCHEMS identified several deficiencies or issues that should be addressed in updating the model, the most consequential of which is the organization's finding that the model chronically tends to understate the appropriate level of funding for the community college system. NCHEMS also noted that the trend in other states is away from a pure cost-reimbursement model like BBA and toward making a portion of higher education funding performance-based. Our recommendations likewise call for a significant set of performance incentives as a fourth component of the overall funding model, a topic on which we elaborate below.

The Commission believes that the Cost of Education concept first advanced in the early dialogue leading to the 2005 Restructuring Act should be incorporated into the base funding component of the new Virginia model. Using an updated version of the BBA methodology, an appropriate level of funding for instructional and operational costs ("Cost of Education") should be calculated for each institution. As in the earlier consultations leading to the BBA model, this should be a collaborative process that reflects input and buy-in by the institutions and appropriate executive and legislative branch officials.

In crafting the model, the BBA methodology should be followed to the extent feasible consistent with established state policies and institutional practices here in Virginia. Certain longstanding policies, such as the Commonwealth's commitment to its historically black colleges and universities, its support for the adversative military-style pedagogy at VMI, and its commitment to having a distinctive "public ivy" at William and Mary, among others, will necessitate adjustments in arriving at the "Cost of Education" figure for those institutions. Consideration should also be given to the value of medical and other graduate degree programs that traditionally have not covered their full cost and have necessitated subsidy through other graduate and undergraduate programs. Additional grounds for adjustment may well be warranted based on policy and practice. At the end of the process, the methodology for calculating each institution's basic Cost of Education would be set. The calculations could be re-run annually (or less often if state policymakers see fit), but the model itself would need to be updated only periodically, perhaps every five or seven years.

Several important benefits would accrue from establishing the Cost of Education for each institution and employing it consistently in state funding allocations. First, it would enhance funding predictability and reliability, thereby aiding planning and efficient management. Second, it would make base funding allocations more objective and minimize the influence of ad hoc considerations, such as lobbying. Third, as state

[25] "Assessment of the Base Adequacy Funding Model, National Center for Higher Education Management Systems and Delta Project on Postsecondary Education costs, productivity and Accountability, October 12, 2010

funding for higher education rebounds with the economy, discrepancies among institutions could be remedied so that each institution makes progress toward "full funding" at the same rate as the system as a whole, enhancing fairness. And, as state support progresses incrementally toward "full funding," the Cost of Education would supply an upper limit on tuition increases, enhancing affordability.

Current state policy for the public higher education system calls for the Commonwealth to pay two-thirds of the cost of educating Virginia students and for the institutions to cover the other third through non-general funds (i.e., mainly tuition and mandatory fees). This policy has been honored more in the breach than the observance, however. On average the Commonwealth today pays less than 50 percent of this cost today, and the rest is borne mostly by tuition-paying students and families. The Commonwealth should determine what the appropriate share of this cost burden is for tax- and tuition-payers going forward, and set the funding model accordingly. An aspirational funding split that is so far from present or achievable reality as to make it irrelevant not only lacks value in the planning and funding process; it fosters a detrimental cynicism. Whether state policy continues to envision a 67-33 percent split or is set at a different level is a decision for the Commonwealth's policymakers, who must weigh a range of competing goals and needs. The more the Commonwealth is able to cover, the less the burden will fall on tuition-paying families. What matters most for the future is that the Commonwealth's funding actions over time actually match its declared policy goals embodied in the model to the fullest extent possible.

Once the basic Cost of Education for each institution is fixed and the Commonwealth's contribution toward meeting that cost is determined, the balance of funding will ordinarily come from non-general funds generated by tuition and fee charges. Absent initiatives approved by the institutions' governing boards and endorsed at the state level, tuition should not exceed the amount necessary to close this gap. That way, as the Commonwealth makes progress toward funding its full share of college costs for Virginia students, there will be a corresponding easing of tuition pressures on students and their families. Certain tuition-funded costs generally will be outside this sliding-scale formula, such as the institution's required contribution to state-mandated pay raises, its local match of state-incentivized initiatives, and financial aid payments not funded by the Commonwealth.

The proposed funding model thus will provide significant leverage for greater college affordability—leverage, that is, to the extent the Commonwealth succeeds in funding its share of the total Cost of Education. The Commission believes it is imperative that the actual authority for setting tuition and fees remain with the institutions, as it is under current law. Nevertheless, the incentives—financial and otherwise—for keeping tuition within the bounds of the model will be significant. The means for making well-considered and justified departures from the model also will exist:

- In the event an institution conceives a new initiative of value to the Commonwealth that it proposes to fund in whole or in part by raising non-general funds beyond the level envisioned in the funding model,

the planning process recommended in the preceding section on restructuring will provide an effective vehicle for state-level endorsement, acquiescence, or discouragement.

- In the event an institution with the requisite market power chooses to restructure its pricing and generate additional revenue by increasing the effective tuition cost for those at higher income levels while protecting middle- and low-income students through increased financial aid, that same planning process will afford a mechanism for determining any corresponding change in the level of state support or other conditions.

- And, in the unlikely event that a public college or university proceeds, outside the bounds of both the funding model and the planning process, to increase tuition to levels deemed unacceptable at the state level, legislative and executive branch decision-makers have ample means through the appropriations process to impose consequences.

Also important as an element of each institution's basic instructional funding is the Commonwealth's policy on faculty salaries. Instructional quality is the central element in the college value equation, and vigorous competition for talented faculty is a facet of the higher education landscape that comes into play in virtually every aspect of this initiative, from generating a high economic return by equipping Virginians for top knowledge-based jobs, to enhancing our national and international competitiveness through much higher STEM degree production, to generating leading-edge business investment and job creation through lucrative university-based research. The Commission believes the Commonwealth's declared but unattained objective of providing average faculty compensation at the 60th percentile, or somewhat above average of designated peer institutions is a sound policy and should be embedded in the funding model.

While performance-based funding is addressed below and reflects the Commission's emphasis on providing incentives for innovation and reform rather than imposing new mandates on the institutions, certain actions are so central to the Commonwealth's interest as to be expected from each institution. Failure to comply with state policy in such areas should have some impact on funding of basic instruction and operations. In addition to existing expectations related to legal compliance and financial stewardship, the Commission believes three areas of initiative fall in this category:

- The achievement of targets for conferral of degrees on Virginia students;
- The development of plans for optimal year-round utilization of facilities and resources; and
- The development of plans for instructional-resource sharing across the higher education system.

The Virginia Promise (Per-Student Funding). Turning to the second building block in the four-block funding model, the Commission's proposal to have an increment of state funding follow the student to the public or private (not-for-profit) institution of his or her choice has a two-fold rationale and benefit. First, it would allow student choices and demand to drive institutional funding levels, at least on an incremental and interim basis, and thus provide an incentive for institutions to enroll more students—a key element in achieving the overarching goal of having more Virginians earn college degrees. Second, the fact that it embodies a commitment to every Virginia student would increase the likelihood that its future funding survives the vagaries of the business cycle and political winds, thereby helping to keep the Commonwealth on track toward its long-term educational attainment goal.

As a starting point, the Commission recommends that the "Virginia Promise" be set at the current level of the Virginia Tuition Assistance Grant (TAG) program, approximately $2,600—or, if TAG grant funding is restored and enhanced, as we recommend, then at that higher level. Except to the extent of such a TAG increase, no new funding would be provided initially. Rather, the "Virginia Promise" would be funded as part of the public institutions' existing base funding or, in the case of private colleges, through their existing TAG funding. Over time, however, economic substance would be added to the Virginia Promise's symbolic value, since institutional funding would grow with the enrollment of more Virginia students. Of course, funding already generally follows enrollment growth at independent colleges under the TAG program, and under the base funding approach outlined above public institutions would see their funding rise with enrollments whenever the base is recalculated. In the interim between such recalculations, the Virginia Promise payments would provide an incremental increase in per-student support.

Need-Based Financial Aid. The funding model's third major component is need-based financial aid. In contrast to the Virginia Promise, which applies to every Virginia student and is a portion of the enrolling institution's base funding, student financial assistance is based on need and helps defray the eligible student's tuition and fee charges. Currently, the Commonwealth funds a portion of need-based financial aid and the balance is funded by the institutions. While need-based financial aid is an essential tool in addressing affordability, it has limitations. Commission members have expressed concern about increased reliance on higher tuition charges for some students as a source of funding for financial aid to others. The Commonwealth needs to do more.

The Commission has focused on the particular affordability challenge faced by middle-income students and their families. Wealthy Virginians generally can afford to pay for college, and they even get a subsidy from taxpayers: those attending independent colleges qualify for TAG payments, and at public institutions in-state tuition is substantially lower than the actual cost to educate the student. At the low-income end of the spectrum, needy Virginians traditionally have qualified for ample federal grants and/or loans. In the middle, however, families are squeezed because tuition continues to rise yet financial aid through grants is limited or nonexistent.

The Commission recommends that the Commonwealth undertake a systematic assessment of financial aid eligibility and practices at its institutions of higher education, including the impact of recent policy changes at the federal level, with the objective of enhancing financial aid eligibility and awards for middle-income families without diminishing need-based aid for low-income families. Consideration should be given to providing increased grants and exploring the feasibility of guaranteed loan options for middle-income tuition-payers as means of filling identified gaps in existing aid programs.

To avoid merely adding to the student debt burden, any guaranteed loan program at the state level either should provide a lower-interest alternative to federal loan programs or should be convertible into a grant based on performance of certain conditions. Such forgivable loan options may have value in achieving important state policy goals. For example, a loan might be forgiven in whole or in part if a student completes a STEM degree program and then teaches STEM-related courses in elementary or high school for a specified period of time.

While the recent federal changes in student financial assistance programs have altered the landscape significantly, necessitating more extensive study than the Commission has been able to accomplish to date, it is important that the forthcoming "Top Jobs" higher education legislation express the Commonwealth's commitment to college affordability for middle-income as well as low-income families, and set in motion a process leading to viable student financial aid solutions that are incorporated in the codified higher education funding model.

Incentives for Economic Impact and Innovation. Earlier in this report we noted the salutary trend across the country toward a more performance-based approach to higher education funding, a fact cited by the National Council of Higher Education Management Systems (NCHEMS) in its recent review of Virginia's current higher education funding methodology. The fourth major component of our proposed funding model consists of performance incentives tied to the key policy outcomes we have recommended throughout this report. Virtually all of these recommendations relate to enhancing the economic impact of Virginia's higher education system, introducing value-enhancing innovation and reform, or both.

Rather than a pooled incentive approach tied loosely to the achievement of a set of performance measures, the Commission recommends the development of direct and meaningful performance funding mechanisms tailored to each of the major policy initiatives proposed in this report. The incentives will take various forms, and, as with other aspects of higher education reform, the process of fashioning the criteria and corresponding funding consequences will require a collaborative legislative, executive, and institutional process. The forthcoming legislation should articulate the policy priorities and outcomes and provide for such a developmental process during 2011 so the mechanisms are in place for the next biennial budget process.

The Commission recommends development of performance-based funding elements corresponding to the following major initiatives recommended in this Interim Report, including:

- Increased enrollment of Virginia students;
- Increased degree completion by returning students;
- Improved retention and graduation rates;
- STEM degree production;
- Public-private research partnerships;
- Optimal year-round utilization of resources and other efficiency reforms;
- Technology-enhanced instruction and resource-sharing; and
- Community college transfer grants and other degree path programs

Rainy Day Fund. The Commonwealth has benefited greatly from its forward-thinking policy of setting aside a portion of growth revenues in a reserve for times of fiscal stress. This concept should be extended specifically to higher education funding, the category of state spending that has been cut first and deepest in response to each recession over the last several decades. The boom-or-bust character of higher education spending in Virginia not only has wreaked havoc with planning and reform efforts; it has made it next to impossible for parents to anticipate what it will take to put their kids through college and prepare accordingly.

As a key strategy for higher education affordability and to keep the initiatives outlined herein on track, the Commission recommends creation of an additional rainy day fund reserved for higher education. As revenues rebound over time, a portion should be set aside to help sustain higher education support in the face of future economic stresses. Perhaps most important given the demonstrated impact of our colleges and universities in creating jobs, boosting the Commonwealth's economy, and generating tax revenues, such a fund would help prevent these growth-producing investments from being slashed during the very times when they are most needed—times of economic strain.

THE COMMISSION'S NEXT STEPS

The Commission's work has been underway less than a year, and some remaining aspects of our charge will received heightened attention in the coming months.

As noted earlier in this report, we have purposely deferred most of our work on regional strategies and public-private partnerships for business recruitment, workforce preparation, and university-based research. The Commission will focus on these important subjects in 2011, aided by the Final Report of the Governor's Commission on Economic Development and Job Creation, which was completed earlier this fall.

Another area of focus next year will be the Governor's charge to make Virginia a national leader in providing higher education opportunities to military personnel and veterans. While many of our interim recommendations encompass military personnel and veterans, we intend to give this subject particular attention in the coming months.

The Commission will actively support passage of the Governor's *Top Jobs* legislation in next year's legislative session. We believe this landmark legislation is an essential foundational step in committing the Commonwealth to a long-term and sustained plan that will lead to significantly higher college degree attainment, greater personal economic opportunity, and unsurpassed economic growth and competitiveness for our state. We expect this initiative and legislation to received broad bipartisan support in the General Assembly, fueled in part by an intense belief in the business and professional community that this action is urgently needed for success in the knowledge economy. All Virginians have a stake in the enactment of this strategic vision for reform, innovation, and investment.

As we noted at the outset, passage of the legislation will not complete the planning process. But it is a vital first step, because it will set the direction, provide a framework, and commence a collaborative process for the full development of the funding model, key incentive components of the plan, and other provisions. Work likewise will continue on STEM degree production strategies, opportunities to capitalize on new technologies, course redesign and instructional resource-sharing, restructuring and Reengineering reforms, and other key initiatives referenced in our interim recommendations. The Commission expects to be actively involved in many of these discussions.

We conclude this phase of our work with an appeal to all Virginians who love our Commonwealth and believe in its potential for continued greatness. These times continue to challenge us all, but they also serve to clarify our choices and focus our vision. As Governor McDonnell said in his inaugural address, "The creation of and desire for opportunity has shaped Virginia from its very foundation. It is why even in these tough times we will have the foresight to invest today in ideas and economic policies that increase economic prosperity tomorrow." It is in that spirit that we offer these interim recommendations and urge enactment of legislation affirming the Commonwealth's resolve to prepare Virginians for the top jobs of the 21st century.

Attachment A - Executive Order No. 9 (revised July 9, 2010)

Establishing the: "Governor's Commission on Higher Education Reform, Innovation and Investment"

Importance of the Issue

The current period of economic challenge facing our Commonwealth and Nation comes during an era of rapid technological advancement and intensifying international competition, requiring an increasingly knowledgeable workforce and engaged citizenry. There is a well-documented general correlation between the degree or certificate a person gains and the income he or she earns-between a state's educational attainment and its per capita income. Higher education is among the state programs generating the highest return in terms of job creation, economic growth, and ultimately tax revenues.

With great national universities, a higher education system distinguished by both its quality and diversity, and a vibrant knowledge-based economy, Virginia has a unique opportunity to show the way to a new era of American leadership in advanced education, ground-breaking research, and economic growth. Our country's security, our state's prosperity, and our citizens' opportunity all depend on a sustained commitment to higher education excellence and access.

During the first decade of this century, Virginia's state support for public colleges and universities was cut nearly in half on a per-student, constant-dollar basis. The result was an unprecedented cost shift to students and their families and a potential threat to quality and access. Tuition has nearly doubled in the past decade. Colleges and universities must continue to find ways to reduce operating costs and focus on the disciplines that lead to the high paying jobs of the future. Greater efficiencies and more productivity in the state system must be found.

There is a pressing need for the Commonwealth to establish a long-term policy of reform, innovation and investment that will ensure instructional excellence, create affordable pathways to college degree attainment for many thousands more Virginians, prepare our citizens for employment in the high-income, high-demand fields of the new economy, foster socio-economically important research and development, and ensure affordable access to appropriate post-secondary education, training, and re-training for all Virginians.

Governor's Commission on Higher Education Reform, Innovation and Investment

Accordingly, by virtue of the authority vested in me as Governor under Article V of the Constitution of Virginia and under the laws of the Commonwealth, including but not limited to Section 2.2-134 of the *Code of Virginia*, and subject always to my continuing and ultimate authority and responsibility to act in such matters, I hereby establish the Governor's Commission on Higher Education Reform, Innovation and Investment ("Commission").

The Commission shall consist of up to 30 members appointed by the Governor and serving at his pleasure. The Governor shall designate a Chairman and one or more Vice-Chairmen from among the members. The Commission shall include the Secretary of Education, the Secretary of Technology, the Secretary of Finance or designate, and the Vice-Chairman of the Council on Virginia's Future and other state leaders as determined by the Governor. The Lieutenant Governor, Secretary of Commerce and Trade, and Senior Economic Advisor shall serve as *ex officio* members.

The Commission shall consider the current state of public and private higher education in Virginia and the best practices in other states and countries, and shall make findings and recommendations for addressing the following priorities:

- Preserving and enhancing the instructional excellence of Virginia's leading universities and of the higher education system as a whole;
- Increasing significantly the percentage of college-age Virginians enrolling in institutions of higher education and attaining degrees;
- Attracting and preparing young people for the STEM (science, technology, engineering, and math) areas and other disciplines (e.g., healthcare and advanced manufacturing) where skill shortages now exist and/or unmet demand is anticipated;
- Forging new effective public-private partnerships and regional strategies for business recruitment, workforce preparation, and university-based research;
- Making Virginia a national leader in providing higher education opportunities to military personnel and veterans;
- Crafting a sustainable higher education funding model that will systematically move Virginia toward higher levels of educational attainment and economic competitiveness over the next decade-and-a-half;
- Developing innovative ways to deliver quality instruction, cost-saving reform strategies, and affordable new pathways to degree attainment for capable and motivated Virginians regardless of income or background;
- Evaluating strategies to reduce costs through additional college placement testing and accelerated degree completion; and
- Creating effective workforce development programs through expanded use of the Community College System in coordination with the Commission on Economic Development and Job Creation.

The Commission's report shall set forth a comprehensive strategy for increased educational attainment, skills development, and lifelong learning that will equip Virginians to succeed at the highest levels of global economic competition. The strategy shall include a renewed commitment to public-private collaboration, predictable state operational support, and managerial flexibility at the institutional level. The strategy shall simultaneously challenge, encourage, and empower the institutions to attract resources, emphasize STEM and other priority disciplines, while deemphasizing low-demand programs, and using new technology and pedagogy to replace outmoded methods of service delivery with cost-effective instructional programming. The strategy shall embrace the full array of Virginia's higher education assets-public and private, for-

profit and not-for-profit, residential and non-residential, physical and virtual-for the purpose of ensuring that all Virginians have affordable access to appropriate post-secondary education, training, and re-training opportunities.

The Commission shall accomplish its work through committees appointed by the Chairman and corresponding to the following three major objectives, together with such additional committees, subcommittees and working groups as the Chairman may establish:

(1) Increased Degree Attainment, Financial Aid and Workforce Training

- Plan for achieving the goal of 100,000 cumulative additional associate and bachelor's degrees over the next 15 years;
- Concentration of increased educational attainment in the STEM areas and other high-demand and high-income fields;
- Plan to support increased enrollment of Virginia students;
- Suitable financial aid for low and middle income families;
- Alignment of policies, resources and incentives to promote study in areas where shortages of skilled workers exist or are anticipated;
- Provision of enhanced higher education opportunities to military personnel and veterans; and
- Coordination with the Job Creation Officer, Office of Commerce and Trade, and Governor's Economic Development and Job Creation Commission on workforce development initiatives and recommendations.

(2) Implement Innovation and Cost Containment

- Model for higher education funding and service delivery that embodies a long-term commitment to high-quality instruction and affordable access, and that incorporates the degree attainment goals set out in (1) above;
- Rigorous cost-benefit analysis to identify and phase out low-demand programs and reduce/prevent wasteful central office administrative spending and eliminate redundancy within and across higher educational institutions;
- Optimal development and utilization of private and federal resources;
- Increased collaboration among high schools, community colleges, four-year institutions, and private providers to reduce the time and cost of obtaining a college degree;
- Use of new technology for delivering instruction, including course re-design for online learning, use of electronic instructional materials in lieu of textbooks, etc.; and
- Analysis of the principles and objectives of the Higher Education Restructuring Act of 2005, and enhancements thereto.

(3) Regional Strategies/Partnerships for Research and Economic Development

- Plan to dramatically increase the leveraging of private and federal research funding by Virginia's colleges and universities;
- Coordination with development of a Virginia Energy Institute and other energy-related research initiatives;
- Coordination with the Office of Commerce and Trade to develop region-specific strategies and partnerships through which public and private colleges and community colleges participate actively in economic development, workforce training, development of research parks, and related activities; and
- Identification of funding streams through which financial incentives for regional collaboration and public-private partnerships may be introduced.

The Commission shall submit to the Governor its interim findings and recommendations on matters potentially impacting the development of the Executive Budget no later than September 30, 2010. The Commission shall submit to the Governor an interim report of its activities, findings and recommendations no later than November 30, 2010. The interim report shall focus primarily on increasing degree attainment, concentrating increased educational attainment in STEM areas and other high-demand and high-income fields, a model for higher education funding, and partnerships through which public and private colleges and community colleges participate actively in economic development and workforce training. The Commission shall continue to meet and make recommendations on additional stated objectives throughout calendar year 2011.

Staff support as necessary for the conduct of the Commission's work during the term of its existence shall be provided by the Office of the Governor, the Office of the Secretary of Education, the Offices of the other Governor's Secretaries represented on the Commission, the Department of Planning and Budget, the Council on Virginia's Future, and such other agencies as the Governor may designate. All executive branch agencies shall cooperate fully with the Commission and render such assistance as may be requested by it.

An estimated 2,000 hours of staff time will be required to support the Commission. Such funding as is necessary for the term of the Commission's existence shall be provided from sources, including both private and appropriated funds, contributed or appropriated for purposes related to the work of the Commission, as authorized by Section 2.2-135(B) of the *Code of Virginia*. Direct expenditures for the Commission's work are estimated to be $15,000, exclusive of staff support.

Effective Date of the Executive Order

This Executive Order shall be effective upon its signing and shall remain in full force and effect until March 26, 2011 unless amended or rescinded by further executive order.

Given under my hand and under the Seal of the Commonwealth of Virginia this 26th day of March, 20

Attachment B - Degree Attainment, Financial Aid and Workforce Training Committee Interim Report

Committee Background

The Degree Attainment, Financial Aid and Workforce Training Committee is chaired by Bill Barr and co-chaired by Leslie Peterson. It's members include: President John Broderick, Dr. Bill Bosher, Delegate Kirk Cox, JoAnn DiGennaro, President Mark Dreyfus, Senator Edd Houck, President Robert Lindgren, President Linwood Rose, President Carlyle Ramsey and Senator Walter Stosch.

As outlined in its charge, the Degree Attainment Committee's goals are to: (1) develop a plan for achieving the goal of 100,000 cumulative additional associates and bachelor's degrees over the next 15 years; (2) increase education attainment in the STEM areas and other high-demand and high-income fields; (3) support increased enrollment of Virginia students; (4) align policies, resources and incentives to promote study in areas where shortages of skilled workers exist or are anticipated; (5) support financial aid for low and middle income families; and (6) enhance higher education opportunities to military personnel and veterans.

During this calendar year, the Committee primarily focused on the first four goals as requested by the Policy Office. Continuing in 2011, the Committee will address the last two goals.

Committee Activity: The Degree Attainment, Financial Aid and Workforce Training Committee held two half day meetings in addition to the introductory meeting on July 12 and the joint meeting with the Innovation and Cost Containment Committee on October 12.

July 22: The first meeting was held at the UVA/VT Center in Richmond. The committee heard presentations from SCHEV staff on Virginia student demographics and enrollment and degree attainment patterns in the public institutions, including data regarding STEM degree production. The committee also received a presentation from Robert Lindgren, president of Randolph-Macon College, on the capacity of Virginia's private not-for-profit institutions to contribute to the degree production and STEM degree goals. The committee discussed the initial goal matrix and set priorities for its work.

August 31: The committee held its second meeting at Hampton University. Linda Wallinger of Virginia Department of Education ("VDOE") delivered a presentation on STEM and K-12 initiatives, both in Virginia and the nation. VDOE is participating in the Achieve American Diploma Project (ADP) to align curriculums of K-12 with the post-secondary system in addition to designing Virginia's College and Career Readiness Initaitive in partnership with the SCHEV and the VCCS. The initiative is designed to (1) ensure that college-ready learning standards in reading, writing, and mathematics are emphasized in every Virginia classroom, and (2) increase students' preparation for college and the work force before leaving high school. Scores on the Science and Math

SOL's have steadily increased over the last 8 years, and on the National Assessment of Educational Progress (NAEP), Virginia students scored higher in mathematics than students nationwide in 2009. In support of improved STEM education, VDOE is also involved in teacher professional development initiatives and collaborations with the higher education and business communities.

Also at the August 31 meeting, Mark Dreyfus, ECPI President and committee member, described his institution's programs, which are developed in accordance with workforce needs and structured to expedite degree attainment. Christine Chmura of Chmura Economics & Analytics presented job demand forecasting which demonstrated that Virginia will need 100,000 additional STEM workers over the next ten years, a growth which is due to expansion in the number of STEM occupations. The presentation underscored the problem that students' lack of information about demand occupations contributes to misalignment of degrees produced by higher education and workforce needs. Students and displaced workers should have better information to identify demand occupations to enable them to make better decisions about what degrees to pursue. Industry leaders than engaged in a panel discussion moderated by Dr. Bob Leber, the Senior Advisor to the Governor for Workforce Development, regarding job demand reality. The panelists' discussion stressed that some of Virginia's most important enterprises are experiencing shortages of both high-skill (e.g., engineers) and low-skill (e.g., technicians) STEM workers.

Dr. Pinelli, the University Affairs Officer for NASA, gave a presentation on the value of STEM education and preparation, highlighting the limitations and weaknesses of the STEM pipeline. Glenn DuBois, Chancellor of the Virginia Community College System, presented the System's recent initiatives which are helping Virginians obtain credentials and jobs. Ideas that have successfully increased degree attainment for community college students are the Two-Year College Transfer Grant, Middle College, and career coaches (community college employees located in Virginia's high schools that provide individual services to students). Dr. DuBois also announced that Virginia is one of six states selected to participate in the Lumina Foundation's Project Win-Win grant, which will identify former students who fell short of an associate degree and re-enroll them to complete an associates degree. Finally, Dr. Leanna Blevins of The New College Institute made a presentation regarding the role of Higher Education Centers in increasing access and innovation in rural Virginia. The centers can contribute to the goal of 100,000 degrees by enrolling more students through technology and leveraging public-private partnerships to enhance funding and programs.

Attachment C - Innovation and Cost Containment Committee Interim Report

Committee Background

The Innovation and Cost Containment ("ICC") Committee is chaired by Todd Stottlemyer and co-chaired by Dr. Pam Moran. Its members include: Delegate Rosalyn Dance, Chancellor Jerry Falwell, Dr. Rachel Fowlkes, Heywood Fralin, Paul Nardo, Senator Steve Newman, Senator Tommy Norment, Delegate Beverly Sherwood, President Paul Trible, and John "Dubby" Wynne.

As outlined in its charge, the ICC Committee's goals are to: (1) develop a model for higher education funding and service delivery that embodies a long-term commitment to high-quality instruction and affordable access, and that incorporates the Commission's degree attainment goals; (2) conduct a rigorous cost-benefit analysis to identify and phase out low-demand programs and reduce/prevent wasteful central office administrative spending and eliminate redundancy within and across higher educational institutions; (3) review utilization of private and federal resources and recommend enhancements; (4) identify current partnerships and strategies to strengthen collaboration among high schools, community colleges, four-year institutions, and private providers to reduce the time and cost of obtaining a college degree; (5) identify models for using new technology for delivering instruction, including course re-design for online learning, use of electronic instructional materials in lieu of textbooks; and (6) analyze the principles and objectives of the Higher Education Restructuring Act of 2005, and enhancements thereto.

Committee Activity

The ICC Committee met five times: two brief meetings following the Commission's July 12 and October 12 meetings, the latter held jointly with the Degree Attainment Committee; and three half-day meetings at locations around the state.

July 12. Convening immediately after the Commission's kick-off meeting, the ICC Committee spent its first meeting discussing potential meeting dates and strategies for addressing its charges/goals. The strategy that was developed centered on seeking information on examples, models, and resources that would assist members in understanding activities that were currently "working" (and could be built upon/shared/leveraged); held the potential to "work;" or were "not working." Potential overlap with the work of the Degree Attainment Committee was noted in regard to some issues; a strict focus on the committee's goals was urged. Prioritization and synthesis of the committee's charges/goals were also suggested, leading Mr. Stottlemyer to offer to draft a working outline of goals and priorities.

July 29. The Innovation and Cost Containment Committee held the first of what Chairman Stottlemyer would later call its three "discovery meetings" at the Capitol. The agenda included presentations on: (1) the Restructuring Act (*Restructured Higher Education Financial and Administrative Operations Act of 2005*) by staff from the State Council of Higher Education (academic measures) and the Department of Planning and Budget (administrative measures); and (2) the perspectives of a public-university president (Mr. Trible) on restructuring, productivity, and resource optimization.

Much of the discussion centered on strategies for using the goals and processes of the Restructuring Act to address productivity issues (e.g., fewer but more focused and meaningful goals; more institutional autonomy and less state "micro-management" in pursuing and achieving the goals; more significant rewards for good performance and more significant disincentives for poor performance). The fostering on an "entrepreneurial infrastructure" in higher education was suggested. Commission chair Tom Farrell suggested that more students could be served – and perhaps more could complete their degrees in less time – through more and better use of campus facilities/resources. President Trible highlighted the importance of internships, study abroad, and other off-campus learning experiences during the summer break, as well as the need of many students to work part-time jobs to fund their education; he stressed the roles and contributions of liberal arts institutions and face-to-face interaction between students and faculty.

August 23. Another committee meeting was held at George Mason University. The agenda centered on the innovative use of technology to improve student outcomes and to reduce costs. Presenters made clear that technology can be a strategic means of hastening innovation and decision-making, of facilitating cross-cultural interaction and collaboration while reducing travel costs, and of accommodating the changing needs, demands, and learning methodologies of today's global students (and faculty and researchers).

Under the "innovative use of technology" rubric:

- Online learning was discussed as a means to enhance student access and options and to improve student and institutional outcomes (better learning; more graduates), with participation by representatives from Western Governor's University, University of Phoenix, and Liberty University.
- Course-redesign initiatives, such as those spearheaded by the National Center for Academic Transformation (e.g. the Math Emporium at Virginia Tech) were discussed as proven examples of strategies for improving student outcomes while serving more students, often at lower costs.
- New tools for learning, such as electronic textbooks, course management systems, collaborative tools, social media tools, and cloud computing were also discussed.

Discussion centered on the types of "organizing structures" needed to facilitate such efforts, particularly at large scales. Presenters noted that incentives often foster innovation and overcome resistance to change and that budget challenges are currently limiting technological innovation in higher education.

The committee also reviewed and discussed goals and strategies of the Virginia Community College System's Reengineering Task Force and its connections to and overlap with the Commission's goals. The discussion centered on issues of adequacy – adequacy of high-school-students' readiness for college; adequacy of lower-division course availability for transfer students; adequacy of funding for the community college system to meet current and projected enrollment demand and the Commission's degree-attainment goals; and adequacy of colleges' and universities' declining percentages of

full-time faculty (which one member pointed to as evidence that Virginia's public higher education system is "broken").

September 17. The third meeting took place on September 17 at the University of Virginia. The agenda centered primarily on cost containment strategies and on partnerships between PK-12 and higher education, but also included innovative STEM-related initiatives (e.g., the Pathways to the Baccalaureate program and SySTEMic Solutions at NVCC, and the Virginia Initiative for Science Teaching and Achievement at GMU).

Minnis Ridenour, Senior Fellow for Resource Development at Virginia Tech, gave a presentation on cost containment and savings strategies in higher education based on a research paper by Kathryn Webb Farley, Boris Bruk and Emily Swenson Brock, Virginia Tech graduate students, "Strategies for Achieving Productivity and Efficiencies in Higher Education."Strategies were discussed for reducing costs and increasing savings and efficiencies, with discussion of examples and best practices from across Virginia and the nation in the areas of energy management, facilities and infrastructure, business services and processes, human capital and compensation, and academic programs. Presenters recommended the use of incentives and multiple strategies, each tailored for specific types of institutions.

Examples of – and strategies for increasing/improving – opportunities for high school students in Virginia to acquire pre-college credits (such as advanced placement and dual enrollment) were also highlighted. The recent significant growth in the Commonwealth's dual enrollment opportunities was noted as a positive trend, and the successes of such efforts in rural Halifax County, particularly for minority students, were discussed. With the expanding availability of opportunities to acquire credits and to transfer them across institutions, students' ability craft programs of study to fit their interests and needs (financial, scheduling, etc.) is improving; however, when students transfer from two-year institutions to four-year institutions without first completing the associate degree – which is currently true of most transfer students, issues can arise in terms of which and how credits are counted, what status the student receives (sophomore or junior), and how many credits/semesters (and tuition dollars) will be needed to graduate.

October 12. Following the full Commission's meeting on October 12, the ICC Committee met jointly with the Degree Attainment Committee to discuss matters of potential overlap, namely PK-20 strategies for college readiness and access. The "pipeline" – the supply of college-ready students – was identified as one of the most significant issues facing the Commission and the Commonwealth. The need for a cohesive and systemic response to pipeline issues was cited as a necessary means to move beyond the current "random" distribution of successful efforts across the state. Members of the two committees debated means of addressing "readiness" within the parameters of the Commission's work (i.e., how to do so without overreaching its charge from Gov. McDonnell and its foci). The discussion continued beyond the time allotted and continued collaboration between the committees was agreed upon by the chairs.

Attachment D - Regional Strategies/Partnerships for Research and Economic Development Committee Interim Report

Committee Background

The Regional Strategies/Partnerships for Research and Economic Development Committee is chaired by Raj Narasimhan and co-chaired by Tom Loehr. Members of this committee include Jacob Downer, President William Harvey, Dr. Bob Holsworth, Delegate Scott Lingamfelter, Dr. Mirta Martin, Gil Minor, Delegate Tom Rust, President Charles Steger, Robin Sullenberger, Senator William Wampler and Charlie Whitaker.

As outlined in its charge, the Committee's goals are to: (1) plan to dramatically increase the leveraging of private and federal research funding by Virginia's colleges and universities; (2) identify funding streams through which financial incentives for regional collaboration and public-private partnerships may be introduced; (3) coordinate with the development of a Virginia Energy Institute and other energy-related research initiatives; and (4) coordinate with the Office of the Secretary of Commerce and Trade to develop region-specific strategies and partnerships through which public and private colleges and community colleges participate actively in economic development, workforce training, development of research parks, and related activities.

During this calendar year, the Committee focused on the first two goals including leveraging private and federal research dollars and financial incentives for regional collaboration as requested by the Policy Office. Continuing in 2011, the Committee will address the second two goals.

Committee Activity

The Regional Strategies/Partnership Committee met four times following its introductory briefing on July 12, during which committee members introduced themselves, reviewed their charter, and explored subsequent meeting dates.

August 2: The Committee held its first full meeting at the Capitol. Following a review of Executive Order 9 and the Committee's priorities, members received briefings on programs to stimulate academic research and tools to measure research-related outcomes. Throughout its work, the Committee wished to understand and align with, as appropriate, research-related activities and recommendations of other gubernatorial commissions. As such, Carrie Cantrell, Deputy Secretary of Commerce and Trade, reported on research-related incentives examined by the Governor's Commission on Economic Development and Job Creation.

Other important briefings included the Virginia Tobacco Indemnification and Community Revitalization Commission's $100 million research and development investment program; the Restructuring Act of 2005, particularly addressing goals and outcomes related to economic development and externally-funded research; and research and development tax incentives at the federal level, in Virginia, and in other states.

August 16: The committee next met at Virginia Tech's Corporate Research Center in Blacksburg. Briefings focused on leveraging R&D through federal, state, and private resources, factors impacting the innovation ecosystem and innovation, and models for regional collaboration and public private partnerships. Dr. Charles Steger, President of Virginia Tech, introduced current and potential research strengths at Virginia Tech, public-private partnerships, and challenges and potential solutions to enhancing university-based research.

Virginia Tech's Corporate Research Center and KnowledgeWorks, a full service business acceleration center, were introduced, along with TECHLAB, a Corporate Research Center tenant and Virginia Tech spin-out. Subsequent briefings addressed intellectual property; the mission, goals, governance, and IP policy of the Commonwealth Center for Advanced Manufacturing ("CCAM"), a research facility founded by Rolls Royce, the University of Virginia, and Virginia Tech; and federal and regional research strategies.

Ann Loomis, Director of Federal Public Policy for Dominion Power, discussed challenges and opportunities in securing federal research funding, particularly through the appropriations process. She discussed the importance of partnerships that include other states and entities other than universities in order to broaden congressional appeal.

Formal presentations concluded with a briefing on the Institute of Advanced Research and Development (IALR) by Ben Davenport, board member and Chairman, First Piedmont Corporation/Davenport Energy, and by Karl Stauber, President and CEO of the Danville Regional Foundation. They discussed the importance of degree attainment and ensuring that economic benefits occur in regions of Virginia without a major research institution.

September 8: The committee held its third meeting at James Madison University in Harrisonburg; briefings and discussion focused on academic research leading to commercialization of IP, company and job creation, and R&D tax incentives. Dr. Linwood Rose, President of JMU and a member of the Higher Education Commission, welcomed the Committee.

Mark Crowell, the University of Virginia's Executive Director and Associate Vice President for Innovation Partnerships and Commercialization, discussed the innovation ecosystem at the University of Virginia, at other U.S. universities and at Research Triangle Park (RTP). He addressed key factors in RTP's success, including alignment of university research excellence with industry clusters, sustained state and academic commitments, and an innovation ecosystem in the university and business communities.

John Backus, Managing Partner with New Atlantic Ventures, a venture capital company based in Virginia, examined challenges and suggested solutions associated with commercializing academic R&D. Mr. Backus' perspective was suggested by Jeannemarie Davis, Director of the Virginia Liaison Office in Washington, D.C.

Tom Weithman, Vice President Entrepreneurship and Investment Services for the Center for Innovative Technology (CIT), discussed Virginia's low level of seed and early state capital compared to peer states. He introduced CIT's GAP Funds, a family of seed-stage, near-equity convertible debt investment funds designed to transfer and commercialize IP, form companies, and create financial as well as social wealth and benefits. The GAP Funds' portfolio includes companies created from Virginia's university-based research; the program invests in technologies across the spectrum of science and technology sectors.

Pete Jobse, CIT President and CEO, spoke about the Commonwealth's comprehensive R&D strategic roadmap. The Innovation and Entrepreneurship Investment Authority has the duty of creating this roadmap, which will help guide universities in establishing research and development priorities and will include common themes and recommendations for alignment of research areas.

Paul Timmreck spoke on behalf of the Virginia Business Higher Education Council's "Grow by Degrees" campaign. He provided a historical perspective on research funding and economic development in Virginia and suggested issues that the Committee consider in order to maximize the Commonwealth's job creation and other research-related economic benefits.

October 12: In coordination with the full Commission meeting in Richmond, the committee's fourth meeting was held. At this meeting, the Chair invited discussion on priorities, concerns, and next steps. In addition, Deputy Secretary of Commerce and Trade Cantrell briefed the Committee on the Job Commission's research-related recommendations.

Attachment E - Higher Education Commission Members

Chairman – Thomas F. Farrell, II, Chairman, President and CEO, Dominion Resources, Inc. and Former Rector of the University of Virginia

Vice Chairman-Delegate Kirk Cox, Colonial Heights

Members

- William Barr, Former U.S. Attorney General
- Dr. Bill Bosher, Executive Director, Commonwealth Policy Institute and Distinguished Professor of Public Policy and Education, Virginia Commonwealth University
- John Broderick, President, Old Dominion University
- Ric Brown, Secretary of Finance
- Delegate Rosalyn Dance, Petersburg
- JoAnn DiGennaro, President, Center for Excellence in Education
- Jacob Downer, second year student at Dabney S. Lancaster Community College
- Mark Dreyfus, President and CEO, ECPI Colleges
- Jim Duffy, Secretary of Technology
- Jerry Falwell, Jr., Chancellor, Liberty University
- Heywood Fralin, CEO of Medical Facilities of America, Inc.
- Dr. Rachel Fowlkes, Executive Director, Southwest Virginia Higher Education Center
- Dr. William Harvey, President, Hampton University
- Dr. Bob Holsworth, Founder and President, Virginia Tomorrow
- Senator Edd Houck, Spotsylvania
- Dr. Robert Lindgren, President, Randolph-Macon College
- Delegate Scott Lingamfelter, Prince William
- Thomas Loehr, Executive Vice President - Crosspointe Operations, Rolls Royce
- Dr. Mirta Martin, Dean, School of Business and Professor of Management, Virginia State University
- G. Gilmer Minor, Chairman, Owens and Minor, Inc.
- Dr. Pamela Moran, Superintendent, Albemarle County Public Schools
- Raj Narasimhan, Site Director, Micron Technology Virginia
- Paul Nardo, Chief of Staff, Speaker William J. Howell
- Senator Steve Newman, Lynchburg
- Senator Tommy Norment, Williamsburg
- Leslie Peterson, Director of Operations, Chmura Economics & Analytics
- Dr. B. Carlyle Ramsey, President, Danville Community College
- Gerard Robinson, Secretary of Education
- Dr. Linwood Rose, President, James Madison University
- Delegate Tom Rust, Herndon
- Delegate Beverly Sherwood
- Dr. Charles Steger, President, Virginia Tech
- Senator Walter Stosch, Glen Allen
- Todd Stottlemyer, Executive Vice-President, Inova Health System

- Robin Sullenberger, CEO, Shenandoah Valley Partnership
- Paul Trible, Jr., President, Christopher Newport University
- Senator William Wampler, Bristol
- Charlie Whitaker, Senior VP of Human Resources and Compliance, Altria Client Services, Inc
- John O. "Dubby" Wynne, Vice Chairman of the Council on Virginia's Future

Ex Officio Members
Bill Bolling, Lieutenant Governor
Jim Cheng, Secretary of Commerce and Trade
Bob Sledd, Senior Economic Advisor

Commission Staff

Laura Fornash, Deputy Secretary of Education
Melissa Luchau, Deputy Director of Policy
Emily Webb, Special Assistant to the Secretary of Education

Committee Staff

Degree Attainment, Financial Aid and Workforce Training Committee-Beverly Covington, Policy Analyst and Dr. Joseph DeFilippo, Academic Affairs and Planning Director, State Council of Higher Education for Virginia

Innovation and Cost Containment Committee-Dr. Alan Edwards, Policy Studies Director, State Council of Higher Education for Virginia

Regional Strategies/Partnerships for Research and Economic Development Committee-Peter Blake, Vice Chancellor for Workforce Development, Virginia Community College System and Nancy Vorona, Vice President, Research Investment, Center for Innovative Technology

Special thanks to Tod Massa, Policy Research & Data Warehousing Director, State Council of Higher Education for Virginia, who provided support to all three committees and data for the interim report.

GOVERNOR'S RURAL JOBS COUNCIL

REPORT TO THE GOVERNOR

June 12, 2013

http://www.governor.virginia.gov/RuralJobsCouncil/

June 6, 2013

Dear Governor McDonnell,

I am pleased to submit the final report of the Governor's Rural Jobs Council. Over the past three and a half years we have worked hard to create jobs in Virginia. We have experienced tremendous success, closing 1,167 economic development deals, creating 171,300 net new jobs and reducing our state's unemployment rate to 5.2%, which is well below regional and national averages.

These positive economic development results have been one of the major accomplishments of the McDonnell/Bolling administration, and our Commonwealth is stronger today because of these successes. Despite this progress, we know there is still important work to accomplish through the remainder of the term. The Rural Jobs Council's efforts over the last several months are further indication that we intend to sprint to the finish.

The recommendations contained in the report are focused on strategies to improve K-12 education and the workforce pipeline; develop a comprehensive economic and infrastructure plan for rural Virginia; and development policies that encourage and expand Virginia's entrepreneurial foundation.

Throughout the process, members of the Council researched, developed and exchanged a wide array of innovative ideas, including the Rural Virginia Horseshoe Initiative, a promising community college based initiative that has recently emerged to drive job creation in Rural Virginia through full-time career coaches. The Rural Virginia Horseshoe Initiative is an example of the power of public-private partnerships to drive job creation and workforce development.

I want to thank the members of the Council who worked hard to help develop these recommendations. They include legislators and leaders in business, manufacturing, agriculture and healthcare. I also want to reiterate my thanks to you for your leadership in providing us with this forum in which to discuss these kinds of important issues. I look forward to seeing what results come from these recommendations in the future.

Sincerely,

LIEUTENANT GOVERNOR BILL BOLLING

Members of the Governor's Rural Jobs Council

Chair: Lieutenant Governor Bill Bolling
Vice Chairs: Secretary Jim Cheng
Secretary Todd Haymore

Members: Shannon Blevins, Director of Economic Development, UVA at Wise, Wise County
David Brash, Senior Vice President of Business Development and Rural Strategy, Wellmont Health System, Lebanon
Delegate Kathy Byron, Lynchburg
Elizabeth Crowther, President, Rappahannock Community College, Saluda
Jeff Edwards, CEO, Southside Electric Cooperative, Crewe
Katie Frazier, President, Virginia Agribusiness Council, Richmond
Timothy Heydon, CEO, Shenandoah Growers, Harrisonburg
Rebecca Hough, Co-Founder and CEO, Evatran, Wytheville
Thomas Hudson, President, Virginia Coal Association, Richmond
Delegate Danny Marshall, Danville
Ned Massee, Chairman, Virginia Chamber of Commerce, Richmond
Delegate Don Merricks, Pittsylvania County
Phil Miskovic, Councilman, Crewe
Martha Moore, Vice President for Government Affairs, Virginia Farm Bureau Federation, Richmond
Delegate Israel O'Quinn, Abingdon
Bill Parr, Parr Properties, Cape Charles
Senator Phil Puckett, Tazewell
Delegate Margaret Ransone, Kinsale
Nicole Riley, State Director, National Federation of Independent Business, Richmond
Michael Robinson, Superintendent, Smyth County Public Schools, Smyth County
Senator Frank Ruff, Clarksville
Dr. Nettie Simon-Owens, Director of Workforce Services, Southern Virginia Higher Education Center, South Boston
Brett Vassey, President and CEO, Virginia Manufacturers Association, Richmond
Senator William Wampler, Executive Director, New College Institute, Martinsville
Delegate Onzlee Ware, Roanoke

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Entrepreneurship Advisor
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Staff Assistant
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Executive Assistant to Commerce and Trade
Office of Governor Bob McDonnell

Governor's Rural Jobs Council Report Executive Summary

Governor McDonnell issued Executive Order 57 on January 2, 2013, establishing the Rural Jobs Council. He named Lieutenant Governor Bolling, Virginia's Chief Jobs Creation Officer, as Chair of the Council. Secretary of Commerce and Trade Jim Cheng and Secretary of Agriculture and Forestry Todd Haymore were named as Co-Vice Chairs for the group.

The Council's purpose was to ensure a continued focus on rural Virginia. Since the beginning of the term, the administration has been committed to jobs and economic development and rural development has been a key part of those efforts. This Council helped by continuing to look for ways to improve the business environment and quality of life and leave a legacy of dedication to rural Virginia that will benefit the Commonwealth for years to come.

The membership of the Council consisted of legislators and leaders in the business, manufacturing, agriculture, and healthcare industries. The group's goal was to put forth recommendations to address the challenges to economic growth in rural Virginia.
Since the Council began its work several months ago, members, staff and expert agency staff worked diligently to identify key initial recommendations that would be achievable in scope.

The Council's key recommendations are fully detailed in individual sections of the report. They include:

- Promoting regional capacity building
- Improving health care outcomes
- Supporting efforts to increase access to capital in rural areas
- Expanding access to dual-enrollment, particularly in Science, Technology, Engineering, Mathematics, and Health (STEM-H)
- Strengthening pipeline and credentials of rural STEM-H teachers
- Sustaining and expanding use of annual Report Card on Workforce Development in Virginia
- Conducting public awareness campaign for middle skills jobs and the Career Readiness Certificate (CRC)
- Disseminating regional workforce solutions that address skills gap in key industry sectors
- Guaranteeing that participants of Virginia's Career and Technical Education (CTE) and Workforce Programs have opportunities to earn a work readiness credential
- Implementing "Rural Entrepreneurial Community" program for rural Virginia to promote localities that have maintained healthy entrepreneurial climates
- Developing regional strategies to promote cooperative efforts that foster entrepreneurship
- Developing educational entrepreneurship package to include the selection of a site in rural Virginia for the future Governor's School for Entrepreneurship
- Reviewing new technology applications for surface-influenced public well water treatment systems

Entrepreneurship

The Entrepreneurship Subcommittee of the Governor's Rural Jobs Council considered many ways in which entrepreneurial activity and a culture of innovation could be encouraged in rural Virginia. There were four key areas in which the subcommittee determined policy recommendations were appropriate, including: (1) the implementation of a "Rural Entrepreneurial Community" program for rural Virginia to promote localities that have maintained healthy entrepreneurial climates, (2) the development of regional strategies to promote cooperative efforts that foster entrepreneurship, (3) the development of an educational entrepreneurship policy to include the inclusion of a site in rural Virginia for the future Governor's School for Entrepreneurship, and (4) specific short-term recommendations regarding the review of new technology applications for surface-influenced public well water treatment systems. The recommendations are outlined in the following action ideas along with further details on their implementation.

Action Item #1: Rural Entrepreneurial Communities

Problem:

While many rural communities may identify themselves as having the eco-system critical for entrepreneurs to grow and flourish, there is no consistent measurement or designation that communities can strive to achieve in order to set them apart as an entrepreneurially focused community.

Key Players:

Government, Entrepreneurs, Corporations, Investors, Academic Institutions, Service Providers, NGOs & Foundations

How it works:

Implement a "Rural Entrepreneurial Community" program for Rural Virginia to promote communities with a vibrant entrepreneurial eco-system.

No secret formula exists for communities to transform themselves into a vibrant entrepreneurial hub. However, there are several strategies localities can implement to build the right eco-system for generating and sustaining successful entrepreneurial ventures. From providing robust internet access for residents and businesses within its borders to hosting Opportunity Summits to help citizens see business needs within their community, localities can make a positive impact on creating a culture of entrepreneurship.

The Commonwealth may also encourage communities to take positive steps in boosting entrepreneurship support by developing an official recognition program – Partner Rural Entrepreneurship Community. Entrepreneurial Community Tool Kits provide a roadmap for communities and a series of workshops tailored to government officials and community leaders

motivated by sharing results of a business-friendly climate and provide helpful information for communities to use as they develop effective strategies that meet their needs.

Highlights:

Opportunity Summits expose the region's citizens to business needs within their communities. Do-It-Yourself Summit packages designed specifically for Institutions of Higher Education (IHE) within rural regions will provide a roadmap to promote entrepreneurship at a large-scale level. These summits serve promotional purposes for the universities, which will operate as the regional hubs for such events.

Rural Economic Development Toolkit tailored for local leaders with limited human resources and newly-elected local officials. Elected officials in rural areas may not have had substantial exposure to successful economic development initiatives, and may have limited knowledge of the resources available at the state level. Often times in an effort to preserve longstanding local traditions and culture, rural communities fight against institutional changes resulting in economic disadvantage and stunting economic growth. The toolkit will acknowledge this tendency and provide differentiated resources for rural areas that require specific and targeted approaches to achieve desirable economic results.

Economic Gardening Workshops provided through a partnership with a statewide association will highlight case studies of what can happen when a town, city, or county creates a business-friendly climate that attracts and supports an entrepreneurial venture. These workshops would encourage government officials to appeal to entrepreneurs with their policies.

Entrepreneurial Mentoring Programs strengthen existing businesses by supporting the "high school to work" program. Legislation in 2013 created this program to encourage high school students gaining real world experience

Examples:

Certified Entrepreneurial Communities

North Carolina - http://www.prweb.com/releases/2008/10/prweb1516664.htm

AdvantageWest Economic Development Group, a 23 county economic development organization established a rigorous five-step process known as the Certified Entrepreneurial Community program. It is designed to assist community leaders in creating a business friendly climate by improving access to capital for entrepreneurs and providing an exceptional support system. Haywood County, located in the mountains of Western North Carolina was the first locality awarded the designation in the fall of 2008. This region of North Carolina has experienced a higher rate of entrepreneurial activity than the rest of the state.

Rogers State University - http://www.rsu.edu/innovation/entrepreneur.asp

Entrepreneurial Ready Community Certification Program was created by Rogers State University to recognize communities who provide support services to small businesses and local entrepreneurs. The program is based upon economic gardening principles pioneered by Chris

Gibbons in the City of Littleton, Colorado as they transformed themselves into a vibrant entrepreneurial hub.

Opportunity Summits

http://www.empactsummit.com/about.php

This Summit held at the US Chamber of Commerce, Capitol Hill, and White House included over 300 delegates. The mission is to spark conversations that facilitate relationship building in order to forge and strengthen bonds in both local and global entrepreneurship ecosystems thus making entrepreneurship a viable option.

http://rockymountainentrepreneurialsummit.com/

The Rocky Mountain Entrepreneurial Summit is hosted semi-annually in Denver, Colorado. This summit is dedicated toward spurring innovation, job creation, and a better quality of life. The Summit seeks, encourages, supports, and catapults entrepreneurs in the Rocky Mountain Region.

Tool Kits

http://www.joe.org/joe/2002october/tt5.php

Oklahoma Cooperative Extension provides economic development educations a toolkit targeting two categories: educational programming and technical assistance. The tools work best when used together however, they can be used independently and can significantly impact rural communities dedicated to the process of economic development.

http://www.nist.gov/ineap/upload/RI_SmallBizToolkit-2012-Web.pdf

The National League of Cities offers toolkits to local leaders which provide guidance on constructive action local officials can take to foster an entrepreneurial environment. Common themes of leadership, communication and partnerships are themes found within this toolkit which is applicable to both large and small cities.

Action Item #2: Regional Strategy to Grow Entrepreneurship

Problem:

Many rural localities, regions and institutions utilize a strategic planning process to chart a course for the future. Often these strategic plans do not consider the critical role of a robust entrepreneurial culture for a region's economic growth.

Key Players:

Government, Entrepreneurs, Business Leaders, Academic Institutions, Regional Planning Organizations, Engaged Citizens

How it works:

In partnership with the "Rural Entrepreneurial Communities" recommendation, rural regions should consider the potential benefit from a regional entrepreneurship strategy. Regions should consider strategies to grow entrepreneurship through:

1. Strategy Meetings
   Strategic planning groups should engage thought leaders early to determine the scope and size of such a planning effort. The organizational leadership should provide the framework and support, but not be the only source of content.
2. Gap Analysis
   Each region or community has existing resources which make up the eco-system needed for entrepreneurial ventures to thrive. However, gaps in these resources will inevitably exist, especially in rural regions. A thorough gap analysis will provide a foundation for strategic planning and identify where the region should focus attention to fill existing gaps.
3. Public Engagement
   Public input continues to be one of the most critical elements of a successful regional strategy. The strategic planning groups should be sure to engage the public in person and through electronic comment tools.
4. Strategy ventures
   Leaders from regions who are seeking to learn from other successful models should dedicate time to visit a peer region to learn about their strategy.

Examples:

Blueprint for Entrepreneurial Growth and Economic Prosperity in Southwest Virginia

Appalachian Prosperity Project – http://approject.org/initiatives/appalachian-ventures.html
The Blueprint for Entrepreneurial Growth and Economic Prosperity is a regional strategy to grow entrepreneurship and innovation in southwest Virginia. It is a key focus of the Appalachian Prosperity Project, a collaborative initiative resulting from the work done in partnership between the University of Virginia, The University of Virginia's College at Wise and the Virginia Coalfield Coalition. Most importantly, the Entrepreneurship Blueprint is a strategy born of the region for the region and is flexible enough to adapt to the ever changing needs of a region. The strategy was developed with a broad stakeholder group of thought leaders who are committed to its success.

Inter-city Visits / Inter-Region Visits
Greater Richmond Chamber of Commerce --
www.grcc.com/View.aspx?page=events/list/intercity_visit
Each year, the Greater Richmond Chamber of Commerce sponsors an exciting trip to a comparable region in the nation to exchange ideas and best practices. The InterCity visit (ICV) has become one of the GRCC's most sought after programs because it helps participants look at the Richmond region through new eyes.

Rural communities could partner the ICV model with their strategic planning process to better inform and prepare stakeholder input.

Action Item #3: Educational Entrepreneurship Programs

Problem:

Virginia Governor's Schools provide skilled students the opportunity to participate in academically and artistically challenging programs beyond those offered in their home school districts. These schools serve more than 7,500 students in various parts of the state. Unfortunately, there is currently no program available for students to study entrepreneurship.

Key Players:

Governor's Office, Department of Education, Local Governments, Academic Institutions, Entrepreneurs, Corporations.

How it Works:

Entrepreneurship has grown at a rapid pace in recent years. In an increasingly globalized world, entrepreneurs with education and ambition have found opportunities to drive emerging markets with revolutionary products and services. But as businesses and individuals have gravitated towards the ever-expanding urban centers, rural areas have been slow to develop a culture of entrepreneurship.

In recent years, the number of universities in the US that offer education and training in entrepreneurship has skyrocketed to roughly 1,600. Although Virginia, like several other states, has begun to see the effects of this cultural shift trickle down to K-12 education, the following are recommended specific initiatives to expedite the adoption of early entrepreneurship education programs.

Highlights:

Inclusion of a rural Virginia site for the future location of the Governor's School for Entrepreneurship

Virginia Governor's Schools provide skilled students the opportunity to participate in academically and artistically challenging programs beyond those offered in their home school districts. These schools serve more than 7,500 students in various parts of the state. Unfortunately, there is currently no program available for students to study entrepreneurship. The Subcommittee recommends selecting a site in rural Virginia as the location of the Governor's School for Entrepreneurship. This school, either a summer program or a full-year curriculum, could be modeled off of successful programs implemented in several other states.

Endorsement of the High School to Work Program

During the 2013 legislative session, Governor McDonnell support legislation sponsored by Senator Dick Black and Delegate David Ramadan directing the Board of Education to develop guidelines for the establishment of High School to Work Partnerships between public high schools and local businesses to create apprenticeships, internships, and job shadow programs in a variety of trades and skilled positions. Programs like this one have been used successfully across the country to give job-seeking high school students a head start towards employment. For

students with ambitions of starting and running their own company, this training proves invaluable to their future.

The subcommittee encourages the steps the Governor, Senator Black and Delegate Ramadan, and members of the General Assembly have taken to advance this initiative.

Case Studies:

Pennsylvania's School for Global Entrepreneurship (PSGE)

PSGE was launched in 2001. The program runs through the existing Governor's school during the summer. It provides hands on exposure to entrepreneurship. After the state cut funds for the program, Lehigh University assumed responsibility for the program in 2009.

http://www.iacocca-lehigh.org/Iacocca/psge/

South Carolina Governor's School

South Carolina started the Innovation, Technology and Entrepreneurship Among Middle Schoolers (iTEAMS) program in partnership with Google. The program exposes young students to topics in computer science, app development, and cyber security.

http://www.iacocca-lehigh.org/Iacocca/psge/

Kentucky's Governor's School for Entrepreneurs (GSE)

Kentucky will be opening the GSE during 2013. This summer program provides students experience developing a business venture from the ground up.

http://gse.kstc.com/

SB1248 (Black)/HB2101 (Ramadan) – High school to work partnerships

Directs the Board of Education to develop guidelines for the establishment of High School to Work Partnerships between public high schools and local businesses to create apprenticeships, internships, and job shadow programs in a variety of trades and skilled labor positions. The bill also provides that local school boards may encourage the local school division's career and technical education administrator to work with the guidance counselor office of each public high school to establish such partnerships.

http://lis.virginia.gov/cgi-bin/legp604.exe?131+sum+HB2101

Action Item #4: Expedited decisions on alternative surface-influenced public well water treatment systems

Problem:

The Virginia Department of Health is committed to protecting public health by ensuring all Virginians have access to an adequate supply of affordable, safe drinking water that meets state and federal standards. The Virginia Waterworks Regulations require any drinking well facility or distribution network that serves more than 25 persons a day, whether through multiple taps (i.e.

meters) or employees at a facility, is deemed a public drinking water system and must conform to all Commonwealth guidelines. This means the water purification level for e coli, viruses, HTC, Giardia lamblia cysts, and other harmful organisms and contaminants must be removed to the Commonwealth specified levels. Currently, the technology and filtration systems accepted for public water facilities are large and expensive—in some cases, starting around $250,000. This is cost prohibitive for the average small rural business that may employ more than 25 persons working on site within a 24-hour day.

The Virginia Department of Health is committed to periodic reviews of the Virginia Wastewater Regulations to ensure the best available water treatment technologies are permitted per the regulations. The Rural Jobs Council applauds VDH's commitment to continuous review of these regulations to ensure they reflect advancing and new technologies that produce safe and reliable drinking water at a lower cost to the operator.

The Virginia Department of Health also reviews new technology applications on a case-by-case basis. The Rural Jobs Council recognizes that water treatment systems that are effective in one location may not be equally effective in another, and accordingly, approves of VDH's efforts to review individual applications and work with operators to ensure that new systems will effectively uphold their commitment to public health and safety.

Key Players:

The Virginia Department of Health; Water Treatment System Operators; Water Quality Engineers

How it Works:

The Entrepreneurship Subcommittee of the Rural Jobs Council encourages VDH to continue to work with stakeholders and engineers during the regulatory revision process to allow for the use of new, reliable, and safe treatment technologies for surface-influenced well water to meet state and federal standards. During the revision process, the subcommittee recommends that VDH take into consideration ways in which the case-by-case review of alternative systems can safely be accelerated.

The approval process for use of new technologies understandably requires diligent review and careful consideration before approval or denial. The subcommittee appreciates the thoroughness with which VDH evaluates each application, often following up with engineers for further information or clarification before making final decisions.

From a business-owner's perspective, delays in the approval process for alternative technologies can have significant budgeting implications. Specifically, when a startup operation meets the definition of a noncommunity water supply, the owner is required to install a system meeting VDH criteria to ensure water quality remains constant and safe. Property and business owners are therefore faced with the difficult decision of installing a large and expensive treatment system that complies with state regulations, pursuing less-expensive but also effective alternative systems that require navigation of the lengthy approval process, or simply restricting employment so as not to exceed the 25 person maximum.

The Rural Jobs Council has been asked to examine policies that improve the business environment and quality of life in rural areas of the Commonwealth. It is the opinion of the Entrepreneurship Subcommittee that delays in the approval process of alternative treatment systems serve as a deterrent to job growth for start-up operations in rural areas. That said, the subcommittee recognizes the importance of a reliably safe finished product and the impact it has on quality of life and public health. For this reason the subcommittee recommends the consideration of new technology application review processes that will quickly, safely, and reliably evaluate plans.

Infrastructure

The Infrastructure Subcommittee of the Governor's Rural Jobs Council focused on three key action areas to impact economic development and job creation in rural Virginia. These key areas include: (a) capacity building, (b) healthcare and (c) access to capital. This report highlights each of these action areas and provides key strategies to effectively implement the recommendations. The document details the need for each action item and highlights the positive economic results it would have on communities throughout the Commonwealth.

Action Item #1: Promote Regional Capacity Building

The first action idea from the Infrastructure Subcommittee is to promote regional capacity building efforts in rural communities. This action idea focuses on two specific categories for capacity building that includes: 1.) organizational development and 2.) economic development. It is recommended that these capacity building efforts be implemented through a regional approach that encourages and facilitates local government cooperation in addressing problems of greater than local significance. These two capacity building categories are highlighted below.

Organizational Development Capacity

Problem:

The decline in traditional economic sectors as well as increased international competition has left many rural areas of the state behind economically. Many rural localities may lack the resources and capacity to independently address community and economic development needs. However, addressing these issues on a regional, rather than local, basis would enhance the region's ability to adequately respond to the community needs.

Recommendation:

The first action item from the Infrastructure Subcommittee is to expand and increase the support of Virginia's Building Collaborative Communities (BCC**)** initiative. To effectively meet the program's demand and to increase the organizational capacity of many rural areas in Virginia, the Building Collaborative Communities program should be funded at $500,000 annually.

How It Works:

The primary objective of Building Collaborative Communities (BCC) program is to promote regional capacity and economic collaborations in economically distressed areas that stimulate job-creation, economic development, and provide a significant return on State investment. This program requires projects to facilitate significant involvement from the private sector, economic development agencies, community organizations, educational institutions, nonprofits, local leaders and governmental officials. Investment and engagement from local private industries are a vital component of this program. Collaborative resources for this program are provided from a number of state entities, including the Department of Business Assistance, Virginia Tourism Corporation, Virginia Economic Development Partnership, Department of Housing and Community Development, Virginia Community College System and other agencies as appropriate.

Community capacity underpins and spurs economic development. Sustainable community and economic development does not come from the outside in, but rather, from the assets and leadership from within the community. Capable leadership is a key factor in a community's sustainable growth and economic development. Thus, it is imperative for communities to develop leaders with the capacity and commitment to help their communities survive and thrive. Developing ways to enhance and strengthen local leadership is necessary for distressed communities to compete in the knowledge-based economy. Human resources are the community's greatest asset in addressing sustainable economic development issues, and community and economic development initiatives are difficult to sustain without a constant source of strong and devoted leaders.

In the global economy, regions must serve as the economic unit. Economic boundaries are not defined by political boundaries. Economic research shows that in areas around the country where localities work together cooperatively, economic competiveness is enhanced. Quality of life indicators such as income disparity between localities, area median income, and job creation are more positive in areas that interact on a regional level. Regional, community-based strategies that capitalize upon the unique assets of communities offer stronger opportunities for success and long-term sustainability. Location decisions made by businesses are based on a number of factors, ranging from quality of life, local amenities, supply chain availability, and workforce competency to name a few—low on the list of considerations, if at all, are geographical boundaries. Collaborative efforts represent the best opportunity for economic growth and prosperity.

Key Players:

The key players for this action item would include: Elected Officials, Decision Makers, Community Leaders, Local Governments, Planning District Commissions (PDCs), Regional Economic Development Marketing Organizations, Chambers of Commerce, Private Sector, State Agencies with economic development mission.

Highlights:

In the two years since its inception, the Building Collaborative Communities initiative received seventeen application proposals of which, nine regional projects were funded. The program has strategically invested $400,000 in these regional initiatives which has leveraged commitments of $750,000 from local partners and $80,000 from state agency partner. Interest in the BCC remains high and from all across the Commonwealth. New regional initiatives, such as the Stronger Economies Together program initiated in the Northern Neck and Southern Virginia regions have further spurred other regional interest. A few exemplary BBC funded projects include:

- **Virginia Growth's Alliance (formerly Trans Tech)**

  Virginia Growth's Alliance (formerly TransTech) is a newly-formed organization of six counties and one city that have come together to facilitate investment attraction and economic growth in the region. The localities include the counties of Brunswick, Charlotte, Greensville, Lunenburg, Mecklenburg and Nottoway and the city of Emporia. Although, the initial major focus is on business recruitment, the organization is also creating strategies for entrepreneurship development, asset development and leadership development. Within the past year, the region has engaged the community by hosting a creative economy conference, creating a cultural asset map and leveraging resources to obtain additional capacity building support.

- **Fields of Gold**

  This regional economic development collaboration promotes agritourism in the Shenandoah Valley. It is a collaborative effort among six counties and five cities in Virginia. Fields of Gold program has brought together local government officials and agritourism representatives from localities across the region to work together on a comprehensive marketing, tracking, and capacity building initiative. It is intended to create and retain jobs on the farm, expand tourism jobs off the farm, and nurture an environment for entrepreneurism. Additionally, Fields of Gold strives to establish better linkages between agricultural producers and consumers which strengthen the local food system and invigorate the region's economy.

- **Virginia's Region 2000**

  The Building Collaborative Communities program can also serve to expand and enhance the services delivered through an already existing, well established regional organization. BBC funds were invested in Virginia's Region 2000 to primarily focus on developing and fostering entrepreneurship.

  The Virginia's Region 2000 partnership is an interwoven network of organizations with a centralized vision to provide regional development leadership within the 2,000 square miles that surround Lynchburg, Virginia. The organization provides a single point of contact to the public and private sector for regional planning services, economic development, marketing, and workforce training. BCC funds will be leveraged in Region 2000 projects to further add value to an already effective regional organization.

Economic Development Capacity

Problem:

Virginia is competing against states that have strong certified sites programs, putting the Commonwealth at a significant disadvantage when companies are seeking new locations. For businesses, narrowing sites to a short list of candidates that clearly meets their goals, with minimal risk and cost, is critical. One step that can be taken to improve the competitive positioning of states and localities is to ensure that development costs are minimized through programs that prequalify certain real estate properties by identifying ownership structures, infrastructure, appropriate zoning, and conducting certain environmental impact studies. These prequalification programs, known as "certified sites" or "shovel-ready" programs, effectively reduce risk and shorten development timeframes. States who offer certified sites have demonstrated success in new business location. Virginia has been omitted from some site searches because it does not have similar prepared sites.

Recommendation:

The second action item from the Infrastructure Subcommittee is to expand and increase the support for the Right Now Sites initiative currently managed by the Virginia Economic Development Partnership. To effectively compete with other states, the program needs to be enhanced to better define and set certification standards, and then supported with funding for localities who desire to complete the certification process. To meet the program's anticipated demand and to increase the competitive standing of rural areas in Virginia, the Right Now Sites program should be funded at $500,000 annually.

How It Works:

The current Right Now Sites Program is designed to ensure business prospects and consultants that those business properties designated as "Right Now Sites" have all the essential elements in place for rapid business location that lowers risk and shortens timeframes for development. The Right Now Sites Program establishes minimum infrastructure requirements for eight industry groups (light manufacturing, general manufacturing, heavy manufacturing, mega sites, business/industrial parks, office parks, warehouse/distribution, and research & development). In addition to these industry-specific standards, separate "readiness standards" have been established to ensure that these sites are truly ready to go. The Virginia Economic Development Partnership has determined that each site designated as a "Right Now Site" has met the minimum readiness standards and one or more industry-specific criteria. The program as currently implemented does not offer funding support for localities who wish to achieve the "Right Now Site" designation, nor does the program have a recognized brand in the market.

In an enhanced program, VEDP would assess the current industry groups and standards, make modifications as necessary (i.e. site certification for data centers would align well with Virginia's current strength in this growing sector), identify strategic partners with whom to collaborate (i.e. utility companies and rail companies are traditional partners in site certification programs; the Virginia Department of Housing & Community Development offers technical assistance programs in its capacity-building role), create a framework for receiving applications for financial support from localities and regions who are interested in achieving certification; and

create a branding/marketing strategy to promote these sites to corporations and site selection consultants.

An enhanced Right Now Sites Program will complement and align strategically with the proposed Building Collaborative Communities program, in that both programs support increasing community capacity that will attract private-sector investment. The Right Now Sites Program's marketing and branding element will link the prepared communities to the market opportunities, by creating a brand standard that exemplifies excellence, and by utilizing the marketing channels of strategic partners such as electric utilities, railroads, and broadband partners.

Mark Williams, President of Strategic Development Group, says "For……corporate clients, narrowing sites to a short list of candidates that clearly meet…..goals with minimal risk and cost is critical. As site search timelines become more compressed, the availability of site data generated through quality site certification programs will be increasingly attractive to site selectors and their corporate clients. As the economy continues its recovery, site location projects will likely become more frequent, making site readiness identified by quality site certification programs an important marketing tool for economic developers. For corporations considering site locations, sites certified correctly will significantly reduce development risks and related delays to project timelines while simultaneously generating cost savings."

Key Players:

The key players for this action item would include: Virginia Economic Development Partnership, and other state agencies with an economic development mission; federal agencies with an economic development mission; Virginia's electric utilities, railroads, and broadband providers; regional and local economic development organizations and local elected officials; planning district commissions; and private sector partners.

Highlights:

Relevant site certification programs in Virginia's competitor states:

- **Tennessee Valley Authority's Megasite Program:**
  In 2004, the Tennessee Valley Authority established one of the first, if not the first, noteworthy site certification program with its Megasite initiative. Originally launched to certify sites for automotive assembly plants, TVA's Megasite program has been incredibly successful, with five of the eight certified sites sold to major corporations. To date, Dow Corning/Hemlock Semiconductor, VW, Paccar, Toyota and Severstal are or have built massive facilities on sites in Clarksville, Tenn., Chattanooga, Tenn., Columbus, Miss. and Tupelo, Miss. Together, those projects represent capital investments that total more than $5 billion with 5,500 or more direct jobs created. Three sites remain in TVA's Megasite inventory; the 2,100-acre I-24 Megasite in Hopkinsville, Ky., the 1,720-acre (plus 3,000 acres under option) Memphis-Jackson I-40 Advantage Megasite in Haywood, Tenn. and the 2,010-acre I-65 Megasite in Athens, Alabama.
- **Mississippi Power's Project Ready Program**

Like TVA's Megasite Program, Mississippi Power partnered with South Carolina-based McCallum Sweeney Consulting to design and implement a customized site certification program for southeast Mississippi. Mississippi Power's Project Ready site certification initiative has an aviation and aerospace flavor to it, as several of the sites are located near the John C. Stennis Space Center. There are currently five sites in the Project Ready inventory, including Howard Technology Park, Key Brothers Aviation Site, George County Industrial Park Phase II, Jackson County Aviation Technology Park and John C. Stennis Space Center. All of Project Ready's sites have undergone a rigorous screening and are available, fully-served, and developable.

1. **South Carolina Power Team and Santee Cooper's Certified Sites Program**

The South Carolina Power Team and Santee Cooper's program has certified 39 sites in South Carolina, all ranging from about 50 to 1,500 acres. The two power companies have spent well over $1 million certifying sites in the Palmetto State. There are three large certified sites in and around Sumter and Florence, S.C. that are all 1,200-acres plus, including the Black River Airport Industrial Park (1,300 acres), the I-95 Mega Site (1,441 acres) and the Young Lands Industrial Site (1,445 acres). All three are located on or just a few miles away from Interstate 95. The South Carolina Power Team is the economic development alliance of the state-owned electric utility.

2. **Entergy Arkansas' Select Site Program**

This certified site program has a nice mix of 16 certified sites in Arkansas. Entergy Arkansas used Deloitte Consulting to certify sites for its Select Site program. Deloitte implemented 50-point criteria for certification and the sites range in size from 40 acres to more than 2,000 acres. Three of the sites certified by Entergy Arkansas can accommodate just about any large project. The Saline County I-530 site encompasses 2,045 acres and the Carlisle, Ark. I-40 site totals 1,925 acres. Also in Entergy's inventory is the M-1 site in Marion, Ark. that Toyota considered twice in the last decade for automotive assembly plants that went to San Antonio and Tupelo, Miss. Since 2005, Select Site has created 2,091 jobs with $335 million in capital investment.

Action Item #2: Improve Health Care Outcomes

The second action idea from the Infrastructure Subcommittee is to support efforts to increase health care outcomes, by improving health care systems, in rural areas. Among other challenges that rural localities face in terms of successfully sustaining and growing their economies, is the impact of the health of their populations – their workforce – which is a key driver as companies consider locations for expansions. Rural localities also face the challenge of lack of critical population mass due to a dispersed geography, thus limiting the location of key clinical services and physicians. Rural localities also struggle to maintain quality support staff in the health care industry; jobs which pay well but require educational standards that may not be attained by rural populations. Combined with the anticipated impact of adjusting to the federal Affordable Care

Act – noting that rural health care systems are disproportionally dependent upon reimbursements from Medicare and Medicaid – rural communities are facing a crisis of magnitude that must be addressed.

Comments received from CEOs of Virginia's rural hospitals were collected and presented to the subcommittee. Summarized, the CEOs comments indicated the following are the primary challenges facing rural health care systems:

- Decreasing & inadequate payment/reimbursements, and competition for paying customers
- Recruitment and retention of physicians
- Financial support for physician hospital enterprise and information technology
- Managing the continuum of care and value-based purchasing
- Population critical mass to support key clinical services

Comments from other health care professionals also raised the issue of needing to evaluate Virginia's "scope of practice" regulations. Ensuring that state-specific scope of practice laws allow non-physician primary care providers to diagnose, order tests, write prescriptions and make referrals could increase the capacity of primary care, especially in rural areas by increasing their reach and allowing non-physician primary care practitioners to practice at the top of their licensure. Non-physician providers are trained to treat patients with low-acuity illnesses and provide care to those with chronic diseases, as well as referring patients with more complex issues to physicians. This flexibility allows physicians the time to treat those with the more complex issues while ensuring all patients are seen in a timely and an efficient manner.

As evidenced by the above, health plays a critical role in sustaining and developing strong rural communities**.** Rural health is a necessary component of community health and economic development, in that the availability of a healthy workforce is critical in attracting employers. In addition, health service providers (hospitals, community health centers, nursing facilities, pharmacies, home care agencies and others) are oftentimes the major employers in many rural communities. The related expenditures generated by these providers have significant direct and indirect community impacts (i.e., economic multiplier effects). There is an undeniable connection between employment (a key social determinant of health) and improved health status. Strategies should address support for 1) sustaining and growing the scopes of practice in rural communities; 2) workforce development for health care professions; and 3) mitigating the impact of the Affordable Care Act.

1. Recruitment and retention of health care professionals

Problem:

Recruiting and retaining physicians (and their professional services support systems) in rural communities is extremely challenging. The competition for physicians and related health care professionals is intense. A 2009 policy brief from the federal Office of Rural Health Policy highlighted that 77% of rural counties face a shortage or primary-care providers. The number of general surgeons practicing in rural communities decreased 21% between 1981

and 2005. Rural physicians are often without "cross-coverage" (serving as the sole provider in a given region) and this 24/7 lifestyle is not attractive to young residents. In addition, finding spousal employment can be a challenge in rural areas.

Recommendation:

The Infrastructure Sub-committee recommends supporting a series of tools that can positively impact the successful retention and recruitment of primary care health care professionals. The tools include the following programs and would necessitate budget increases, program modifications, or both.

1. *Expand the parameters and funding of the Virginia State Loan Repayment Program to effectively double the number of recipients serving in rural areas, within two years.*

How It Works:

The Commonwealth of Virginia offers the Department of Health Professions (DHP), Virginia State Loan Repayment Program (VA SLRP). This program offers substantial financial assistance for repayment of qualified medical education loans for eligible primary care disciplines and specialties. Loans are repaid in return for a minimum of two years of full-time practice of the recipient's specialty in a federally designated Health Professional Shortage Area (HPSA) of Virginia. The Loan Repayment Programs pay up to $25,000 a year toward the qualified educational loans of program participants. The minimum service obligation is 2 years, during which the maximum payment of $50,000 will be paid the first year. Subsequent extensions of the loan repayment contract are entitled to annual loan repayments of up to $35,000. These benefits are in addition to any salary or compensation received from employment by an authorized program employer. Loan repayment program participants are required to provide fulltime clinical service at a service site for the period agreed to in the contract. These sites are specific primary health care or psychiatric employment opportunities in a medically underserved area of Virginia. VA SLRP participants are required to complete their obligation in a federally designated primary care Health Professional Shortage Area (HPSA) or a federally designated mental HPSA (for psychiatrists) that have been identified by the Virginia Department of Health, Office of Minority Health and Public Health Policy as having a deficient of certain health professionals.

2. *Expand the Health Professional Shortage Area (HPSA)*

How It Works:

The federal Health Professional Shortage Area (HPSA) designation identifies an area or population as having a shortage of dental, mental, and primary health care providers. HPSA designation is used to qualify for state and federal programs aimed at increasing primary care services to underserved areas and populations. A HPSA designation is based on three criteria, established by federal regulation, based on criteria including 1) geography rational for delivery

of health services; 2) specified population-to-provider ratio must be evidenced; and 3) health care resources in surrounding areas must be unavailable because of distance, overutilization or other access barriers. Health Professional Shortage Areas (HPSAs) have shortages of primary medical care, dental or mental health providers and may be **geographic** (a county or service area), **demographic** (low income population) or **institutional** (comprehensive health center, federally qualified health center or other public facility). Current designations for health professional shortage areas and medically underserved areas are inadequate in many ways. Counting only physicians provides an inadequate picture on primary care availability within rural communities. Use of high-need indicators fails to capture broader access measures. The persistence of separate federal designations for different programs creates a burden on local communities. An assessment of Virginia's current HPSAs indicates that there are a number of rural communities which do not have the HPSA designation. The Infrastructure subcommittee recommends that an assessment of these areas be conducted and evaluated for designation.

3. *Increase funding to support new and existing rural residency sites*

How It Works:

Rural family medicine residency training is a viable and an important pipeline for rural health care. Testimony to the Infrastructure Subcommittee from health care professionals indicated that an expansion of rural residency sites in Virginia could have a positive impact on the retention of health care professionals in rural areas. While the subcommittee has been unable to validate the number of rural residency sites in the Commonwealth, several have been identified as successful examples.

Highlights:

The **Shenandoah Valley Family Practice Residency Program** is a rural-oriented program in the Shenandoah Valley of northwestern Virginia, about 70 miles west of Washington, D.C. It is affiliated with the Medical College of Virginia/Virginia Commonwealth University School of Medicine (www.familymedicine.vcu.edu) and is fully accredited for our 3-year residency by both the ACGME and the American Osteopathic Association, allowing full board certification eligibility for MD and DO physicians. It has 5 residents in each class. Its tag line is "the best of both worlds". http://www.valleyhealthlink.com/svfpr/

The **Lynchburg Family Medicine Residency Program** was established in 1975, and is the only residency in a community based program affiliated with Centra Health, Inc. and the University of Virginia. Residents care for patients in Lynchburg as well as the Big Island Family Medicine Center - its rural site. It offers a solid base in hospital medicine and care for patients at Lynchburg General Hospital and Virginia Baptist Hospital. Continuity of the physician-patient relationship is valued, and patients are also seen in local nursing homes and home visits.

The Blackstone Residency Program markets that the best of both worlds come together in this program - the excellence of academic Family Medicine and the reality of rural Family Medicine. The Blackstone Rural Program is located in Blackstone, Virginia, a division of the St. Francis Family Medicine Residency, sponsored by Bon Secours Health System, and affiliated with Virginia Commonwealth University School of Medicine. Its program is a 2-2-2 integrated rural

training track. Residents spend their intern year in clinical practice at St. Francis Family Medicine in Midlothian, VA and the upper two years in clinical practice in rural Blackstone. This rural continuity practice is interspersed with specialty rotations in pediatrics, cardiology, OB, sports medicine, and many other specialties at Bon Secours St. Francis Hospital in Midlothian, VA and St. Mary's in Henrico, Virginia. Blackstone Family Practice had a long history of training high quality residents for over 30 years with approximately 2/3 of the graduates practicing in rural areas upon graduation.

The Wellmont Osteopathic Family Medicine Residency Program was established in June of 2009 and approved by the American Osteopathic Association for twenty-four (24) Family Medicine Residents. The program, based in rural Wise County at sixty beds Wellmont Lonesome Pine Hospital, accepted the first two residents in July of 2010. The residents do rotations and training at Wellmont's other two rural Virginia facilities, Mountain View Regional Medical Center in Norton and Lee Regional Medical Center in Pennington Gap. Residents also do training rotations at the System's Tennessee facilities to include Bristol Regional Medical Center and Holston Valley Medical Center. The residency program has been almost immediately successful growing from two residents in the first year, to twelve in the second year and nineteen in only the third year of operation. The three-year residency produced its first graduate in July of 2012, who after completing his training in rural Wise County, decided to locate there to begin his practice with Wellmont Medical Associates. In calendar year 2013, four additional residents will complete their training, with some already having accepted offers to remain in rural Virginia and practice with Wellmont. The program is expected to continue to grow and evolve to other residency opportunities and potentially specialty fellowship programs. This residency program is accredited by the AOA and has been recognized by the Virginia Hospital and Healthcare Association as a Community Benefit Award Finalist in 2012.

Key Players: The key players for these action items would include: rural health care systems; state agencies whose missions incorporate rural health care; federal agencies whose missions incorporate rural health care; medical schools & clinics; workforce delivery system partners; community foundations; federal and state elected officials.

2. Workforce Development for Health Care Professionals

Problem:

According to the National Rural Health Association, near-retirement primary care physicians (age 56 or older) constitute a larger proportion of the rural workforce (25.5 percent urban, 27.5 percent rural, and 28.9 percent remote rural), making it likely that rural workforce shortages will increase in the years ahead, putting even more pressure on the existing rural workforce. The health care labor shortage in the United States has been widely documented and is expected to last for the foreseeable future. The increase in population is partially responsible for the health care labor shortage.

As the health care workforce ages, the U.S. population is expected to rise by 18 percent by 2030, and the population over the age of 65 is expected to increase three times that rate. In addition to

the overall shortage of health professionals, maldistribution is another prevalent obstacle rural Americans face in accessing timely and appropriate primary health care services. As of June 30, 2011, the number of non-metropolitan primary medical health professional shortage areas (HPSAs) was 4,148, representing 65 percent of the primary care HPSAs and nearly 34.5 million people. Nationally, these HPSAs would require an additional 3,959 practitioners to remove the HPSA designations and 8,851 to achieve target population-to-practitioner ratios. Based on comments received by the Infrastructure Subcommittee from Virginia health care professionals, national trends are mirrored in rural Virginia. The Virginia Health Workforce Development Authority is tasked with developing a statewide health professions pipeline.

Recommendation:

The Infrastructure Subcommittee recommends that state funding be targeted for:

- graduate medical education training, and
- clinical practice sites for advanced practice professionals

In addition, the Subcommittee recommends that consortia models of workforce development systems in the health care field be developed to pilot in rural geographies.

How It Works:

Utilizing existing partnership structures in rural regions of Virginia, and in collaboration with Virginia's Community College System, identify two pilot regions in which funds can be used to support both graduate medical education training (see above Rural Residency programs) and health care support professions such as CNAs, health technicians, etc. The expectation is that the support professions programs will target rural residents, youth or displaced adult workers and will result in at least an associate degree in the identified occupational categories. For both audiences, leverage existing partnerships to reach the intended candidates, and support the programs by establishing linkages with health care providers who can commit to supporting employment upon completion of programs.

Key Players:

The key players for these action items would include: rural health care systems; state agencies whose missions incorporate rural health care; federal agencies whose missions incorporate rural health care; medical schools & clinics; workforce delivery system partners; community foundations; federal and state elected officials.

Highlights:

Highlighted below are three examples of health care system organizations in rural Virginia:

The Southwest Virginia Area Health Education Center (SWAHEC)'s mission is to provide education, information, training, and services to improve health outcomes in Southwest Virginia. SWAHEC primarily focuses on rural health care workforce development to meet the needs of

communities and health care professionals. Located in Tazewell, Virginia, SWAHEC reaches some of the neediest areas in the Appalachians. Established in 1993, SWAHEC is an independent, not-for-profit corporation led by a volunteer Board of Directors. The Board is primarily made up of community members from health care and education organizations. Southwest Virginia AHEC's major programs include:

- Health Professions Students' Clinical Training Opportunities
- Exposing Youth to Health Careers
- Support for Practicing Health Professionals
- Community Health Initiatives

The Southside Area Health Education Center In 1992, the Southside Area Health Education Center (AHEC) was incorporated by local community leaders to address the availability and distribution of health care providers in its 15 county and 3 city region. Health care workers are in short supply in 12 of Southside AHEC's rural communities, which is compounded by a growing demand for health care services. To help these underserved communities attract and produce more health care professionals, the Southside AHEC engages in a wide array of education-based activities that range from summer health careers camps and school clubs for middle and high school students to clinical training opportunities for health professions students in community-based clinics to providing educational resources for health care practitioners. The mission of the Southside Area Health Education Center, Inc., is to improve the health of Southside Virginians through health careers promotion, practice support, and health education. The goals of the Southside Area Health Education Center, Inc. include:

- Provide secondary students exposure to health careers and the opportunities available in health careers.
- Enhance and expand relationships with health training institutions.
- Identify means of support to the community-based training programs of Primary Care and allied health professional students and residents in Southside Virginia's underserved areas.
- Provide practice support to health care professionals, matching graduates to practice sites and disseminate information through modern technology.
- Creating partnerships with community businesses, healthcare, education and human service organizations to achieve the shared goal of improved health and disease prevention for the citizens of Southside Virginia.
- Promote a broad based concept of wellness for Southside Virginians.

Current Projects

- Southside AHEC assists MCV/VCU School of Medicine with the placement of approximately thirty, 3rd year medical students in the region.
- In partnership with the Virginia Foundation for Healthy Youth (VFHY) the Southside AHEC works with more than 360 disadvantaged students in grades K-8 to instill resiliency, social skills, emotional development, character building skills and health living lifestyles.

The Southern Virginia Higher Education Center (SVHEC) has had incredible impact in workforce development in and outside health care. The Center of Nursing Excellence was developed at the SVHEC just a few years ago to combat the nursing shortage in southern Virginia. It`s a vibrant example of best practice in a rural community.

3. Medicaid Reform

Problem:

The Infrastructure Subcommittee heard passionate testimony from rural health care professionals that the Affordable Care Act implementation poses major risks especially for rural providers. Rural Virginia hospitals generally have a higher percentage of uninsured and Medicare/Medicaid beneficiaries coupled with a lower percentage of commercially-insured patients (commercial payers represent only 20% of the payer mix in rural hospitals). Virginia must remain engaged to both understand the implications of the Affordable Care Act while identifying appropriate ways to brace for the change without compromising care to citizens in rural Virginia.

Health care provides over 50,000 direct jobs in rural Virginia and another 20,000 indirect jobs. In some rural communities, the health care sector represents up to 37% of jobs; in the majority of rural Virginia, health care represents between 12% - 19% of all jobs. These jobs are not ones that can be outsourced and are relatively stable, they are generally higher-paying; and they build on STEM knowledge. The importance of their impact in rural Virginia, as a stabilizing force in local and regional economies, is evident.

Recommendation:

The Infrastructure Subcommittee received input from various health care professionals related to Medicaid expansion. Comments received included the view that there is risk and reward resulting from a possible Medicaid expansion. Ultimately, however, the Infrastructure Subcommittee recognizes that the complexity of this issue, combined with the timeframe in which the Rural Jobs Commission report is due, does not give the Subcommittee appropriate capability to make a recommendation on the topic of Virginia's approach to Medicaid reform. Due to the significant impact on the citizens and health care systems that anchor rural Virginia, the subcommittee defers to the Medicaid Innovation and Reform Commission for action.

How It Works:

Medicaid Reform budget language was passed by the 2013 General Assembly and subsequently signed by the Governor. Several components captured in the budget language are underway by the department, while strategic approaches to all described reforms are being prepared. The Medicaid Innovation and Reform Commission is a legislative body that will consider these reforms and will signal back to the legislature at large when reforms are substantial enough to reengage the conversation of a Medicaid expansion. Undoubtedly, health coverage is important; however, the dialogue concerning any type of Medicaid expansion must include the often unspoken reality that coverage does not equal access to care.

Key Players:

The key players for these action items would include: rural health care systems; state agencies whose missions incorporate rural health care; federal agencies whose missions incorporate rural health care; medical schools & clinics; workforce delivery system partners; community foundations; federal and state elected officials, and the Virginia Medicaid Innovation and Reform Commission.

Action Idea #3: Support efforts to Increase Access to Capital in Rural Areas

The third action idea from the Infrastructure Subcommittee is to support efforts to increase access to capital in rural areas. Rural municipalities must have reliable access to capital to help optimize economic development opportunities and improve the overall quality of life of local communities. Increased access to capital can attract new businesses to rural areas and create viable, competitive, communities.

As the economic landscape has changed in rural areas, it is no longer a viable economic strategy to simply pursue the large industrial employer; instead, a diversified job creation strategy is needed. Strategies must be identified for communities to create access to capital and training for small business owners to invigorate the area. Strategies should support these efforts both through technical assistance to the localities and the organizations that provide funding and implement entrepreneurial assistance. Below are key strategic recommendations for increasing access to capital in rural areas. These strategies are primarily focused on: 1.) entrepreneurship/business development, 2.) water/waste water, and 3.) broadband.

1. **Entrepreneurship and Business Development**

   Problem:

   In many of Virginia's rural communities, the economic engine that once thrived is no longer viable. Many of these communities were driven by textiles, manufacturing, coal, rail, and other forces that no longer sustain them. Many of these localities face severe economic distress as they have fallen behind the rapid pace of economic change prevailing in much of the state. Rural areas often have both the greatest need and the least ability to address their condition. To succeed, rural communities must be positioned to access opportunities in current markets by developing local and regional economic development strategies that focus and guide both local and state investment. Maintaining economic viability requires finding new economic engines, the future economic drivers for a community, and often it is the small businesses and entrepreneurial networks that are vital to that new framework. Additionally, these small businesses must have access to entrepreneurial assistance and financing through loan pools and microfinance.

   Recommendation:

The Infrastructure Sub-committee recommends Virginia provide an annual allocation of $ 4.0 million to state agencies to increase access to capital for developing and expanding entrepreneurial networks and business development.

How It Works:

Improving access to capital for communities, entrepreneurs and businesses must be a vital part of a comprehensive economic development strategy for rural regions. These funds would be directed to state agencies with an economic development mission and currently able to provide financing directly to local businesses and communities. These funds would be leveraged with private investments to multiply the economic impact on the region. These funding strategies should be a part of a broader, more coherent regional approach that facilitates both financing assistance and technical assistance. This rural financing effort should promote a regional approach that includes; "value added" agribusinesses, small farm initiatives and other commercial development.

Key Players:

The key players for this action item would include: Community Banks, Community Development Financial Institutions (CDFIs), Lending Institutions, Community Foundations, Private Sector Investors, State Agencies with an economic development mission.

Highlights:

Highlighted below are three institutions that promote increased access to capital throughout Virginia.

- **Community Banks**
  Community banks play a primary role in the economic development of rural Virginia. Community banks are often the first line of financing for entrepreneurship, business development and company expansion. These banks have long established ties to the local communities and are in the best position to understand the needs of local area businesses. State policy and programs should support and not compete with community banking efforts.

- **Virginia Small Business Finance Authority (VSBFA)**
  The Virginia Small Business Finance Authority (VSBFA) promotes economic development and provides state and federally source financing programs for the benefit of businesses and local IDAs and EDAs. VSBFA assists Virginia's existing businesses and those businesses that are seeking to come to Virginia through a portfolio of financing programs. VSBFA does not provide grants; however, the agency adds value by helping Virginia's financial institutions offer business loans that they might not be able to offer without our assistance.

- **Virginia Community Capital, Inc. (VCC)**
  To help address some of these financing issues in rural and distressed regions, the

Commonwealth created the Virginia Community Capital, Inc (VCC). Virginia Community Capital is a multi-million dollar non-profit, community development financial institution that provides innovative loan and investment solutions for affordable housing and economic development projects throughout Virginia. VCC is a unique banking structure that provides loan capital that is broader than bank lending to projects that have a positive community impact in low- to moderate-income communities in underserved geographies and markets. VCC partners with community banks where appropriate and also seeks to address the capital needs of worthy projects that exceed the capacity of community banks. VCC provides great partnership opportunities for the Commonwealth and has played a key role in the implementation of new economic development programs, providing underwriting services, developing financial packages, and loan servicing.

2. Water and Wastewater

Problem:

Access to safe, reliable drinking water continues to be a critical need in many rural parts of Virginia. Due to the limited number of customers, small public water systems are not able to generate enough revenue to pay additional technical staff, make infrastructure improvements, pay debts, or even meet national drinking water standards. Unlike municipalities with general taxation authority, many of the small water systems in rural Virginia can only raise revenue through user and connection fees. Often there have not been rate increases to provide sufficient revenue to properly manage and maintain these systems, resulting infrastructure which is inadequate and failing. Additionally, challenges posed by the geography and terrain often prohibit the installation of conventional wastewater systems, resulting in the need for alternative systems which are generally far more expensive and which carry their own set of maintenance issues. Also, small water systems in rural Virginia have fractured and uncoordinated delivery systems, which would benefit from greater consolidation.

Recommendation:

It is recommended that the State provides $500,000 to fund a state administered program to plan, design and implement three (3) regional water/wastewater initiatives.

How It Works:

This program would be coordinated and delivered through a state agency in collaboration with selected Planning District Commissions. This funding would be used for planning and preliminary engineering of more cost effective alternative wastewater treatment models, including resolving issue of proper management and maintenance of alternative systems. The State should identify funding sources and incentivize efforts to pursue more efficient regional approaches to consolidate water and wastewater systems. These strategic investments in regional projects should facilitate orderly economic development similar to the Virginia Coalfields Water Study (VCRWS). This study conducted a regional needs assessment for rural communities and to address appropriate funding and implementation

strategies for Virginia's Coalfields region. Virginia should also provide funding to address water quality issues in non-Chesapeake Bay communities that lack access to WQIF. This funding could be similar to the funds that were allocated for the Southern Rivers Watershed Enhancement Program (SRWEP). This initiative was designed to improve the water quality in the streams and groundwater of the "Southern Rivers" region of Virginia.

3. **Broadband**

Problem:

Currently, many rural communities are not afforded access to broadband telecommunications and hence deprived of their ability to participate in enhanced social, education, occupation, healthcare, and economic development opportunities. It is critical that all Virginia communities have affordable access to high-speed broadband telecommunications.

Recommendation:

The Commonwealth should consider the need for annual funding for the planning and deployment of affordable, high-speed broadband infrastructure in UNserved areas (as determined by the Commonwealth Broadband Mapping Initiative).

How it would work:

Community initiated projects seeking funding should utilize the extensive mapping of existing telecom infrastructure carried out by the Secretary of Technology and the CIT with the cooperation and assistance of the private sector to demonstrate that the proposed area(s) to be planned for/served are currently "unserved". Projects under consideration for funding (planning and/or infrastructure deployment) should be merit based and emphasize the applicant's ability to provide (contract for, deploy) affordably priced, sustainable high-speed (as defined by the FCC) broadband services in UNserved areas. Strategies should: a) emphasize collaboration and partnership b) be integrated into a broader community and economic development strategy, and c) focus on solutions that emphasize long term sustainability that leverage, to the fullest extent possible, existing public and private sector assets.

Problem:

Many rural communities and smaller providers do not have the staffing or skill sets necessary to successfully compete for federal broadband funding opportunities.

Recommendation:

The Commonwealth should consider creating (funding) a federal funding assistance program to provide assistance to communities and small Internet Service Providers (ISP's) who lack the staffing and skill sets to effectively compete for federal funding opportunities.

How it would work:

The program would be established to work with communities and small private sector providers who lack the ability to effectively apply for federal broadband funding opportunities. Applicants would request funding to hire a grant-writer to assist with the preparation and submission of federal funding proposal preparation on a catch-match basis. The Center for Innovative Technology ran a similar program several years ago.

Problem:

Commonwealth public policies related to the deployment of affordable, high-speed broadband services should be evaluated on a regular basis to insure that programs, policies, and legislation remain relevant.

Recommendation:

The Commonwealth's Broadband Advisory Council should review public policy related to the provision of broadband services in rural areas of the Commonwealth to identify opportunities and barriers to the provision of such services. The intent of this review is to ensure that Virginia is best positioned to promote the development of affordable broadband in rural areas.

Stakeholders:

The key players for this action item would include (but not be limited to): Elected Officials, Community Leaders, Decision Makers, Chambers of Commerce, Local Governments, Planning District Commissions (PDCs), Regional Economic Development Marketing Organizations, Appropriate State Agencies, Broadband Authorities, Broadband Service Providers, Wireless Service Authorities, the Private Sector, and the Office of Tele-work Promotion and Broadband Assistance.

Workforce and K12

The K-12 and Workforce Subcommittee of the Governor's Rural Jobs Council focused on six key action areas for workforce development of K-12 students and adult populations served through Virginia's Workforce Network (VWN). Key areas of inquiry and recommendation include: (1) Expanding access to dual-enrollment, particularly in Science, Technology, Engineering, Mathematics, and Health (STEM-H); (2) Strengthening pipeline and credentials of rural STEM-H teachers; (3) Sustaining and expanding use of annual Report Card on Workforce Development in Virginia; (4) Conducting public awareness campaign for middle skills jobs and the Career Readiness Certificate (CRC); (5) Disseminating regional workforce solutions that address skills gap in key industry sectors; (6) Guaranteeing that Participants of Virginia's Career and Technical Education (CTE) and Workforce Programs have opportunities to earn a work readiness credential. A total of eight specific policy or budget recommendations are included for these six action areas.

Action Item #1: Expand participation of rural high school students in dual and concurrent enrollment courses in Science, Technology, Engineering, and Mathematics (STEM-H), including Career and Technical Education (CTE)

Problem:

As stated in a recent report of the Education Commission of the States, "In today's global economy, knowledge truly is power." With most labor forecasts projecting, by 2020, 66 percent of all jobs will require some level of education beyond high school, and with the fastest growing and highest paying occupations between now and 2014 requiring some form of postsecondary education, increasing the number and percentage of rural Virginians attaining a postsecondary education credential remains essential to job creation. As the U.S. Chamber of Commerce's #1 ranked state for STEM (Science, Technology, Engineering, and Mathematics) jobs, with the 3rd highest rate of STEM job growth in the United States according to an analysis by Chmura Economics, Virginia needs to produce more college graduates with STEM-H degrees to maintain our economic competitiveness. Several regions with the greatest discrepancy between STEM-H degree attainment and employer demands are located in rural Virginia.

A growing body of national research documents the benefits of dual-enrollment programs administered in high school classrooms, on a college campus or through a distance learning provider. According to the U.S. Department of Education, college credits earned prior to high school graduation reduce the average time-to-degree and increase the likelihood of college graduation for high school student participants. Research reported by Regional Educational Laboratory of Appalachia shows that:

- Dual enrollment participants learn study skills and other habits related to college success, including learning "how to play the part of a college student";
- Dual enrollment is related to increased high school graduation;
- Dual enrollment participants are more likely to enroll in college than their non-participating peers;
- Participation in dual-enrollment is related to improved college grade point averages;
- Participation is related to persistence to a second year of college;
- Participation is positively related to credit accrual;
- Students in Career and Technical Education (CTE) programs benefit from dual-enrollment participation; and
- Middle and low-income students benefit more from participation than other sub-groups.

In Virginia, over 30,488 high school students in the 2011-12 academic year earned college credits through dual-enrollment programs, and of those students 28,544 earned credits through community colleges. Virginia's Standards of Accreditation require secondary students be counseled, beginning in middle school, on opportunities for beginning postsecondary education prior to high school graduation, and Virginia's Standards of Accreditation require students in all school divisions have access to at least three Advanced Placement (AP) classes or three college-level courses for dual-credit. School division and college participation in dual-enrollment is further supported by the fact that both public schools and colleges offering students dual-enrollment options are not penalized in state appropriations, with schools receiving average daily membership (ADM) credit, and colleges full time equivalency (FTE) student credit for dual-

enrollment students. Virginia's Plan for Dual-Enrollment, a collaboration of Virginia's public school divisions and community colleges, encourages schools and colleges to offer students dual-enrollment opportunities at no tuition cost.

Beginning in fall 2013, student and parent interest in dual-enrollment as well as AP and International Baccalaureate (IB) options should be enhanced when all school divisions will begin a process of providing a personal Academic and Career Plan for each 7th grade student. These plans, supported in an online format through Virginia's Education Wizard, will include the student's program of study for high school graduation as well as a postsecondary career pathway. Plans will be developed with participation by parents or guardians, and revisited prior to 9th and 11th grades. The planning process will provide additional opportunities for informing and encouraging parents, as well as students, to learn more about the variety of early college options available in rural school divisions through AP and IB programs, as well as dual-enrollment course options available through partnerships of school divisions with community colleges, regional higher education centers and universities.

In 2012, HB 1184 was signed by Governor McDonnell into law, directing community colleges and school divisions to work together to provide a program of study for high school students that will allow them through dual-enrollment or a combination of dual-enrollment and AP classes to earn a one year General Studies community college certificate or an associate's degree by high school graduation. In spring 2013, through the new Governor's Scholar program recognizing high school graduates who attain the General Studies certificate or an associate degree simultaneously with a high school diploma, more than 610 high school graduates in the Commonwealth were recognized in graduation ceremonies as Governor's Scholars. The majority of these students were from rural school divisions.

While Southern Virginia, in particular, has higher levels of dual-enrollment participation compared to other regions in the state, more can be done to expand participation in dual-enrollment throughout rural Virginia, and particularly dual-enrollment in STEM-H courses as a means to supplement math and science options available in school divisions and provide students with a jump start toward a STEM-H college degree. The need to encourage access and success of rural students in programs such as dual-enrollment that afford an opportunity to "try on college" is important given the challenges of rural school divisions in attracting and retaining STEM-H teachers to teach higher level math and science classes and also given research that indicates that early college programs such as dual-enrollment can have a positive impact on access to and attainment of a postsecondary education credential for underrepresented students such as first generation students whose parents did not attend college.

Recommendation:

1. Expand the range of dual-enrollment course options available to students in rural school divisions by directing the VCCS to work with college academic leaders and dual-enrollment coordinators to share with school divisions and other stakeholders opportunities for high school students to take STEM-H and other on-line courses through the statewide Shared Services Distance Learning (SSDL) Program hosted by Northern Virginia Community College.

How It Works:

Launched in 2011, SSDL currently provides more than 616 college courses available online to enrollees from 12 community colleges participating in the program. The benefit to rural students is that college course options available to them are dramatically expanded. For example, students needing foreign language courses to complete an associate degree from Rappahannock or Paul D. Camp Community Colleges can now earn those credits through online Arabic, Japanese, Chinese or Russian classes that may be designed and instructed by community college faculty from any participating college but are offered and transcripted through the local college. SSDL also offers a diverse array of college level STEM classes, including topics in information technology, mathematics, physics and geology. To date, 2,025 students have participated in the online courses provided through SSDL, and this number will significantly increase as SSDL expands to all 23 community college service regions.

SSDL has not been yet used for the purpose of expanding dual-enrollment college course options to high school students; however, with appropriate communication from VDOE and local school divisions to parents, students, counselors and career coaches, SSDL would greatly expand the number and variety of college courses available to rural students. One significant advantage of deploying the partnerships, infrastructure and resources of SSDL for dual-enrollment populations is students would continue to register for courses through their local community college participating in SSDL, alleviating administrative burdens on guidance counselors and local school division personnel who are familiar with their local college dual-enrollment and admissions procedures.

In addition to the online, statewide instruction available through SSDL, rural students should be reminded of the benefits of accessing VDOE's ***Virtual Virginia*** that offers 23 AP courses, free of charge, to any student in Virginia. Rural students and their parents could be informed about both these two significant, statewide resources for online college level courses through R U Ready career and college planning publication, the Virginia Education Wizard, new academic and career planning meetings with students and parents, guidance counselors and career coaches, and other information sources for college and career planning.

Recommendation:

2. Expand current statute addressing Danville, Patrick Henry, Southside Virginia, Virginia Western, and Wytheville Community Colleges, to include other rural community colleges. Approved in March 2013, SB 846 (Stanley) requires the above named colleges to develop policies to encourage greater dual enrollment in career and technical education (CTE) courses that are not at full capacity in terms of community college student enrollment. Rural school divisions and students outside the college service regions identified in SB 846 would benefit from increased access to college-based CTE courses and the law might be expanded to include all rural community colleges.

Key Players:

The key players for this action item would include: Virginia Community Colleges, Virginia Department of Education, Local School Divisions

Case Studies:

National research suggests career focused, dual-enrollment programs can benefit underachieving students and those underrepresented in higher education. Southern Virginia, in particular, has a number of robust dual-enrollment programs targeted to underrepresented populations. Partnerships between Southside Virginia Community College (SSVCC) and neighboring school divisions will result in a record estimated number of 420 high school graduates from divisions served by SSVCC earning a Career Studies Certificate, General Studies certificate, or associate degree simultaneously with earning their high school diploma in Spring 2013.

Universities and regional higher education centers are increasingly important to efforts to expand access to dual-enrollment of rural high school student populations, generally through programs targeted to specific workforce needs. For example, New College Institute has initiated a partnership with Virginia State University (VSU) providing high school students in the Martinsville Region an opportunity to earn up to 20 college credits through an Academy for Engineering and Technology that is ABET accredited, delivered by public school and VSU faculty, and delivered through both classroom and online instruction. This promising dual-enrollment program, offering two programs of study in Engineering and Technology, is noteworthy for its hybrid instructional methods, the rigor of its course offerings, its alliance with a major research university, and access to labs equipped with a list from Commonwealth Center for Advanced Manufacturing (CCAM) and Rolls-Royce and other major manufacturers. Additionally, in line with national research as to best practices in dual-enrollment, the Academy integrates into its curricular offerings career and college development activities such as industry tours, college visits, and internships. In fall 2013, the Academy will offer five different courses, two on line, with enrollments of approximately 20 students per class. An expansion of the Academy to the Center for Advanced Learning and Research in Danville is planned.

National research is available on the impact of dual-enrollment, including its impact on CTE students, but to improve the performance of Virginia's public workforce development system, it is imperative to research and report effective strategies and rate of return for the multiple, diverse postsecondary education options available to high school students. With support from the Virginia Longitudinal Data System (VLDS), one of the Governor's workforce initiatives, University of Virginia (UVA) researchers are currently studying the impact of dual enrollment on high school graduation, college matriculation and college persistence outcomes. This is but one area where VLDS data is being used to inform university research and, ultimately, to inform policy and program decisions for Virginia's education and workforce systems.

Action Item #2: Expand the Pipeline of STEM-H teachers in Rural Virginia including teachers with credentials to teach dual-enrollment

Problem:

The Virginia Department of Education reports for 2013-14 CTE, Mathematics and Science will remain in the Top Ten Critical Shortages of Teaching Endorsement Areas in Virginia, with Career and Technical Education teacher shortages the most acute of these STEM-H areas of study. To expand the number of rural high school students exposed to college level course work in STEM-H fields, including CTE courses, rural Virginia must dedicate itself to "growing its own workforce" of STEM-H teachers who, with some additional graduate or undergraduate

coursework or industry certifications, are candidates to teach dual-enrollment through local community colleges or regional universities. The recent Boston Consulting Group report "Developing an Advanced Manufacturing Workforce for Virginia's Tobacco Region" cites the need to expand dual-enrollment as one of their top three recommendations to position the region's K-12 education system as a strong producer of future advanced manufacturing technicians. Ultimately, expansion of dual-enrollment is contingent upon availability of qualified faculty and instructors.

Included in the Governor's biennial budget, Virginia's 2013 Appropriations Act supports a number of initiatives to recruit and retain STEM-H teachers. These include an appropriation of $500,000 in the first year and $808,000 in the second year to fund a pilot initiative to attract, recruit and retain high-quality diverse individuals to teach STEM subjects in Virginia's middle and high schools. A teacher with up to three years of teaching experience employed full-time in a Virginia school division who has been issued a five-year Virginia teaching license with an endorsement in targeted areas and levels of math, science or technology education is eligible to receive a $5,000 initial incentive award after the completion of the first, second or third year of teaching with a satisfactory performance evaluation and a signed contract for the following school year. Additionally, a teacher holding one of the targeted STEM-H endorsements and assigned to a teaching position in a corresponding STEM subject area and regardless of teaching experience, who is reassigned from a fully accredited school in a Virginia school division to a hard to staff school or a school not fully accredited and who receives a satisfactory performance evaluation and a signed contract for the following year is also eligible to receive an initial incentive award of $5,000. An additional $1,000 incentive award may be granted for each year the eligible teacher receives a satisfactory evaluation and teaches a qualifying STEM subject with the maximum incentive award for each eligible teacher up to $8,000.

Recommendation:

1. Extend current biennial level of funding to Old Dominion University (ODU) to support the Monarch Teach program, based on the national UTeach model, and increase program funding in the next biennial budget to expand the program to a second university in VA.

How It Works:

Old Dominion University's Monarch Teach program replicates highly successful UTeach programs now active in 17 states across the nation. Developed at the University of Texas at Austin, UTeach's mission is to recruit, prepare and retain qualified STEM teachers through undergraduate level teacher preparation and mentoring that emphasizes inquiry, problem and project based instruction and that instills in future teachers a deep subject matter expertise in a STEM field of study. The program's track record for recruiting and preparing university students for teaching STEM-H subject areas is impressive: at University of Texas at Austin, 90 percent of UTeach program graduates enter the teaching profession and 80 percent are still teaching five years later. ODU's first cadre of students in the Monarch Teach program will begin their studies in the program in fall 2013.

The second UTeach program should be housed at a university or regional higher education center that is located in rural Virginia and that provides a significant level of teacher candidates to rural

Virginia school divisions. As was done with the first UTeach program, now based at ODU, the selection of the university will be made through a competitive RFP process.

Recommendation:

2. Initiate a scholarship program through which high school teachers with teaching endorsements in stipulated areas relevant to STEM-H college disciplines and who are teaching STEM-H subjects, including CTE, can apply through their school divisions for reimbursement of tuition and fees for university courses identified by the community college as relevant to the STEM-H teaching discipline for which the teacher is attempting to become credentialed to teach college classes.

How It Works:

VDOE will provide guidelines for distribution and priority of scholarships so as to align with those academic disciplines and school divisions with the most critical shortages of teachers with appropriate qualifications to instruct dual-enrollment or AP courses. Local community colleges will be asked to advise the review process for teacher applicants for scholarships to ensure planned coursework is appropriate to the goal of developing more dual-enrollment teachers and selected applicants are individuals with academic transcripts appropriate to the goal of college teaching.

Players: The key players for this action item would include: Virginia Department of Education, Virginia Community Colleges, Old Dominion University and other higher education institutions offering teacher preparation programs

Case Studies:

The UTeach Institute partners with 35 universities in 17 states. To date, the original program at University of Texas at Austin, has graduated more than 800 STEM teachers. Other universities across the country have produced an additional 800 alumni. Graduates of these programs are projected to teach over 4.8 million secondary students by 2020. Current information and outcomes of UTeach programs are available at http://uteach-institute.org.

Action Item #3: Sustain and expand the use in policy and budget planning of an annual Report Card on Virginia's Workforce System

Problem:

Workforce development programs span nine state agencies and encompass a significant number of federal programs - each with different rules, regulations, funding streams and target populations. Measuring the performance of such a complex system presents a significant challenge. To address this issue, as a part of Virginia Performs, and in collaboration with the nine agency Career Pathways Work Group supporting Virginia's Workforce Council, Virginia's Workforce System Report Card was created to bring together indicators across state agencies in the areas of STEM-H, college and career readiness, postsecondary education, secondary education, and employment and business development. With a special section devoted to manufacturing and plans in the future to expand that section to incorporate other targeted

industry sectors, the report card recognizes the need of critical industries for workers with the right credentials and skills.

Recommendation:

> Virginia's Workforce System Report Card should continue to be produced on a regularly scheduled basis and continually refined and updated with new measures and data as available. Virginia's Workforce System Report Card in conjunction with other workforce data resources should be used to facilitate thoughtful and focused discussion on workforce priorities among government, policy, and education and workforce system leaders. The Report Card should inform the annual work plan of the Virginia Workforce Council.

How It Works:

The recommendation related to Virginia's Workforce System Report Card would be carried out by:

- Using strategic partners, such as the Virginia Workforce Council, the Council's Career Pathways System Workgroup, and relevant stakeholder organizations to explore new measures and industry focus areas, and to refine existing measures annually. The Council on Virginia's Future will continue to produce the report card.

By far the more significant piece of this recommendation is related to strategy development around key indicators. It would be carried out by:

- Presenting opportunities for discussion, additional research, and eventual action based on data from Virginia's Workforce System Report Card and other data tools. Each year this should guide the work of the Virginia Workforce Council at the committee level. The Virginia Community College System, as staff to the Virginia Workforce Council, will develop an approach to integrating strategy development around key metrics and outcomes.

Key Players:

The key players for this action item would include: Governor's Director of Education and Workforce Development, Council on Virginia's Future, The Virginia Workforce Council, and Virginia's Career Pathways Workgroup

Case Studies:

A number of states with strong reputations for workforce development and workforce policy use annual scorecards to guide analysis and decision making by their state Workforce Investment Boards (WIBs) and other major stakeholders in education and workforce development. These include: Washington, Kentucky, Oregon, Massachusetts and Maryland.

Action Item #4: Conduct Public Awareness Campaign to Promote Middle Skills Jobs and the Career Readiness Certificate (CRC)

Problem:

Virginia, like other states, faces an increasing skills gap in middle skills jobs—those requiring more than a high school education but less than a bachelor's degree. Middle skills jobs are often

accessible through certifications, licensures, and apprenticeship credentials as well as community college certificates and degrees. The nature of America's skills gap was recently addressed in State Sector Strategies Coming of Age: Implications for State Workforce Policy Makers, a report jointly produced by the National Governors Association Center for Best Practices and the National Skills Coalition. Closer to home, the Boston Consulting Group report Developing an Advanced Manufacturing Workforce for Virginia's Tobacco Region underscored a pending "skills gap" in middle skills jobs with a projected 1,045 manufacturing jobs in the Tobacco Region to be left unfilled by 2017, due to a shortage of trained and prepared workers for these jobs. The Boston Consulting Report states in order for the Tobacco Commission Region to address current and future workforce needs for "middle skills" technicians and trades workers a focus must be placed on attracting individuals to pursue careers in manufacturing. Other industry sectors, such as energy and health care, report a similar challenge in attracting applicants with the work and career readiness skills to pass pre-employment examinations required by the hiring process. But in no occupational sector is the impending skills shortage more acute than in skilled trades—welders, electricians, machinists—the "most in-demand group of workers" in America, according to Forbes. Whereas 44 percent of all workers in the U.S. are 45 or older, 53 percent of skilled trade workers fall into that age bracket with nearly 20 percent of all trade workers over the age of 55.

With businesses looking to a need to replace skilled trade workers, it is of great concern in Virginia there are fewer high school students completing CTE programs in the manufacturing cluster than in all but one other of the 16 national career clusters adopted by Virginia's school systems. Whereas business management and administration programs in school divisions across the state produce 5,177 CTE program completers a year and marketing programs 3,873, statewide, high school manufacturing programs produced only 828 CTE completers in 2011-12. It should be noted, however, the number of completers in manufacturing in recent years has increased with statewide gains of about 100 manufacturing program completers per year.

The Career Readiness Certificate (CRC), awarded by the Commonwealth of Virginia and ACT, provides a certification of work readiness for the technology sectors most in need of "middle skills" employees. The CRC program provides not only an assessment of core workforce skills but maps those skills to specific occupations in specific industries. In order to move forward business and industry recognition of the certification, thus increasing its value to job seekers and employers alike, information available to business and industry about the CRC needs to be expanded and enhanced. In addition, there is a need to better inform industry as to Virginia's production of emerging workers and the value of job seekers with certifications, including the CRC, and thereby better connect industry with available resources and manpower.

Recommendation:

Calling the attention of communities, schools, parents, and students to the skills gap in "middle skills" jobs and the career opportunities afforded young people who are hard working and ready to move into the industries that most need them demands a public relations campaign. Additionally, by improving the telling of its own workforce story--the Commonwealth's efforts and successes in developing and expanding a pipeline of "middle skills" technicians—Virginia can enhance its attractiveness to businesses and industries seeking to relocate, start a new venture or expand operations. There is also an opportunity to promote career pathways—including those providing industry recognized certifications—into these "middle skills" jobs beginning with the advantages of earning a CRC.

How It Works:

Develop a Request for Proposal (RFP) and select vendor to develop a plan, a brand, and materials for a public information and marketing campaign to be specifically targeted to expanding the pipeline of future workers preparing for "middle skills" jobs, such as skilled trades, where there is demonstrated evidence of a skills gap in both the industry sector and rural region(s). The public relations campaign should focus on careers while providing information and referrals to education, training and employment resources to connect to featured career fields and industries, and the campaign should build on current work being done in this area, such as Virginia Manufacturers Association's Dream It, Do It activities and materials, VDOE's R U Ready publications, Virginia Education Wizard and other efforts. Funds for this effort should be supplemented by private donations from business and industry stakeholders.

Key Players:

The key players for this action item would be: Virginia's Career Pathways Work Group and the Virginia Workforce Council

Case Studies:

A number of states have launched major workforce initiatives that were the focus of ambitious public relations campaigns. Some have directly focused these efforts on driving their message (and their pubic workforce programs) to the skills gap in "middle skills" jobs, and some states have launched statewide campaigns to promote the Career Readiness Certificate (CRC) as a starting point for entering "middle skills" jobs. To date, there is limited data on the impact of these statewide marketing campaigns on outcomes in education or employment.

In Virginia, Race to the GED, launched as a Governor's initiative in 2003, was a successful statewide public relations campaign including various forms of advertising. During the course of the campaign, academic years 2003-04 to 2008-09, the Commonwealth saw an increase of 50 percent of GED passers as compared to pre-campaign years. The success of that campaign is supportive of the premise that a similarly ambitious campaign, targeted to expanding enrollment in education and training "pipelines" to middle skills jobs could have impact on participant enrollment and behaviors.

Action Item #5: Expand regional solutions for addressing the skills gap in targeted industry sectors

Problem:

Even as some regions in rural Virginia are challenged with the highest levels of unemployment in the state, many employers in key sectors have good paying positions that remain unfilled because of the disconnect in demonstrated skills sets of applicants and the requirements of available jobs. Seeking to address this skills gap is the goal of several regional initiatives throughout rural Virginia that have sprung up in recent years. These include career pathways in manufacturing and energy in the Blue Ridge and Southwest regions, respectively, and the Southern Virginia Work Ready Community initiative, led by the Dan River Regional Collaborative with a Steering Committee representing local Workforce Investment Boards (WIBs), Chambers of Commerce, and regional foundations and non-profit organizations.

Recommendation:

The Virginia Workforce Council (VWC) and the Governor's Office will evaluate the Southern Virginia Work Ready Community Initiative

How It Works:

To meet the challenge of helping employers assess applicant skills sets to job requirements and helping job seekers develop and demonstrate "work ready" skills in demand by employers, the Dan River Collaborative has launched a Southern Virginia Work Ready Community Initiative that is driving the number of incumbent, transitional, and emerging workers (or high school students) who attain the National Career Readiness Certificate (NCRC Plus). The NCRC Plus is an industry recognized, portable credential that certifies essential skills for success in the workplace including: Applied Mathematics, Locating Information, Reading for Information, and the "soft skills" of dependability, tolerance, attitude, interpersonal skills, perseverance, persuasion, and problem solving. The NCRC has also been mapped against job requirements for specific occupations—especially "middle skills" jobs—in key industries, so that the NCRC can be used to align foundational skills sets of job seekers and available job positions.

In addition to driving National Career Readiness Certificate Plus (NCRC Plus) attainment by emerging, incumbent and displaced workers, the Dan River Regional Collaborative hopes that its Work Ready Communities initiative will help regional leaders and economic developers tell a better story about workforce development in the region: a story about skills sets and a community's collaborative attempt to increase those skills sets. The potential of the Work Ready Communities initiative to create a specifically rural Virginia story of workforce development is a consideration appropriate to the VWC, with its members well versed in the NCRC and Work Ready Communities.

Additionally, while the Dan River Regional Collaborative has only identified two indicators of work readiness for the Southern Virginia region—NCRC attainment levels by targeted workforce populations and use of NCRC by regional employers—local WIBs and training providers are adopting a practice of using the NCRC as a first step in career pathways to occupationally specific credentials and entry into the skilled workforce. The VWC may choose to consider the impact of CRC attainment on entry into occupationally specific training and certification attainment beyond the CRC in considering the issue of expansion, as well as other participant and community outcomes.

Key Players:

The key players for this action item would include: Virginia Workforce Council, Dan River Regional Collaborative, and Virginia Community College System in the VCCS's role as state administrator of the CRC.

Case Studies

ACT has produced a number of case studies on the impact of Work Ready Communities. Until recently, evidence of the success of these initiatives has been limited to increased NCRC attainment levels in targeted populations and increased use of Work Keys job profiling with some anecdotal evidence of improvements in employer satisfaction levels and job placement rates. However, a recent report of the Southwest Missouri Workforce Investment Board on Average Earnings, Employment, and Retention by National Career Readiness Certificate and Education Levels provides quantifiable data on the impact of NCRC attainment by adult participants in that region's workforce programs on such participant outcomes as average

earnings, entered employment, and retention in employment. An additional recent research report on the impact of CRC attainment on displaced manufacturing workers in Ohio suggests a positive relationship between CRC attainment and pursuit and completion of occupational specific, industry recognized certifications.

Action Item #6: Guarantee that Virginians Served through CTE and Workforce Programs Have Opportunities to Improve and Demonstrate Work and Career Readiness

Problem:

Virginia took a big jump forward in prioritizing the work readiness of future high school graduates who earn standard diplomas when a Governor McDonnell proposed education initiative in 2012 (HB 1061/SB 489) was passed by the General Assembly and signed into law. The new law, effective with the entering high school class of fall 2013, requires all high school graduates earning a standard diploma to earn a state approved workforce credential in order to graduate. Since 2009, the Board of Education has approved over 281 industry recognized certifications, licensures, and other national and state assessments including the VDOE developed Work Readiness Skills assessment and the CRC. Any one of these 281 approved credentials will now serve to meet the new graduation requirement. Over 35,946 high school graduates earned standard diplomas in 2012 or 41.13 percent of the Commonwealth's high school graduates, suggesting the scope of impact of the new law on Virginia's emerging workforce and the school divisions preparing these students.

As school divisions across the Commonwealth prepare to implement HB 1061, nearly 200,000 adults looking for work in the Commonwealth have an equally critical need to demonstrate work and career readiness—basic applied academic skills and occupationally specific skills--to potential employers. HB 1061/SB 489 prioritizes demonstration of work or career readiness by targeted high school populations, but there is no correlating policy requirement that would apply to the displaced and adult workers served by the 14 federally funded programs under the umbrella of Virginia's Workforce Network. The need to demonstrate proficiency in work and career readiness to employers may be most acute for adults without postsecondary education credentials and young adults without much work experience.

Recommendation:

Require publicly-funded workforce programs to prepare plans for how each program will provide participants with an opportunity to attain a credential of work or career readiness

How It Works:

As previously described, the CRC provides a national credential of work readiness; however, for some occupations and some populations of youth and adults, other demonstrations of work readiness may be appropriate and acceptable. For example, the Virginia Employment Commission's Trade Act Adjustment program has collaborated with the VDOE Office of Adult Education and Literacy and with Virginia Commonwealth University to develop a holistic six-month training program--commonly called Pre-PluggedIn VA—that affords trade impacted, displaced workers who test at a 5^{th} to 9^{th} grade reading level with a six-month individualized course of instruction that includes basic skills, GED test preparation, CRC preparation, digital literacy skills, and "soft skills." To allow for demonstration of specific workplace competencies that are aligned with available jobs for this adult population that may not rapidly qualify to earn a CRC but needs to almost immediately return to work, program developers have implemented a

stepping stone approach in terms of credential attainment, following a model developed by Purdue University and Mozilla. The system confers badges that each attest to a demonstrated competency or competencies in occupationally specific skills and in "soft skills." Each of the badges is the result of agreement between education and training providers and employers. Another example of a way in which work readiness credentials might be obtained is formal on the job training programs—from registered apprenticeships to structured internships and cooperative education—that provide evidence of work and career readiness through the nationally recognized apprenticeship credential or through project-based portfolios or structured performance evaluations.

The Governor's workforce initiative to further strengthen the Virginia Workforce Council, HB 2154/SB 1177 (2013 Session) calls for the VWC to "*review and recommend industry credentials that align with high demand occupations."* With this in mind, the Virginia Workforce Council, assisted by the nine agency represented Career Pathways Work Group, is charged with reviewing proposed guidelines to be submitted to the VWC by the Career Pathways Work Group for providing participants of targeted programs within Virginia's workforce system with a credential or other approved demonstration of work or career readiness skills.

Key Players:

The key players for this action item would include: Virginia Workforce Council and Career Pathways Work Group in their role of providing cross-agency staffing support to the Council.

Case Studies

Virginia's vision of its workforce system is singularly ambitious in its incorporation and integration of CTE education at all levels as well as more than 20 state and federally funded workforce development programs. Whereas this subcommittee is recommending a strategy that would cross agencies and programs with responsibilities for workforce development, currently available national case studies and data on the impact of work ready credentials, such as the CRC, are often limited to participants in only WIA programs or a small cluster of workforce programs and, often, these studies delineate impact on a single region rather than a state or multiple regions within a state. Such evidence as exists to support the impact of CRC attainment on entry into employment and higher level credential attainment has been previously cited.