Technology Subgroup Final Report

Subgroup Activity:

The Technology Subgroup of the Governor's Commission on Economic Development and Job Creation first met on June 2nd in Fredericksburg. At this initial meeting the subgroup discussed their approach and vision, and divided tasks among the members.

The subgroup met next on July 9th, again in Fredericksburg. At this meeting the members heard a presentation from CIT on Broadband in the Commonwealth, and the current work the Secretary of Technology's office is doing to apply for grants and create a strategic plan for Broadband for the Commonwealth. The subgroup also heard from VEDP on economic development in terms of research and development. The presentation included VEDP's current incentives for technology and growing sectors in the Commonwealth: energy, advanced manufacturing and information technology. The members also discussed their research, and continued to narrow and focus their recommendations.

On August 11, the subgroup met at the Biotechnology Research Park in Richmond. At this meeting, subgroup members heard from the Secretary of Health and Human Resource's office on Health IT and the Commonwealth's current efforts in this area. The members were also given a presentation on the Department of Partnerships, Innovation, and Commercialization at the University of Virginia. The subgroup began to discuss their final recommendations and focus their recommendations into several areas.

For the final subgroup meeting, the members met at the Microsoft Technology Center in Reston on September 14th. The subgroup heard a presentation on the Modeling, Analysis, and Simulation Center at Old Dominion University, including an overview of the program, its history, its purpose and its needs. The program engages in scholarly research, promotes economic development and supports workforce development. The members then finalized their recommendations and discussed the best way to present them to the Commission and the Governor.

Subgroup members also recognized the value of reaching out to stakeholders for comments, input and discussion and identified the following organizations: The Virginia Technology Alliance and the Ten Regional Technology Councils; Virginia Biotechnology Association ; Association of University Technology Transfer Managers (AUTM); National Business Incubation Association; Virginia Active Angel Investor Network; Mid-Atlantic Venture Association; and National Venture Capital Association.

Analysis:

After hearing presentations and reviewing materials, Subgroup members determined that while the Commonwealth has programs in place to help other sectors, it lacks significant programs and policies directed specifically at early-stage, high growth, tech-based companies. These are the type of 21st century companies that will drive innovation, future economic growth and sustainable jobs in the Commonwealth.

Presentations from VEDP/SRI and material from the Commonwealth Innovation Index being conducted by the Ten Regional Technology Councils and CIT identify unique and common industry clusters. For instance, these reports indicate that energy and green technology industry clusters are being pursued in most regions, while an industry like bioscience has greater emphasis and opportunities in Richmond, Charlottesville and Northern Virginia because of the early investments in those areas. Each region has a unique focuses such as the Lynchburg/Region 2000 area, which is focused on the nuclear and wireless industries.

While these studies are exploring many innovative opportunities within these clusters, they are also bringing to the surface many gaps that are impeding the Commonwealth from taking full advantage of the greater benefits of a technology-based Innovation Economy.

The two primary gaps that need to be addressed are access to capital, including investments and tax credits, and commercialization of research and technology development. The aforementioned industry clusters are attracting energetic entrepreneurs of early-stage, innovative, high-growth companies. These are companies at the early stage of the innovation spectrum between angel investments and more significant investments. Because of their unique nature, even in good economic conditions, these entrepreneurs have difficulty finding seed investments from the private and public sectors in Virginia. Today, the flat economy and frozen capital markets have only exacerbated the problem. The Technology Subcommittee understands that the Business Development Subcommittee is working on a proposal modeled after the Emerging Technologies Fund in the State of Texas. We fully endorse this proposal and advocate for its adoption by the full Commission.

The Subgroup also believes that while there are recommendations that are new programs and funds, consideration should be given to existing programs that have been underfunded.

Vision Strategies:

Virginia must use new and existing technology and resources to position itself to create future technology-based economic development opportunities that spur sustainable job growth. We must promote the use of technology to help us solve many of the challenges we face as a Commonwealth, such as smart transportation solutions, a cleaner environment, more efficient health care delivery, increased educational opportunities for all citizens and a lasting effect on long-term economic stability.

I. Reaffirm financial support for sustainable or increased funding for CIT GAP Fund and tax credits for early stage companies.

II. R&D Strategy - look at ways to establish a statewide research and development strategic plan that clearly articulates the research direction, investment requirements, expected quantitative and/or qualitative returns and obstacles to resolve.

III. Consider how we can attract advanced technology, early-stage investors to Virginia.

IV. Examine how Virginia can implement a refundable R&D tax credit targeted at advanced technology companies, especially those that sponsor research with Virginia universities.

V. Increase the number of investors who apply for the Angel Investor Tax Credit through effective marketing of the program.

VI. Consider how to increase biotechnology infrastructure, including additional bioscience "wet-lab" development.

VII. Examine the Technology Business Commercialization Programs (Business Incubator Program).

VIII. Provide an outline for an all-up Chief Executive marketing/public relations campaign to promote Virginia's assets around job creation and viability for formation of new, organic businesses.

Technology Subgroup Final Recommendations

Recommendation #1: Access to Capital

This is the most difficult environment for raising capital in decades. This challenge is particularly difficult in the development of biotech and advanced technology firms at the earliest stages of formation. Several states currently offer innovative solutions to this problem leveraging private sector participation and revenue streams decoupled from the general appropriations process. One solution is to develop a program that would incentivize insurance companies to make investments today in targeted companies in return for tax credits down the road. Maryland Governor Martin O'Malley recently announced a similar program called "*Invest*Maryland" with the intent to target more than $100 million in venture funds for the bioscience & advanced technology industries.

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 due in

2015. The concept is similar to the Small Business Investment Company Credit offered by Delegate Merricks during the 2010 legislative Session. This program would get capital flowing to high growth, high wage, advanced technology firms now when they need it the most.

How the Program Works:

The Commonwealth offers tax credits to insurance companies. For every $1 offered, insurance providers that pay taxes to the state can receive an up-front discount on the credit for investing in the program.

Tax Credit Distribution:

- Participating insurance companies receive the tax credits when capital is contributed but cannot start using them until 2015.

- Tax credits will be eligible for use starting in 2015 at an amount of approximately one-fifth of the total amount of committed tax credits.

- For example, in Maryland, they expect to sell tax credits for $.70 per $1. At one-fifth of the total raised, participating insurance companies would be receiving approximately $29M in credits per year for five years.

Other approaches to fund the Virginia Venture 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.

How the Funds are Deployed:

The funds raised by the Venture Virginia program would be targeted at programs that commercialize qualified advanced technologies in Virginia. The funds raised would be invested in the following priority technology-based economic development initiatives:

- **An Emerging Technology Fund:** This program being developed by the Business Recruitment/Development Subgroup of the Governor's Economic Development and Job Creation Commission.

- **An Advanced Technology Convertible Loan Fund:** This program, based on the successful North Carolina initiative, 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, mirrored by a successful North Carolina initiative, would loan up to $500k paid out over 12-18

months based upon developmental milestones of qualified, advanced technology companies.

- **The Commonwealth Research Commercialization Fund (CRCF):** An existing structure for state funding that leverages federal and private investment to commercialize technologies in the Commonwealth.

- **Wet Lab and Incubator Fund:** A dedicated fund for wet-lab development, relocation incentives, incubator programs and/or proof-of concept funding initiatives.

Benefits:

- Provides an influx of capital and deal flow today when the economy needs it the most.
- Delays fiscal impact to the state until 2015.
- Generates payroll, sales, business and corporate income taxes.
- Attracts out of state venture capital funds to invest in Virginia.
- Creates high-paying, full time jobs.

Refundable Research & Development Tax Credit:

Virginia is one of only twelve states that do not offer an 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. In 2010, of the 38 states that offer an R&D tax credit, seven are refundable and four others are transferable.

How the Program Works:

For example, Connecticut has an R&D tax credit that is simple *and* refundable under certain circumstances. The state offers a "non-incremental" credit of between 1 percent and 6 percent on qualified research expenditures (federal definition), scaling upward with the level of expenditure, along with a special 6 percent credit for qualified small businesses (defined as gross income less than $100 million). The state also offers a credit of 20 percent on the increment in qualified research expenditures over the base year, again per federal definitions. For small businesses (defined as grossing less than $70 million), the state will refund in cash 65 percent of the value of R&D credits that cannot be used for lack of tax liability, in lieu of a carry-forward option. The program is as of right, i.e., the firm automatically receives the credit if it qualifies. In some states the credit is discretionary.

We strongly propose 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 percent of the value of R&D credits that cannot be used for lack of tax liability, in lieu of a carry-forward option.

Benefits:

- Ends Virginia's competitive disadvantage by adding this important incentive tool for advanced technology firms
- Provides needed capital for technologies invented at Virginia universities that would otherwise never be commercialized and create jobs or add to the tax base.

Recommendation #2: Advanced Technology Relocation Fund

Small business is the driver of true long term job growth. If Virginia wants to be competitive, we need to be an attractive home for small and mid-sized successful, high growth, high wage 21st century industries.

Currently, Virginia has few incentive tools available that specifically target companies in this industry. This modest program would provide at least one program that could be advertised to attract innovative companies from Maryland, North Carolina and Pennsylvania.

This fund would develop a targeted relocation program for small, high-growth, advanced technology companies. The program could be promoted as the "Virginia Advanced Technology Relocation Fund" in VEDP and allies' marketing materials.

The Subgroup recommends appropriating funds to off-set the relocation costs for highly paid executives from advanced technology firms who move to Virginia.

How the Program Works:

- Discretionary cash grant award to relocate company headquarters from another location outside the Commonwealth.
- Cash grant award may be used for relocation of high wage executives or equipment and furnishings from old location to new location as well as any expenses incurred in exiting old business location and establishing the new office location in the Commonwealth.
- Recipients must move their headquarters to the state and commit to remaining in Virginia for a pre-determined term.
- Qualification for companies eligible to receive grant funds would be based on a targeted list described in the Angel Investment Tax Credit.

Benefits:

- Generates payroll, sales, business and corporate income tax growth
- Attracts out of state, advanced technology companies to Virginia
- Creates high-paying, sustainable jobs
- Fiscal impact is small and state recovers investment quickly through payroll, corporate income and sales taxes

- Provides a new incentive tool for VEDP to promote at trade shows and in media campaigns

Recommendation #3: Virginia Biotechnology Wetlab Facility Construction & Loan Guarantee Fund

Biotechnology research and production facilities are highly specialized (e.g., wet labs, GMP-certified and clean rooms) with an extreme cost differential over normal office and light industrial facilities ($250-$350 per s.f. versus $30-$75 per s.f.). Most biotechnology companies are still small (early to mid-stage) with high research and development costs and significant capital needs. The private sector is "risk averse" to meeting these facility needs because of high development costs, specialized design, and inability to amortize improvements over short lease terms. A lack of available facilities that can be outfitted to meet the needs of biotech companies and to finance the improvements is an impediment to the growing life sciences industry.

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

Benefits:

- Will create new biotech industry jobs in Virginia by attracting companies that will not wait for facilities to be built on "greenfield" sites.
- Alleviates shortage of wet lab space for biotech companies in the Commonwealth.
- Allows Virginia to attract companies by having product "in place" versus showing prospects raw land which will add 12-15 months to the occupancy timeline.
- Allows Virginia to compete with other states implementing various types of loan and lease guarantee or grant programs for biotechnology facilities.

Administration:

- Bonds could be issued either by the Virginia Public Building Authority or another entity such as the Virginia Biotechnology Research Partnership Authority.

Prospective projects would be competitively selected based upon review by a panel appointed by the Governor and the General Assembly. Projects would be evaluated based on location, project costs, local contributions and leverage (land donation, site improvements, etc), market studies or assessments, leasing and business attraction projections, and an exit strategy (how the Commonwealth recovers the costs). In the case of shell facilities, utilization of standard building plans would be recommended.

The Subgroup recommends funding a new economic development program to finance 2-3 biotechnology "shell" facilities (approximately 25,000-30,000 square feet in size). 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 in such a way so that once the facilities are built and fully leased, they could be sold to real estate investors with the proceeds being earmarked to go back into a revolving fund to build new facilities over time.

Recommendation #4: Virginia 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. Businesses started in organized incubators utilizing industry best practices have a much higher success and survival rate. According to the National Business Incubation Association (NBIA):

- 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 or immediate area.

Knowledge-based companies often face unique challenges including protecting their intellectual property, regulatory hurdles (e.g. FDA approval), dependency on non-traditional sources of capital (Venture Capital Investments, Angel investors, etc.) as well as exit strategies such as licensing or Joint Ventures with very large multi-national companies. However they tend to create jobs with much higher average wages. According to the U.S. Small Business Administration, 64% of all new job creation in the U.S. over the past 15 years has come from small businesses, which also account for over 44% of all high tech jobs in the country.

The Virginia Biotechnology Research Park is an excellent example of this success. In 15 years since the Park opened over 68 companies have been started in the incubator, and the Park's Biosciences Development Center has been recognized globally for its best practices and successes. To date, companies in the incubator have raised over $425 million in equity financing, licenses, grants and other sources of capitalization. The Park has 3 publically-traded graduates among its alumni.

How the Program Works:

Under the direction of a Board of Directors, a typical technology incubator or commercialization center will be organized as a non-profit, 501-c-3 entity easily formed under the Virginia Non-Profit, Non-Stock Corporation sections of the Virginia Code. Depending upon the focus of the incubator program (e.g.; biotechnology, "GreenTech/CleanTech" companies, IT, etc.) space can usually be found and adapted in existing facilities which can be leased versus using program proceeds to invest in the capital cost of a building. Typical partners for the incubators include local governments, commercial real estate owners, vendors, suppliers and others who see and support the economic development benefits and the longer term potential for

return on investment. Support from the Commonwealth will typically be used to 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 the best practices of the NBIA. Those criteria include:

- Experienced incubator director and management with hands-on experience in forming and building successful technology businesses in the applicable sectors;
- Business community support for the incubator in the form of sponsorships, mentoring, governance and education;
- Affiliation (or cooperative relationship) with one or more higher education institutions which are willing to provide support in the form of cooperative research, IP licensing, business strategy development, etc.
- Network of entrepreneurs, professionals, professional advisors, companies, non-profits and other resources that the incubator can call upon to provide support and direct assistance to companies in the program;
- Adequate resources from a variety of public and private sources to create a sustaining and ongoing program;
- 1-2 "entrepreneurs-in-residence" with experience in building technology-based businesses from early-stage through intermediate exit points, capable of guiding founders through the early stages of forming and building a successful business;
- Access to and adequately funded seed and early-stage investment fund affiliated with the incubator which can bridge financing of companies in the program;
- An established program and network of angel investors who are equally motivated by personal investment goals as well as supporting technology-based economic development in their region.

Benefits:

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 the above standards and metrics and through partnerships and affiliated agreements, and would result in a 5:1 return on state investment.

- A minimum of 10 new technology companies per incubator at the end of the three year period.
- A minimum of 50 new jobs from the ten companies per incubator by the end of the three years.
- An average salary for all new jobs that is approximately 35% greater than the average wage in the communities where the incubators are located.

Recommendation #5: Better Marketing and Awareness of Virginia's Incentives for Technology Innovation and Entrepreneurship

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

To realize the potential ROI in 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, and their advisors, such as legal and accounting professionals who are key team players in company formation and growth.

Such a marketing plan would include qualitative research with key stakeholders and decision makers in the venture investment, technology council and entrepreneurial communities to better understand how to reach these audiences with information and a call to action. Research-based marketing plans have proven to be highly effective.

The McDonnell Administration's Declaration of Innovation: Achieving a new technology-based economy driven by innovation.

As Virginia continues to experience economic challenges, the McDonnell Administration has an opportunity to implement cost-effective and immediately valuable actions to stimulate the development of an innovation economy and new sustainable job growth. Two hundred-thirty four years ago, Thomas Jefferson wrote the Declaration of Independence, signaling a new beginning for a new nation driven by innovative ideas. Today, Governor Bob McDonnell has the opportunity to extend the Jefferson legacy by creating a new "**Declaration of Innovation"** that sparks new opportunities in a new economy driven by innovation in technology.

What follows is an action plan that combines ideas of two of the Governor's Commissions – Higher Education Reform, Innovation and Investment and Economic Development and Job Creation – that can give this new Declaration of Innovation some tactical steps along an innovation continuum and turn it into reality.

This action plan has been designed so that most of these initiatives can be developed and accomplished in less than twelve months using existing marketing budgets for the public declaration and the resources of the Center for Innovative Technology and the Universities for the strategic plan development

Declare Virginia to be "Open for Research and Development"

Virginia has world-class research universities that conduct over $1 billion annually in research expenditures. Like all states, Virginia strives to improve its national rank for R&D expenditures.

1. As part of the Governor's new Declaration of Innovation, Virginia must announce to the nation and world that we are "open for research and development." This is a marketing campaign to the profile of the Commonwealth as a destination for research and development activities.

2. Virginia must produce a consolidated statewide research and development strategic plan – a business plan (in consultation with the Virginia Economic Development Partnership) – that substantiates the marketing message.

Declare Virginia to be "Open for Technology Company Formation"

Unlike Massachusetts and California, Virginia does not have the reputation as an epicenter of innovation. In comparing Massachusetts and Virginia on new high growth company formation, Virginia lags by 75% even though the two states are Gross State Product (GSP) peers. Virginia is primarily recognized for its community of systems-integration companies that serve the federal government.

To improve perceptions of Virginia's reputation as an emerging epicenter of innovation:

1. The Commonwealth must address the needs of early stage technology companies to obtain capital by supporting the facilitation of seed stage capital until the private sector ecosystem satisfies the pending demand. To facilitate the development of a strong investment community, a respected neutral organization with experience in this area should be used to conduct a professional, objective evaluation and investment validation process that delivers to investors a complete analysis for their investment consideration.

2. Similar to the above R&D recommendation, the Governor can declare that "Virginia is open for technology company formation" kicking off a marketing campaign that celebrates entrepreneurs and the creation of new technology companies. Moreover, the Governor and Cabinet can host quarterly meetings with entrepreneurs to discuss ideas for accelerating company growth and regional location.

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. This can be orchestrated and accomplished within 60 days.

Also announce innovation prizes; 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.

The Declaration of Innovation will deliver the following value in less than 12 months:

- Produce 20 to 30 new technology companies annually.
- Immediately raises Virginia's national profile as a destination for R&D and technology company formation.

- Resolve private sector concerns about lack of knowledge of university R&D initiatives.
- Provide elected officials with R&D background information resulting in more deliberate capital investment.
- Empower local, state and federal government officials to jointly cooperate to attract new research opportunities for the Commonwealth.
- Facilitate inter-university partnership for cooperative grant pursuit.
- Attract new high technology start-up companies.
- Attract new private investor investment .

While not as glamorous as other state's hundred-million dollar funding announcements, this action recognizes the current economic challenges facing the Administration and General Assembly 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.