REPORT OF THE

Joint Commission on Technology and Science

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

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Richmond, Virginia
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I. COMMISSION HISTORY AND BACKGROUND

A. HISTORICAL SUMMARY OF SCIENCE AND TECHNOLOGY UNITS IN THE VIRGINIA LEGISLATURE

In 1977, funding was received from the National Science Foundation to incorporate scientific and technological information into the legislative process. House Joint Resolution 7 (1977) established the Legislative Scientific and Technology Advisory Committee to plan and implement the Legislative Science Advisor project. In 1978, a staff science position was created in the Division of Legislative Services. He provided research on matters related to science and technology to legislators in both houses, completed studies requested by standing or study committees and Division staff, and served as staff to standing committees and subcommittees dealing with science and technology. The position terminated about two years later when the advisor left the Division.

The 1979 "Report of the Legislative Scientific and Technological Advisory Committee to the Governor and the General Assembly of Virginia" (House Document No. 15 (1979)) recommended that the Committee provide research, assessment, and recommendations on technologies applicable to the legislature and the legislative process; study how to tap the private sector into valuable sources of technical information; and study appropriate issues as the need arises.

In 1983, the governor established the Task Force on Science and Technology in Virginia. This task force was established to recommend ways in which Virginia could effectively retain and attract high-technology enterprises and assist citizens, communities, and institutions in preparing for societal changes resulting from the technological revolution. Its major recommendation was to create a policy advisory group of leaders from industry and education to monitor state agencies' performances in carrying out Task Force recommendations; provide guidance to the Governor and state agencies; assist in mobilizing efforts on the federal level; serve as ambassadors to high-technology industries considering a Virginia location; and review the plans and performance of the Division of Industrial Development in technology matters. The Task Force recommended that the group be active in formulating policy, have high visibility, and be specifically identified with science and technology, and that the Governor should be closely involved, perhaps as Chairman.

Chapter 782 of the 1984 Acts of Assembly created the Innovative Technology Authority Act (§ 9-250 et seq.), which established the Center for Innovative Technology.

The 1988 "Report of the Joint Legislative Audit and Review Commission on Information Technology in Virginia State Government" (Senate Document No. 3) recommended that the General Assembly establish a supervisory board, called the Council on Information Management with a permanent, continuous planning process. The Council would set Virginia's information technology course and have authority to develop an information technology plan and establish policies to address information technology issues.

Chapter 424 of the 1988 Acts of Assembly created the Council on Information Management (§ 2.1-563.28 et seq.).

The 1993 "Report of the Review Committee on the Performance and Potential of The Center For Innovative Technology" (Senate Document No. 16) concluded that Virginia's strategic plans for science and technology are insufficient and recommended that the General Assembly adopt a resolution creating a task force to coordinate development of a statewide strategic plan for science and technology.

House Joint Resolution 390 (1993) established the Task Force on Science and Technology for two years to report on the status of the recommendations made by the 1983 Governor's Task Force on Science and Technology, coordinate the development of a statewide strategic plan for science and technology, and examine whether a permanent council on science and technology should be created.

House Joint Resolution 447 (1995) continued the Task Force on Science and Technology for another year and requested the Task Force to consider recent and ongoing initiatives of other organizations focusing on science and technology issues. Also, House Joint Resolution 714 (1995) asked the Task Force to study opportunities and incentives for information and communications technology to meet public needs.

The 1996 "Report of the Joint Legislative Task Force on Science and Technology in Virginia" (House Document No. 46) recommended that a joint commission for technology and education be established; the Task Force be continued to review technology dispersion and public policy; and the Center for Innovative Technology be considered the lead mechanism for planning and representing Virginia in economic development matters dealing with science and technology.

B. THE JOINT COMMISSION ON TECHNOLOGY AND SCIENCE (JCOTS)

To continue the work begun by the Task Force on Science and Technology established under House Joint Resolution 390 (1993), the 1996 General Assembly adopted House Joint Resolution 195, which created a joint legislative subcommittee to study science and technology. The subcommittee reported to the Governor and the 1997 General Assembly in House Document No. 81 (1997). The creation of the Joint Commission on Technology and Science ("JCOTS" or "the Commission") was included among the recommendations of the subcommittee. Created by the 1997 General Assembly through House Bill 2138, JCOTS is a permanent legislative commission charged to study all aspects of technology and science, to promote the development of technology and science in the Commonwealth of Virginia through sound public policies, and to report its findings annually to the Governor and the General Assembly. (See Chapter 11 of Title

30 of the Code of Virginia, § 30-85 et seq.) JCOTS, which consists of twelve legislators (seven Delegates and five Senators), submitted its first report to the Governor and the 1998 General Assembly in House Document No. 89 (1998); and maintains a website at http://jcots.state.va.us/.

At its meeting on June 6, 2000, JCOTS adopted its 2000-2001 workplan. (See Appendix 1). The workplan identified six issues for study through the establishment and work of advisory committees, co-chaired by JCOTS members: Internet Governance (Senator Bolling and Delegate Nixon, co-chairs); Economic Development (Delegates Bennett and Purkey, co-chairs); Electronic Government (Senators Newman and Ticer, co-chairs); the Digital Divide (Delegates Christian and Plum, co-chairs); the Uniform Computer Information Transactions Act (Senator Schrock and Delegate May, co-chairs); and Criminal Law (Senator Howell and Delegate O'Brien, co-chairs).

During the period from July to December 2000, advisory committees held 17 meetings. (See Appendix 2) Approximately 108 people participated in JCOTS' work through membership on advisory committees. (See Appendix 3) Advisory committee reports, presented to JCOTS at meetings on November 16, 2000 and January 9, 2001, were adopted by the full commission.

JCOTS' workplan also identified new issues to be introduced at full commission meetings through testimony and presentations, possible field trips, and other issues to be monitored throughout the study year. To accomplish these objectives and establish its legislative agenda, JCOTS met as a full commission five times from June 2000 to January 2001. At its meeting on January 9, 2001, JCOTS finalized its legislative and budget recommendations for the 2001 Session, which included 20 bills and resolutions, and one budget amendment. (See Appendix 4)

II. ADVISORY COMMITTEE REPORTS

A. ADVISORY COMMITTEE ONE (INTERNET GOVERNANCE)
Senator William T. Bolling and Delegate Sam A. Nixon, Jr., Co-Chairs

Charge: To study the government's role in regulating activity conducted on the Internet. For example, the committee studied the issues surrounding employment in the digital age, from the use of company-owned computers for private activities to whether an employee manual posted on a company's intranet constitutes a contract. In addition, the committee studied House Bill 61 (H.B. 61), a bill to declare certain transactions that facilitate Internet gambling void, and House Bill 1491 (H.B. 1491), a bill designed to recognize web sites as personal property and create new civil causes of action to redress certain conduct that injures web site owners.

1. Summary

Advisory Committee One met twice during this interim on August 29, 2000, and October 18, 2000. The Committee was co-chaired by Senator Bolling and Delegate Nixon. It was composed of 10 citizen members. The committee addressed two bills continued to the 2001 Session of the General Assembly by the House Committee on Science and Technology and a proposal on electronic employment law.

a. Internet Gambling

The first bill that the committee addressed was H.B. 61 on Internet gambling. Delegate Robert Marshall, the bill's patron, participated in the discussion via telephone at the August 29 meeting to support the bill. Delegate Marshall stated that other parts of the Code distinguish between what is illegal on the Internet and what is illegal in the "real world." He believes that this difference could create an ambiguity in § 11-14 of the Code of Virginia, which invalidates gambling contracts. Delegate Marshall stated that he introduced this bill to ensure that § 11-14 would apply to Internet gambling.

Rick Olson, the Manager of State and Local Government Relations at Capital One, addressed this bill. According to him, this bill would force companies that facilitate financial transactions over the Internet to monitor and police the Internet. They would have to determine whether gambling is occurring on a website, if so try to prevent these transactions from taking place or risk being held liable for transactions initiated by their customers. If the credit card user lost money, under this bill, he would not be liable for the debt, leaving the credit card company with the burden of attempting to seek payment. Most of the online gambling sites are based offshore, making it even more difficult to collect. In essence, credit card companies would have to monitor web sites and attempt to get them to change their content if any possibility of gambling is involved.

Finally, Mr. Olson raised concerns over uncertainties that the bill would create if enacted into law. He questioned the feasibility of determining a gambler's location. Presumably, H.B. 61, even if enacted, would not apply to gamblers in other states. An uncertainty exists when a gambler is a Virginia resident at his job in Maryland or a Maryland resident at his job in Virginia. Mr. Olson asked if both of these people would be covered under the bill.

Josh Levi, Public Policy Manager of the Northern Virginia Technology Council (NVTC), spoke next. Mr. Levi was troubled that this bill treats Internet transactions differently than other electronic transactions using landline telephones and wireless technologies. He was also concerned that the bill as written might also affect sweepstakes, giveaways, and even other types of payments, like debit cards and e-cash. These fledgling companies will be affected with legal bills in trying to determine whether they are covered.

After discussion about the merits and necessity of the bill, the committee postponed a recommendation until the next meeting. Delegate Marshall could not participate in the October 18 meeting. Therefore, the committee decided that it would take no action.

b. The Virginia Website Protection Act

The committee next addressed H.B. 1491 and Senate Bill 767 (S.B. 767), the Virginia Website Protection Act. Senator Patricia Ticer, the bill's Senate patron, and Delegate Jeannemarie Devolites, the bill's House patron, presented the bill along with constituent Michael Horwatt, the bills' author. The bills are designed to protect an individual's or company's website. These bills would afford civil damages as opposed to the criminal penalties established by the Computer

Trespass Law. They would create a tort and designate the place of the wrong as Virginia for those web site owners who choose to register their web sites in Virginia.

The bills would give the registration task and authority to the State Corporation Commission (SCC). While no representative from the SCC was present, Delegate Devolites informed the committee that the SCC supports the bills.

The committee expressed several concerns about these bills. First, the bills do not define "bypassing a home page," an act the bills would prohibit. As written, these bills may prohibit the practice known as deep linking. In addition, the bills seek to designate websites as personal property. This change would subject websites (and all of their components, such as domain names) to the jurisdiction of bankruptcy courts; domain names are currently considered a service in Virginia and not subject to the bankruptcy court's jurisdiction.

On behalf of the NVTC, Josh Levi expressed several concerns with the bills as presented. He suggested to the committee that the bills attempt to create a property right in an area preempted by federal law, duplicate existing law and may be unconstitutional on due process and free speech grounds. For these reasons, the NVTC opposed the bills.

After discussion about the bills, the committee postponed a recommendation until the next meeting. At its October 18 meeting, at the request of Delegate Devolites, the committee decided to take no action. Delegate Devolites informed Delegate Nixon and Director Goldstein that she planned to remove the House bill from consideration and redraft it to more narrowly address the problems that the bill was designed to address and the concerns raised at the first committee meeting.

c. Electronic Employment Issues - The Notice of Electronic Monitoring Act

Then, the committee opened up the meeting to address issues of concern to the members of the committee and the people that they represent. Rodney Glover, an attorney and member of the committee, introduced the committee to the Notice of Electronic Monitoring Act (NEMA). NEMA is designed to ban companies from secretly monitoring employees' electronic communications. Although it was introduced in the 106th Congress (H.B. 4908, S. 2898) and in several state legislatures, including California, Delaware, Kansas, Maryland, Michigan and Minnesota, neither the Congress nor any of the states have enacted the bill. To date, there are no state or federal laws requiring an employer to notify an employee before monitoring.

Mr. Glover explained the need for guidelines outlining permissible practices. The question of privacy expectations in the workplace is still being formulated for real world situations (e.g., employer-provided lockers). In the cyberworld, these issues are even less clear. For example, if an employer allows employees to use the company e-mail for personal use (with a folder marked "personal"), does that employee have an expectation of privacy? If an employee used the company network to access his private America Online (AOL) account on his lunch break, can the employer monitor this activity?

Employers have concerns as well. They can be held liable for certain actions of employees. For example, in certain circumstances, employers can be held liable for creating a hostile work environment when an employee e-mails pornography around the office, even if the employer has no knowledge. In addition, according to Mr. Glover, 92 percent of employers and 82 percent of employees favor NEMA.

The committee debated these issues. Afterwards, Senator Bolling and Delegate indicated that the issues should be addressed in public hearings before the committee makes a decision on such complex issues. The committee tabled the debate until a future time.

2. Recommendations

Advisory Committee One recommended:

1. That the Commission make no recommendation on H.B. 61 (Internet gambling); and

2. That the Commission make no recommendation on H.B. 1491 or S.B. 767 (Virginia Website Protection Act).

B. ADVISORY COMMITTEE TWO (ECONOMIC DEVELOPMENT)
Delegates William W. Bennett, Jr. and Harry R. Purkey, Co-Chairs

Charge: To study the Commonwealth's economic development of its information technology, biotechnology and space industries. Among the issues that this committee studied were the protection of intellectual property rights and the transfer of technology developed by, or in collaboration with, public institutions to the marketplace for commercialization. In addition, the committee studied House Bill 710 (H.B. 710) and House Bill 711 (H.B. 711), bills designed to protect domain names and include them in the definition for trademark infringement.

1. Summary

Advisory Committee Two met three times during this interim on October 12, 2000, October 30, 2000 and December 5, 2000. The Committee was co-chaired by Delegates Bennett and Purkey. It was composed of 23 citizen members who possessed a wealth of knowledge in the issues affecting the aerospace, biotechnology and information technology industries. The committee focused on intellectual property, workforce development, and the biotechnology sector.

Delegate Purkey began the first meeting by discussing a few of the concerns affecting the development of today's hi-tech economy. He quoted President Clinton, stating that there is no doubt that Internet activity will be regulated and taxed; the question is how to do it (e.g., What rates will apply? Whose principles will govern?). Enforcement is also problematic because the Internet has no geographic boundaries, whereas regulation and taxation are grounded in geographic boundaries. Today's businesses need a predictable legal environment; while we are progressing, we have a long way to go.

a. Intellectual Property

i. Overview of the 1999 Interim Study

Director Goldstein presented an overview of last year's discussions on intellectual property transfers. During the 1999 JCOTS study, the Advisory Committee Two heard testimony from its neighbors, North Carolina and Maryland, about how they deal with the issue of commercializing the intellectual property of state research universities.

North Carolina's Legislature formed the Technology Development Authority, Inc. (TDA), a non-profit organization primarily funded by the legislature. It focuses on entrepreneurial support, investment capital, and research commercialization. The TDA defines research commercialization as a research university's development of copyrightable or patentable technology that is then transferred to a private business that will further develop the technology as a commercial product. It acts as a facilitator in transferring technology to North Carolina-based companies. For smaller companies, it also operates the Centennial Venture Partner, a $10 million venture capital fund that invests in companies commercializing technologies developed at North Carolina's research universities. North Carolina also gives a tax credit, which equals 25 percent of an investment to investors in small technology businesses.

In Maryland, research universities are not as cooperative with business in transferring technology as they are in other states. However, Maryland is trying to remedy this. To draw more world-renowned scientists to its institutions, the legislature established the Maryland Venture Capital Trust (MVCT). The MVCT is funded by state and local pension funds and by other venture capital funds. At least half of the funds are given to Maryland companies. Other funding programs help draw world-renowned scientists to Maryland's research universities (e.g., by helping to pay salaries and helping to commercialize work). To help commercialize the intellectual property, the Maryland Legislature also established the Enterprise Investor Fund (EIF), which invests in biotechnology companies that are started in Maryland. An initial $250,000 investment by the state resulted in a $28 million gain to the industry when the start-ups went public.

New and relocating biotechnology companies have been choosing to locate in Maryland because it invests more money and makes a greater effort to attract these companies. As a result, Virginia is losing businesses and workers to Maryland. William Small, the former Director of the Virginia Biotechnology Association made several recommendations to the committee. He recommended:

a. the creation of a transferable research and development tax credit program (an attempt was made with H.B.1667 (1999), but the bill was not reenacted in the 2000 Session as the bill required);

b. the creation of a sales and use tax exemption for materials and equipment purchased for use in researching, developing and manufacturing biotechnology products;

c. the creation of a nonrestrictive, small, biotechnology business loan program and a bioscience venture capital fund;

d. investing in research universities so that they can attract top researchers; and

e. improving the technology transfer policies of the research universities (they vary significantly; universities are not aggressive in commercializing inventions; small companies cannot afford the up-front costs).

Representatives from Virginia universities and the business community then addressed the issue of intellectual property transfers. One obstacle to resolving the issue is the divergent perspectives of the parties involved. The universities believe that their primary role is to educate, not to innovate. For example, in research and development (R&D), faculty members tend to want to publish findings for academic recognition whereas businesses want to keep them secret and commercialize the product to maximize profit. They believe that if university personnel create intellectual property, the university owns it; if industry personnel create it, the industry owns it; and if both create it, they jointly own it (co-equal owners of 100 percent). The universities tend to want to grant non-exclusive licenses for the greater public good; businesses tend to want exclusive licenses for a competitive advantage.

The universities supported their view by stating that they charge less than market value for licenses due to federal funding restrictions. Businesses do not pay for indirect costs of the research (e.g., faculty supervision of graduate students). To solve this issue, they recommended programs to help businesses work with the universities and funding technology transfer offices within the universities.

Business representatives cautioned the committee about relying on venture capital funds stating that they are concentrated in Northern Virginia and that state-sponsored venture capital funds can become too political. They also stated that current laws are too limited to help generate the investments needed.

During the 1999 Session, the legislature passed a resolution directing the Secretary of Technology to conduct a study and develop a coordinated R&D policy for the Commonwealth (Senate Joint Resolution 502). The Virginia Research and Technology Advisory Council Advisory Commission (VRTAC) is studying this issue. During the 2000 Session, JCOTS recommended a resolution directing Center for Innovative Technology (CIT) and the Virginia Biotechnology Research Park Authority to study the feasibility of establishing a state-sponsored venture capital program for the biotechnology industry (House Joint Resolution 35). Upon their completion, these organizations will present the results of their studies to the committee for further discussion.

ii. Intellectual Property Transfers - the VRTAC Report

In the 1999 Session, the General Assembly directed the Secretary of Technology to study and develop a coordinated research and development (R&D) policy for the Commonwealth (S.J.R. 502). VRTAC conducted this study and reported its preliminary findings to the committee.

VRTAC was formed in June 2000 to develop plans and programs to implement a comprehensive R&D strategy to ensure the Commonwealth's global economic competitiveness. The mission of VRTAC is to promote technology-based economic growth in the Commonwealth by advancing its university, industry, and not-for-profit research capability and by improving the climate for growth of technology-based industry. The Commission consists of people from industry, universities and government.

The study focused on research commercialization, a research university's development of copyrightable or patentable technology that is then transferred to a private business for commercialization. The study made a few key findings: that significant communication problems exist between technology transfer offices, faculty and the business community; that businesses do not understand the limitations universities have in selling intellectual property; and that the Code of Virginia and interpretations thereof create a roadblock to commercialization.

According to Brandon Price and Bob Schwartz, members of VRTAC, VRTAC made six recommendations to resolve this issue. First, they recommended that research universities develop "common term sheets" for their agreements. These documents should facilitate efficient and uniform contract negotiations and make the Commonwealth an easier place for companies to conduct business.

Their second recommendation was to amend § 23-4.4 of the Code of Virginia. Currently, a research institution can transfer any interest it has in intellectual property. However, it is required to obtain the Governor's prior written approval if the property was developed "wholly or significantly through the use of state general funds" and the property was developed by an employee within the scope of his assigned duties or is being transferred to a for-profit company. Pursuant to § 23-4.4, the State Council of Higher Education of Virginia (SCHEV) was supposed to define the terms "significant use of state general funds" and "scope of his assigned duties." They recommended removing these restrictions.

Delegate Bennett asked if this change would remove the accountability to the Commonwealth and the taxpayers. VRTAC representatives responded that the restrictions are ambiguous because SCHEV never defined the terms. In addition, the universities have never petitioned the Governor for approval.

Their third recommendation asked the Center for Innovative Technology (CIT) to complete and implement a user-friendly, website based, statewide, comprehensive intellectual property database, including the Commonwealth's research universities and federal laboratories. The Daily Evaluation and Licensing Software (DEALS) system would enable the universities to keep track of their patents and provide a system for companies to determine what is available at each institution. This system would make it easier to match research institution-owned patents with the companies that desire to commercialize them.

The remaining recommendations suggested that more resources be provided to the research institutions to carry out the process, including providing for a Commonwealth-wide Intellectual Property Coordinator. The recommendations also included a workshop to "enhance awareness and understanding of intellectual property opportunities and management throughout the

Commonwealth." These recommendations are intended to be the first steps of a very intensive process.

Don McAfee, Chairman and CEO of Discovery Therapeutics and a VRTAC member, explained the concern of the business community. In one situation, his company had paid 100 percent of the cost of research conducted at the University of Virginia (UVA), but UVA considered itself the owner of the intellectual property the research generated. According to the VRTAC representatives, most universities believe that if they pay a significant amount of the costs, which includes the cost of the building, the salary of the professor and other sunken costs, they own the resulting intellectual property. They define significant, in some cases, as 10 percent of the total costs, direct and indirect. According to Mr. McAfee, businesses must be given an ownership interest in the work for which they pay.

iii. Continued Legislation
(a). House Bill 710 - Reverse Domain Name Hijacking

Attorney Kathryn Kleiman presented the bill to the committee by telephone. Ms. Kleiman participated in the founding of the Internet Corporation for Assigned Names and Numbers (ICANN), served as head of its naming committee and participated on the committee to finalize the Uniform Domain-Name Dispute-Resolution Policy. ICANN is the non-profit corporation that was formed to assume responsibility for the Internet Protocol (IP) address space allocation, protocol parameter assignment, domain name system management, and root server system management functions previously performed under U.S. Government contract.

House Bill 710 (2000 Session) resulted from a study conducted by a panel of the Virginia Bar Association on domain name hijacking and cybersquatting. Ms. Kleiman described the bill as a method to address the problem of "David versus Goliath" over domain names. For example, in one case, Pony International sued a small education company for trademark infringement over the domain name Pony.com; the small company did not have the resources to litigate, so it transferred the domain name. In another case, Intercommunications, Inc., a large northern California real estate company, sued a small Internet service provider (ISP) over the domain name intercom.com; Intercommunications dropped the case, but not before the ISP spent thousands of its venture capital dollars to defend the suit. A nine-year-old child was also sued by a large company when he registered Pokey.org.

This bill was designed to provide a remedy for those domain name owners that must defend suits such as these. It would provide for the possibility of attorney fees, exemplary damages and actual damages if the plaintiff did not succeed in getting the domain name transferred on one of three grounds outlined in the bill.

Members of the committee argued that the proposed bill was "too far-reaching." Under Virginia's long arm statute, many more actions would be brought in Virginia, creating an avalanche of suits in the Virginia courts. Others said they believed that the law would chill necessary litigation. For example, a company may be afraid to exercise its rights in court for fear of having to pay damages if it loses. This type of relief is extremely rare under Virginia law and

policy. Another argument was that passage of the bill would dilute the impact of a trademark when it conflicts with a domain name and that it would give preference to a domain name holder.

The committee expressed its support for the concept, but had too many concerns about the bill. It voted unanimously to table the bill.

(b). House Bill 711 - Meta tags

Marshall Curtis, an attorney and a member of this committee, had proposed this bill to protect trademark and domain name owners from meta tag abuses. A meta tag is a special hypertext markup language (HTML) tag that provides information about a web page, but does not affect how the page is displayed. These tags are searchable by a search engine but do not appear on the web page. Some web page designers use registered trademarks and other words in meta tags to increase the traffic brought to their web sites.

This bill would prohibit the use of registered trademarks or domain names as meta tags. In addition, it would give the Secretary of Technology the authority to bring suit in court to enjoin these actions. By amending §§ 59.1-92.12 and 59.1-92.13 of the Code of Virginia, knowing and intentional violations would be Class 2 misdemeanors for the first violation and Class 6 felonies for subsequent violations.

The first points addressed were the authority to litigate. In civil cases, the local city or county attorney has the jurisdiction to seek injunctions. To the extent that the case belongs under state-level jurisdiction, the Office of the Attorney General should have the authority to seek injunctions, not the Secretary of Technology.

A committee member asked why the Attorney General would want to bring an action if a private party did not first file suit. Mr. Curtis responded that the Attorney General would do so to protect citizens from unfair competition and information overload as the result of this type of meta tag use. The chairman questioned whether this type of action merited criminal sanctions. Further concerning him was the attempt to place domain names on equal footing with trademarks, especially without a requirement for registration of a domain name with a state authority. In addition, the federal courts and Congress have refused to protect domain names in this manner. A trademark owner can still use the trademark and unfair competition laws in a civil suit to protect against infringing uses of his trademark by another.

The committee also expressed its support for the concept of this bill, but had too many concerns about it. It voted unanimously to table this bill as well.

b. Virginia's Hi-Tech Workforce

The Committee received testimony from business leaders and education leaders in the Commonwealth to answer key questions:

a. What are today's workforce needs of Virginia's companies?

b. What are the companies doing to meet those needs?

c. Is Virginia doing enough to meet those needs?

i. The Private Sector

(a). Capital One

The first presenter was Beth Choulas, Manager of Economic Development in the Corporate Real Estate Section of Capital One Services, Inc., a subsidiary of the Falls Church-based holding company Capital One Financial Corporation. Capital One's subsidiaries provide financial products like MasterCard and Visa credit cards to customers around the world. Using its proprietary Information-Based Strategy (IBS) to generate constant innovation, Capital One links its database to information technology and highly sophisticated analytics to scientifically test ideas before taking them to market and tailor products to the individual customer.

Capital One (COF) recently announced an expansion that will include the addition of 8,000 new jobs by 2004. With its headquarters and main business operations in Virginia, workforce issues in the Commonwealth are crucial. Ms. Choulas focused on the factors that bring people to Virginia to work, and the challenges COF faces in recruiting experienced information technology (IT) professionals in the Richmond and Northern Virginia metropolitan areas. Ms. Choulas emphasized the need for marketing Richmond as a "high tech" corridor to help with COF's recruiting efforts and the need to develop local universities into "top tier" institutions for post-graduate opportunities. In addition, workers want to know what other opportunities are available either for their spouses or for them if this job does not work out and what opportunities exist for further education near where they live and work.

Another important factor to Capital One's growth is the facilities that exist. They need many facilities with the latest technology to conduct their work. This leads to another concern, the hi-tech infrastructure. Without an infrastructure to support the technology they need, the technology is virtually worthless.

To solve some of their problems, they, like many companies, are investigating telecommuting. However, Capital One promotes teamwork and socializing with co-workers, which are important to development of their employees. They are taking advantage of the increase in H-1B visas, but much more needs to be done. Doug Moran, a representative of their Chief Information Officer's office, added that they produce workers with hi-level training development and then lose them to other companies, a common concern echoed throughout the meeting. Capital One is working on what it calls "distributed development," focusing on different functions in various offices around the country and the world.

After their testimony, members of the committee asked several questions. When asked if Capital One has used businesses or colleges to develop workers, they responded that they use colleges for research and development, change management, and market and analysis projects. They told the committee that they need flexibility on the many local tax issues that they face. One concern was that there appears to lack a central place in the Commonwealth that a business can go for help.

(b). Cisco Systems

The next presenter was Bob Mickie, a Major Account Manager with Cisco Systems. Cisco is a worldwide leader in networking. They provide the so-called plumbing of the Internet with more than 80 percent of the Internet traffic flowing through their equipment. Cisco employs more than 34,000 people worldwide, including several hundred in Virginia.

Mr. Michie informed the committee that Cisco needs help to educate a workforce for its customers. Their customers need to be able to buy and use Cisco's equipment for it to grow as a company. To attempt to solve this problem, Cisco created, the Cisco Networking Academy Program, a curriculum to teach high school and college students about networking. The program is composed of eight semesters and 560 hours. Students can become either a Certified Cisco Networking Associate (CCNA) or a Certified Cisco Networking Professional (CCNP). This three-year-old program has more than 139,000 students worldwide, including 3,249 in Virginia. Virginia's program is Cisco's largest in the southeast and the sixth largest overall.

Cisco's biggest problem with the program is finding qualified instructors for its many students. They will train the instructor for free and that instructor will, in turn, train others. This method works; however, once they train instructors, other companies tend to hire them away. Mr. Michie suggested that the Commonwealth needs to promote a web-based job search and finding capacity to better fill the openings that it needs to fill.

(c). Whiteoak Semiconductor

The final corporate presenter was Andrea Archer of Whiteoak Semiconductor, a subsidiary of Infineon Technologies (formerly Siemens Semiconductor Group). Whiteoak is part of the microelectronics industry and manufactures a new generation of Dynamic Random Access Memory (DRAM) chips.

Whiteoak came to the Richmond area knowing that it would have workforce issues. To alleviate part of the workforce shortage, it hired both local people and experts from other places. The local people were sent to other plants and locations for training in Information Technology Management.

Whiteoak also partnered with local colleges and universities to develop programs to train its people. One of its programs is the Hi-Tech Academy, a joint project with Henrico County Public Schools and the John Tyler Community College. High school students who are enrolled in this program take classes in college for college credit. While these programs are a start, it needs more academic institutions to facilitate education programs to train people for positions that it has locally.

Ms. Archer brought other concerns to the committee. In addition to needing people who have the proper training, Whiteoak also needs people who are willing to come to the Richmond area. She said that they lose people to other "cosmopolitan" places. While Richmond is a great place to raise families and has a good quality of life, she said she is concerned that it may not be a great place for young professionals. Richmond lacks professional sports and upscale shopping

and needs more support for the arts and culture to lure these professionals from cities like Los Angeles, New York, and Boston. Potential employees who decided to go elsewhere gave these reasons for not wanting to relocate to Richmond at this time.

(d). NCS Pearson

Gary Brandt of NCS Pearson, a technology and education company, expressed his concern about the decrease in qualified information technology (IT) workers in an era when the number of these jobs is on the rise. He stated that while the Commonwealth faces an unprecedented personnel shortage, there are numerous factors that limit the ability to place inexperienced IT workers. Requirements placed on IT employers who are supporting the federal government are that they must only include IT workers with three years or more experience in their projects. Front line IT managers are reluctant to hire inexperienced workers because the managers are still expected to deliver their program on schedule. The Commonwealth's education and training systems are not adequately driven by the business community needs. In addition, people do not have a clear understanding of what skill sets are required to be successful in the IT field.

Mr. Brandt explained a strategy to address the workforce shortage. He stated that the Commonwealth needs to provide employers with financial incentives and tools; education providers with current information concerning employers' requirements; and people with information about job skill requirements, their potential to succeed in the field, and the opportunity to upgrade their skills. He recommended developing a means for businesses to identify and communicate their skill requirements so that educators can provide the training and curriculum necessary to meet those needs. In addition, people need an assessment tool to determine whether they will be able to succeed in such a program. Finally, he said that employers need incentives to hire inexperienced workers and to provide telework opportunities to those who are unwilling or unable to move to the employers' location.

Mr. Brandt also explained how his company has attempted to solve the workforce shortage problem. NCS Pearson has developed an IT Workforce Development System that is being utilized by local employers in hiring and training IT employees. The system provides both employed and unemployed individuals with greater opportunity to upgrade their skills and align them with the identified IT skill shortages in Virginia. Their system even supports teleworkers in southwest Virginia to fill jobs in northern Virginia without leaving home. The system has five major components: i) job profiling linkage to local employers; ii) outreach and recruitment services; iii) selection and assessment systems; iv) training and certification programs; and v) internships and job placement programs.

ii. The Commonwealth

(a). The State Council of Higher Education for Virginia (SCHEV)

To answer the final question, the committee invited presentations from two Commonwealth education agencies. Dr. Fletcher Mangum, Chief Economist for the State Council of Higher Education for Virginia (SCHEV), gave the first of these agency presentations by explaining the agency's master plan for Virginia higher education. SCHEV, the Commonwealth's coordinating body for higher education, has as its mission, promoting the development of an educationally and

economically sound, vigorous, progressive, and coordinated system of higher education in the Commonwealth. To fulfill its mission, SCHEV makes higher education public policy recommendations to the Governor and the General Assembly.

The master plan will trace supply and demand of education in Virginia and identify gaps between the two. It will focus on what programs Virginia needs to meet future workforce needs. The plan will be composed of five components: existing demand, underserved populations, economic development, capacity and technology. Some of the objectives of the plan are to evaluate how to facilitate more collaboration between business and higher education; identify the location of target populations and existing education facilities; and expand distance learning programs. SCHEV expects to complete the plan by the end of 2001.

(b). The Virginia Community College System

Ron Laux made the final presentation on behalf of the Virginia Community College System (VCCS). The agency's mission is to provide comprehensive higher-education and workforce-training programs and services of superior quality that are financially and geographically accessible and that meet individual, business, and community needs of the Commonwealth. To accomplish that mission, the VCCS works with companies coming to Virginia, identifies their workforces needs and helps them by developing training programs within the local community colleges.

The VCCS also has the Tech Prep Program through which it combines two years of secondary education with a minimum of two years of postsecondary education, and a common core of required proficiency in mathematics, science, reading, writing, communications, and technologies designed to lead to an associate's degree or a postsecondary certificate in a specific career field. The program provides technical preparation in a career field such as engineering technology, applied science, and a mechanical, industrial, or practical art of trade, agriculture, health occupations, business, or applied economics. Completion of this program usually leads to placement in appropriate employment or to further education.

(c). The Virginia Economic Development Partnership

John B. Sternlicht, Director of Community Relations of the Policy and Legislation of the Virginia Economic Development Partnership (VEDP), described the VEDP's initiatives and activities. The VEDP was created in 1996. It promotes continuity in economic policy and development and increases the Commonwealth's flexibility to operate with private sector customers and principles. Its mission is to enhance the quality of life and raise the standard of living for all Virginians, in collaboration with Virginia communities, through aggressive business recruitment, expansion assistance, and trade development, thereby building the tax base and creating higher income employment opportunities.

Mr. Sternlicht stated that Virginia has certain advantages in competing for business. It has a favorable business climate, a dependable government, a high quality of life, a strategic geographic position, reasonable operating costs, and a multi-modal transportation network. Virginia has a strong economy with falling unemployment and a growing workforce. For the

coming year, the VEDP has targeted an array of industries, including semiconductors and electronics, automotive, office support, information technology and telecommunications, warehouse and distribution, food processing, pharmaceuticals and biotechnology, plastics, printing and publishing, aerospace, machinery and metalworking, and woodworking and furniture, as well as the expansion of existing industries.

While Virginia has a number of growing industries, they have different needs. He explained that a proximity to suppliers and customers, road and rail access, electricity, natural gas and sufficient water and sewer capacity are crucial to the manufacturing industries. They tend to have work ethic and union issues and the labor market is currently tight, except in pockets of high unemployment. These companies tend to locate in areas with a lower cost of living, housing, natural beauty and a good educational system. In addition, manufacturers typically benefit from traditional tax breaks and seek low unionization rates.

The high technology sectors, however, require a strong telecommunications infrastructure and electric power redundancy. These companies currently face a shortage of qualified workers, which are mobile and expect to move; the resulting competition for these workers has generated various hiring incentives. They often employ younger people who want access to a specific set of cultural amenities such as a nightlife, hub airports and professional sports, as well as access to other potential employers. Companies in these sectors seek jurisdictions willing to modify tax codes to accommodate the new economy.

(d). The Virginia Department for Business Assistance

Unfortunately, the Virginia Department for Business Assistance (VDBA) was unable to make a presentation to the Committee. However, because its work impacts the businesses that testified at Committee meetings, this report provides a brief description of this Department.

The Virginia Department of Business Assistance is the economic development agency devoted to the growth and success of the Commonwealth's business community. Established by the Virginia General Assembly in July 1996, the VDBA rounds out the Commonwealth's economic development program by ensuring that businesses not only find Virginia an excellent place to locate, but also an ideal place to grow, expand, and make additional investments.

The Mission of the VDBA is to strengthen Virginia's economy by serving as state government's principal point of communication with Virginia businesses in order to provide access to resources that maximize the potential for their success. The agency carries out this mission through its programs and services, which include access to capital, small business counseling, workforce training and business-to-business matching.

As a business development incentive, the Workforce Services Program is designed to reduce startup human resource development costs of new and expanding companies throughout the Commonwealth of Virginia. Working closely with company personnel, Workforce Services offers consulting services, video production, and funding. These services are offered at no cost to qualifying employers. The program conducts training analyses and consultation to compile information about products and services, recruitment, pre-employment and related studies,

curriculum, facilities, instructors, training aids, length of training, job requirements, training schedules, existing training, and on-the-job training. It can coordinate the recruitment, screening, and interviewing of employees through the Virginia Employment Commission. Workforce Services encourages the networking of all state and federal training programs within the Commonwealth. In addition, it will assist in designing pre-employment assessment programs, which provide management with a recruiting tool to help minimize turnover and can increase the knowledge and skills of potential employees and reduce training cycles. To ensure maximum benefits are derived from the Workforce Services Program, company personnel assigned training responsibilities can be instructed in teaching techniques through VDBA's Train-the-Trainer course. The program offers specific hands-on training, which is designed to reinforce specific learning related to technical and social skills required to perform specific jobs. It offers assistance organizational development programs (e.g., implementation of team building, continuous improvement, total quality management, and ISO 9000-quality orientation), which enable companies to fully utilize their human resources to better compete. The program assists in designing and developing video programs to support orientation and training. Funding for Workforce Service programs is based on a customized budget, which encompasses local recruiting, instructor travel, pre-employment instructor costs, instructional materials, and other training costs.

iii. Conclusion

SCHEV, the VCCS, the VEDP and the VDBA are providing many of the services for which the companies have asked. These agencies attempt to meet the education, training, funding and life cycle issues that many of these companies face. Because they work together, the other issue raised, a central state agency with which they can address their concerns, already appears to have its solution.

c. Biotechnology

i. Biotechnology Venture Capital Program

Jerald P. Coughter, Industry Director for the Virginia's Center for Innovative Technology, presented the results of the biotechnology venture capital program study requested by the Commission in the 2000 Session of the General Assembly (House Joint Resolution 35). H.J.R. 35 requested the Innovative Technology Authority, in consultation with the Virginia Biotechnology Research Park Authority, to study the feasibility of establishing a state-sponsored venture capital[1] program tailored to the biotechnology industry.

Mr. Coughter first reviewed some statistics with the committee to demonstrate the difficulty in establishing such a program. He said that for traditional biotechnology investments, a product takes from 10 to 15 years to reach the market at a total investment of roughly $500 million. For

[1] Venture capital funds typically invest two types of capital for different stages in a company's life cycle, seed capital and venture capital. Seed capital is money invested to support new companies without commercial products, launch new products, or continue research and development (R&D). Venture capital is long-term equity capital invested in rapidly growing companies with the expectation of higher returns.

a venture capitalist, the average window for an investment is approximately five years. For an Internet investor, the window is even lower at approximately five months.

Despite the difficulty, other states have attempted to create state-sponsored biotechnology venture capital programs. Some states have created tax incentives for private venture capital funds to invest in the state and others have promoted entrepreneur-investor interactions to attract venture capital funding. Still other states have created their own venture capital funds, either publicly or privately managed. The public funds to run these programs come through a variety of means, including budget allocation, lottery proceeds, returns on earlier state investments, tobacco settlement money and pension funds. The success of these funds depends upon having skilled, experience management, an optimal fund size, an adequate deal flow,[2] appropriate public oversight, and a self-sustaining rate of return or a long-term commitment.

Mr. Coughter presented other states experiences with venture capital funds. Minnesota created a publicly funded, publicly managed fund. It was unable to raise outside funding because of its restrictions on investment and the State was unwilling to invest additional capital. The State is reorganizing the fund as a private, non-profit organization. Maine also adopted this model and focused on marine sciences, biotechnology, software and other high technology industries. The State is now reorganizing the fund with private management hoping to attract private capital.

Not all publicly managed funds have had trouble. Connecticut Innovations Fund was established as a Small Business Investment Company (SBIC) under the Small Business Administration's guidelines. This fund provides a three-to-one match and focuses on early stage funding of long-term, high-risk companies. The fund has achieved a 40 percent return on an investment of between $100,000 and $1 million per company. The Maryland Enterprise Investment Fund provides up to $5 million in equity financing to businesses seeking to move beyond the startup phase. Its companion program, the Challenge Investment Program, provides seed money of between $50,000 and $100,000 per investment. A $12.5 million combined investment for both of Maryland's programs in 86 companies yielded a 46 percent return. The Maryland fund also requires that participants maintain their primary place of business in the State of Maryland for at least five years.

Examples of privately managed funds include Oklahoma and Kansas. The Oklahoma Capital Investment Board Venture Capital Program is run by a state-beneficiary public trust that solicits funds from institutional investors by offering guaranteed tax credits. Through this program, 12 Oklahoma companies have raised $62 million from the eight venture capital funds that agreed to invest in Oklahoma companies. Twenty-six million dollars of state money yielded a return of more than 29 percent. Kansas Venture Capital Inc. is an SBIC that invests in mostly later-stage rounds of venture capital and not all of its investments are in high technology industries. Investments are limited to Kansas-based companies. A $14 million investment in 26 companies has yielded a return of between 10 and 15 percent.

Two recent efforts to boost early stage life sciences venture capital funding include Ohio and North Carolina. The Ohio BioVentures Development Corporation is also an SBIC, but unlike

[2] Deal flow refers to an adequate and continuing supply of good investment opportunities, and is tied to optimal fund size.

some other funds, its investments are not limited to companies within the State. The fund began with a $750,000 investment from the State of Ohio, $15 million from private sources and $30 million from the SBA. The corporation plans $500,000 investments in up to 45 companies with half of them receiving an additional $1 million. Upon reaching a positive cash flow, the companies will first pay the SBA back for its investment up to a capped 14 percent rate of return. This program has no geographic restrictions; in fact, it is expected to invest in other regions to establish a network of potential co-investors for Ohio-based deals.

North Carolina has allocated $7.5 million in state money to its Bioscience Investment Fund for seed stage venture capital. The fund has raised an additional $22.5 million from private sources. Eno River Capital, which was hired to manage the fund, invested $100,000 to $2 million from this fund in eight to 10 companies. While there are no geographic restrictions, North Carolina appears to have an adequate deal flow to keep the funds from being invested outside the state. A second fund is now being planned involving no state funds.

In determining whether to have a publicly or privately managed fund, Mr. Coughter suggested that the Commonwealth consider the true goals of the fund, the nature of the Commonwealth's support and the implications of each type of fund. Publicly managed funds are typically targeted funds with geographic limitations. Tightly focused, geographically restricted funds typically have difficulty finding private venture capital funds willing to manage them. In addition, the deal flow may not be adequate to sustain private management. He cautioned that the success of the fund should be based on economic development and not rate of return. Private management, however, provides a better opportunity to leverage funds. Furthermore, biotechnology investments are typically larger than public funds will consider. Mr. Coughter believes that an SBIC model is well suited to biotechnology because it works with a smaller state investment that is leveraged against private, local investments and then leveraged again SBA funding. The 14 percent cap on return to the SBA increases the return to the local investors. The concern over deal flow can be minimized by not imposing any geographic restrictions. Finally, it will help to establish the local venture capital infrastructure.

Another consideration is that publicly managed funds have succeeded better than privately managed funds in bringing venture capital to underserved industries and geographic regions, where jobs or economic development take precedence over wealth creation. Privately managed funds, on the other hand, achieve higher rates of return making it more likely that the fund will become self-sustaining over time. Furthermore, publicly funded and managed funds tend not to help nurture the investment culture of a region because private investors typically do not invest in public funds. Privately managed funds are better able to attract private investors because of the lack of investment restrictions.

After Mr. Coughter's presentation, the Committee decided to recommend that the Commission consider a bill that would create a state-sponsored venture capital program tailored for biotechnology, based on the Ohio model. The Committee agreed that while such a bill should start the program this year, it need not appropriate money. The Committee also agreed that it would revisit the funding issue next year.

ii. Biotechnology Tax Credits

Another method of creating a venture capital program is by providing tax incentives for private venture capital funds to invest in the Commonwealth. Mark Herzog, Executive Director of the Virginia Biotechnology Association, explained to the Committee that investors in the fledgling biotechnology companies in Virginia need economic incentives for the companies and the capital to remain in Virginia. He suggested that a bill creating the Virginia Technology and Biotechnology Investment Act (H.B. 421 from the 2000 Session, which was intended to be a reenactment of H.B. 1667 from the 1999 Session) and a bill creating a tax credit for investing in small information technology or biotechnology businesses (H.B. 400 from the 2000 Session) be re-introduced in the 2001 Session. A member of the Committee also suggested that a bill to amend § 58.1-339.4 to (i) raise the $5 million per year cap, (ii) reduce the number of years that an investor must hold on to the equities, (iii) reduce the tax credit so that more money would be invested, and (iv) amend the administrative regulation to allow more predictable and fair distribution of tax credits (HB 401 from the 2000 Session). The Committee agreed to make these recommendations to the Commission for its consideration.

d. The Aerospace Industry
The Virginia Space Flight Center

Wayne Woodhams, Deputy Executive Director of the Virginia Space Flight Center, presented the status of Virginia's aerospace industry. The Virginia Commercial Space Flight Authority was established by legislation in July 1995 to stimulate economic development and education in the aerospace industry. Its primary initiative is the Virginia Space Flight Center at Wallops Island.

Since its creation the Authority has established an agreement with the National Aeronautical and Space Administration (NASA) under which it developed and acquired spaceport infrastructure. It obtained a Federal Aviation Administration (FAA) license for commercial launch operations, established a public/private partnership with DynCorp for investment and operations, created and preserved jobs and developed educational programs. The Authority has achieved international recognition for Virginia as a place to conduct space business.

Virginia is competing with established and emerging domestic spaceports in at least nine other states and with foreign spaceports, which are heavily subsidized by their governments, in an ever-growing and competitive market. The FAA forecasts more than 400 commercial launches in the coming decade. The Center currently has agreements with eight emerging launch companies that want to establish operations in Virginia. Virginia is also competing for other commercial space programs, government programs and potential foreign programs, including VentureStar, a fully reusable space plane under development by Lockheed Martin Corp.

Mr. Woodhams stated that the Commonwealth needs to develop the remainder of its spaceport infrastructure. The payload processing facility and the liquid fueling facility need to support potential customers. The Commonwealth also needs to expand international marketing and business development. His suggestions were to promote Virginia as the place to conduct space business, develop an organized, statewide aerospace promotional activity, support

entrepreneurial launch services companies, develop sustainable government programs at the Center, create a customer-oriented environment at the Center and establish strategic partnerships with industry, state and federal agencies. The potential impact of this industry is from hundreds of jobs and millions of dollars if an emerging launch company becomes operational to thousands of jobs and billions of dollars if the VentureStar program is successfully developed in Virginia.

e. The Next Step

The committee understands that it has a long way to go and should take more testimony from individuals on the issues addressed at these meetings. Protection, development and commercialization of Virginia's intellectual property are important to the growth of the economy and the development of new companies in Virginia. A well-trained and qualified workforce is necessary to fill the vacancies that currently exist and the new jobs that will be created.

2. Recommendations

Advisory Committee Two recommended:

1. That the Commission support a Bill establishing a state sponsored venture capital program tailored for biotechnology;

2. That the Commission support reintroducing House Bill 400 of the 2000 Session, which amends the provisions of the qualified subordinated debt and investment tax credit (also known as the Angel Investor Act);

3. That the Commission support reintroducing House Bill 401 of the 2000 Session, which would create a tax credit for investing in small biotechnology and information technology, companies;

4. That the Commission support reintroducing House Bill 421 of the 2000 Session, which would create a transferable tax credits for information technology and biotechnology companies;

5. That the Commission support a Bill or Resolution regarding workforce shortage; and

6. That the Commission continue to study Economic Development issues affecting the high technology industries in the Commonwealth.

C. ADVISORY COMMITTEE THREE (ELECTRONIC GOVERNMENT)
Senators Stephen D. Newman and Patricia S. Ticer, Co-Chairs

Charge: To study the delivery of government services, and the conduct of its business through the Internet. This committee continued to identify barriers to delivering government services electronically, including monitoring the Auditor of Public Accounts' study on electronic

contracting and procurement. In addition, this committee studied guidelines for using electronic notary services. Furthermore, it monitored *Urofsky v. Gilmore*, a case that challenged the constitutionality of Chapter 52 (§§ 2.1-804 et seq.) of Title 2.1, which restricts state employee access on information infrastructure (on June 23, 2000, the United States Court of Appeals for the Fourth Circuit, *en banc*, decided in favor of the Commonwealth).

1. Summary

Advisory Committee Three met three times during this interim on October 11, 2000, November 29, 2000 and December 18, 2000. The Committee was co-chaired by Senators Newman and Ticer. It was composed of 20 citizen members. The committee focused on a host of issues regarding delivering government services electronically.

a. Electronic Notaries

Shelly Wilcox, Director of Gubernatorial Appointments and Information Systems, Office of the Secretary of the Commonwealth (SC), gave a presentation on the SC Office's views on electronic notaries. Since notaries public are regulated by the SC's Office, that office would regulate electronic notaries as well.

Ms. Wilcox suggested that the current state of the laws regarding electronic signatures and notaries might not be conducive to effectively utilizing electronic notaries. To make effective utilization of electronic notaries possible, she suggested that notaries in general must be strengthened. To accomplish this, she stated that the SC's Office is looking into potential legislation that may (i) reduce commissioning requirements, (ii) modify the endorsement requirements, (iii) strengthen the oath requirement including ensuring that the applicants actually read the notary handbook, (iv) require, instead of encourage, notaries to keep log books, and (v) increase the awareness of the signer so that he knows what it is that he is signing. She also stated that the SC's Office is looking into creating an advisory committee to conduct a study on electronic notaries. The study committee would study the above issues, which digital signature system, if any, would be used for electronic notaries, and the need for using a uniform system among all agencies and electronic notaries. They plan to have the study completed in time for the next administration.

John Jung, Staff Attorney for the Commission, also gave a briefing on electronic notaries. Mr. Jung stated that the purpose of notarizing a document is for a notary public to certify that a person claiming to be the named individual on the document came before him and signed the document in his presence. He also explained that under current law, this process could be performed electronically without much regulatory guidance (See Appendix 5).

Section 59.1-489 of the Code of Virginia provides that a notary public may electronically notarize a document by affixing his electronic signature. However, neither § 59.1-489 nor Title 47.1 of the Code of Virginia (Notaries and Out-of-State Commissioners) provides additional guidelines or procedures on electronically notarizing documents. Therefore, if a notary public electronically notarizes a document, under current Virginia law, that document would have to be

given its legal effect as a notarized document regardless of the security and integrity, or lack thereof, of the computer system used to electronically notarize that document.

One of the main concerns in utilizing electronic notaries is providing for security and integrity. The computer system that would be used to electronically notarize documents must ensure that the electronic documents cannot or will not be altered after being notarized and that the electronic signatures affixed to the documents cannot be forged. Consequently, the next concern is interoperability. Whatever system is used to electronically notarize documents and provide for security and integrity, it must be a system that works with all parties involved. In other words, regardless of how an electronic document is encrypted or formatted, the signer, the notary public, different government agencies, and the courts must be able to decipher the contents of the document.

b. Digital Signatures

The Committee also received a briefing on the use of digital signatures by the federal government and other state governments (See Appendix 6). The federal government's use of digital signatures is governed predominantly by the Government Paperwork Elimination Act (October 1998) and the Electronic Signatures in Global and National Commerce Act (ESIGN) (June 2000). At the state level, three models have developed: the prescriptive model, the criteria-based model and the signature-enabling model. The prescriptive model uses a specific public key infrastructure. The criteria-based model requires digital or electronic signatures to satisfy certain criteria of reliability and security. The signature-enabling model does not adopt a specific technological approach or criteria, but recognizes electronic signatures and documents in a manner parallel to traditional signatures.

c. The Administration's Initiatives

Bette Dillehay, Deputy Secretary of Technology, gave a report on the status of the administration's electronic government initiatives. The administration's initiatives are based on Executive Order 65, the requirements of which are to expeditiously bring clarity, coordination and focused enterprise-wide management to eGovernment initiatives in Virginia and remove/overcome barriers for eGovernment implementation.

The goals of the initiatives are to establish a common portal for government services, eliminate barriers to access and promote digital opportunities and provide policies and infrastructure protecting privacy and civil liberties. To accomplish these goals, the administration will develop and promote a standard methodology that can be used by executive branch agencies to implement the provisions of Executive Order 65. The administration's initiatives include project management; electronic procurement; implementing web-based administrative applications; promoting the statewide deployment of digital signatures; developing privacy and security policies, standards and guidelines; promoting the use of seat management; and establishing a digital opportunity task force and developing a clearinghouse of best practices based on its recommendations. By March 1, 2001, the administration plans to establish a single, statewide, web-based procurement system that enables agencies to purchase goods and services through the

Internet from state contracts, vendor catalogs, and vendor websites. According to Ms. Dillehay, the timeline for implementation of these initiatives runs from May 2000 to March 2001.

d. The New Electronic Procurement System (eVA)

Donald C. Williams, Director of the Department of General Services (DGS), informed the committee about the new electronic procurement system (eVA). eVA involves the creation of a web portal through which agency procurement systems and vendors can interact. The portal has several components that will contain an area to shop state contracts and vendor catalogs; an area to capture registration, bidding and performance information; an area to capture all purchasing transaction information; and an area to push solicitations, awards and other documents. The portal will also focus on best practices, which lead to Code revisions, manual revisions, privacy issues review and the monitoring of legislation (e.g., UCITA and UETA).

eVA will enable electronic posting and delivery that will allow the posting and delivery of requisitions, solicitations, bidder lists, bidding, bid/request for proposal (RFP) evaluation and award. It will enable electronic receiving to accommodate receiving items by partial item, line item, or the entire order. eVA will support electronic payments and enable the electronic sale of surplus property. It allows the loading and reconciling of data from card issuers and interfaces with other systems. eVA will capture transactions accomplished through the portal and import agency date for analysis and reporting.

DGS expects the project to be self-financing through a supplier paid registration fee and a supplier paid transaction fee. The Commonwealth and the Solution Provider will split the fees to pay for costs. The expected completion date for the entire project is the end of 2001. It benefits the government by providing a better selection, better buying, better processes and better information for decision-making. For vendors, it provides one-stop shopping, more opportunities to access Virginia government, better processes and support services. According to Mr. Williams, eVA will revolutionize electronic procurement.

e. Advertising on Government Websites

Angela Gardner, Director of Government Affairs for eGovNet, made a presentation about advertising on government websites. govAds, a subsidiary of eGovNet, represents government agencies and seeks advertising and sponsorship on behalf of government entities. Its business model provides government entities with a method of supplementing public funding with advertising revenues in a way that does not cost the government entity. govAds creates a program that can offset costs associated with developing a dynamic Internet site.

Ms. Gardner began by stating that advertising in the public sector is not a new concept. Advertising already takes place on public buses, on public lands and even in public brochures. It also takes place online on site like the Massachusetts ComPass web page, the Minnesota Travel and Tourism web page, the Florida Fish and Wildlife Conservation Commission web page and the Honolulu Business web page. govAds links government publishers and advertisers by leasing web spaces from the public entity, then acting as a facilitator between the government

entity and the advertiser. Their premise is to match an advertisement to the content on a government web page.

Internet advertising provides government officials with a method of generating revenue without additional costs to the government entities or the taxpayer. govAds' network model attracts advertisers and sponsors by offering a single point of contact that yields a wide range of targeting capabilities. She cautioned that most government websites on their own do not have the traffic needed to attract advertisers.

Ms. Gardner pointed out that government websites are valuable because they are market-focused (e.g., motor vehicles), content-focused (e.g., technology) or reach-focused (i.e., they reach as many people as possible). To demonstrate the value of these sites, she showed the Committee some examples of websites where advertising is used. In one such case, AOL incorporated government websites (even Virginia's) into its own site through a method known as framing and added advertisements.

In order to avoid distracting users of a government website, govAds limits the number and size of advertisements on a web page. Its privacy policy states that it does not collect any personally identifiable information from an Internet user who visits the website. govAds may use cookies solely to track information such as how frequently users visit govAds network websites. They maintain the overall look and integrity of the website. In addition, they state on the websites that the appearance of an advertisement does not imply endorsement. Also, Ms. Gardner explained that govAds only advertises products and services that anyone can use (e.g., they do not advertise firearms, alcohol, religion, or political views). Finally, the company generates reports and sends them on a quarterly basis, or at any time upon request; they send revenue checks approximately once a quarter as well.

f. Auditor of Public Accounts

Karen K. Helderman, Audit Director, Office of the Auditor of Public Accounts, presented the results of the study directed under Senate Joint Resolution 72 of the 2000 Session (SJR 72). SJR 72 was recommended by the Advisory Committee Three during the 1999 interim. The study identified some statutory and regulatory barriers or obstacles, which may impede the implementation of electronic contracting and procurement processes. According to the report, the resolution of these obstacles and barriers are critical to the successful implementation of e-commerce in the Commonwealth. Further, the Auditor's Office has determined that audits of public accounts can satisfactorily occur in an e-commerce environment. For the complete analysis and results of this study, see "A Study of Electronic Commerce: Auditability and Obstacles," Senate Document 10 (2001).

g. Advantage Virginia Electronic Procurement Program

H. Hollister Cantus, Partner, Alcalde & Fay, gave a presentation on the Advantage Virginia Electronic Procurement (AVEP) Program. The AVEP is a program based on Senate Bill 234 of the 2000 Session (S.B. 234). S.B. 234, also titled the AVEP, sought to give a one-time grant of $5,000 to small Virginia businesses that were approved by the U.S. General Service

Administration (GSA) to sell goods and services to federal agencies but were not listed on the GSA approved website for electronic procurement. S.B. 234 was not enacted during the 2000 Session, and the new bill is a modified version of it.

The new bill has the following main changes: (i) the grant would be "up to $5,000" instead of $5,000 and (ii) the new bill is now silent as to who would provide web procurement services. The AVEP would encourage and aid small Virginia businesses to provide procurement services electronically so that Virginia's businesses would have an advantage over those businesses in other states.

h. The Virginia Information Providers Network Authority

W. Christopher Doss, Executive Director of the Virginia Information Providers Network Authority ("Authority"), informed the Commission of a conflict in the Authority's enabling statute that hinders the Authority's operations. Section 9-362 of the Code of Virginia allows the Authority to accept public funds and contract with state agencies and localities, but § 9-368 states that "[n]o state funds shall be used for any Authority's purpose."

i. Virginia Department of Motor Vehicles

Mitchell Goldstein, Director of the Commission, gave a presentation on a resolution commending the Virginia Department of Motor Vehicles (DMV). The DMV has been on the forefront of empowering the citizenry by providing government services electronically. Today, a person needing services from the DMV can walk into a local DMV office, or receive most of those services through the DMV's website. For example, Virginia DMV is the first agency of its kind in the world to offer license renewals over the Internet. In addition, residents of the Commonwealth may change their address, renew their vehicle registration, and request their own DMV records among other services, over the Internet. For its efforts, the DMV has been recognized with numerous state and national awards. The proposed resolution would commend the DMV and present the General Assembly's recognition of the DMV's accomplishments.

j. Credit Card Usage and the Circuit Courts

J. Jack Kennedy, Circuit Court Clerk for Wise County, recommended legislation regarding the circuit courts' acceptance of credit card and other types of payment methods. The Code of Virginia currently requires the court clerks to accept a four percent transaction fee if a person pays his criminal fines or penalties by using a credit card. The Code is silent about civil cases. The proposal would require the court clerks to collect sufficient charges to offset transaction fees if a person uses a credit card to pay for fees and charges in civil matters. Senator Newman said that he believed that this proposal seems to be going in the opposite direction of the Committee's wishes. Earlier, the Committee had decided that the waiving of such fees by government agencies would be beneficial in improving and encouraging electronic government. This bill would do the opposite by requiring the court clerks to collect such fees whereas they may not have been currently collecting such fees. The members of the Committee agreed with Senator Newman, and decided not consider recommending this proposal at this time.

2. Recommendations

Advisory Committee Three recommended:

1. That the Commission support a Resolution requesting the Secretary of Finance to conduct a study on the budgetary impact of waiving credit card fees and fees associated with other electronic payment methods and determine whether sufficient savings can be realized through the reduction of processing costs, losses due to bad checks, or other receivable related costs;

2. That the Commission support a Resolution requesting the Departments of General Services, Transportation, and Technology Planning, in consultation with the Commission, to study the methods and technologies needed to implement competitive procurement via electronic means (Electronic Sealed Bidding Study);

3. That the Commission support a Resolution requesting the Department of General Services, in consultation with the Commission, to study the status of electronic procurement participation by businesses owned by women and minorities;

4. That the Commission support a Bill to direct the Attorney General of Virginia to develop guidelines to the Uniform Electronic Transactions Act's implications on state agencies;

5. That the Commission support a Bill prohibiting public bodies' disclosure of certain account information;

6. That the Commission support a Bill creating the Advantage Virginia Electronic Procurement Program. This bill is a modified version of Senate Bill 234 of the 2000 Session;

7. That the Commission request a Budget Amendment appropriating $2 million to fund the Advantage Virginia Electronic Procurement Program;

8. That the Commission support a Bill regarding financing and operations of the Virginia Information Providers Network Authority;

9. That the Commission support a Resolution directing the Joint Legislative Audit Review Commission (JLARC) to study the policy issues behind public procurement of information technology, including term contracts, as opposed to project contracts, and public entities competing with private sector in providing information technology services to other public agencies;

10. That the Commission support a Resolution requesting the Secretary of Technology study advertising on government websites and develop guidelines.

11. That the Commission support a Bill regarding public procurement of information technology consulting services. The Code of Virginia currently requires agencies to seek approval from the Department of Technology Planning, when appropriating information technology services over $100,000. The Committee was concerned that this bill may circumvent that requirement. In addition, some members of the Committee were not sure whether information technology services should be procured on indefinite duration, indefinite quantity (IDIQ) basis. The Committee decided that the bill should be amended to ensure that the Secretary of Technology's approval requirement would not be circumvented and to delay the effective date one year;

12. That the Commission support a Resolution commending the Virginia Department of Motor Vehicles; and

13. That the Commission continue studying ways to support electronic government initiatives of other government agencies and at the local government level; keeping digital signature certifying authorities consistent with whatever policies may be developed for electronic notaries; bringing electronic government concepts to K through 12 education, such as electronic notification of parents; and other electronic government issues during the 2001 interim.

D. ADVISORY COMMITTEE FOUR (DIGITAL DIVIDE)

Delegates Mary T. Christian and Kenneth R. Plum, Co-Chairs

Charge: To study ways to close the digital divide, the gap (social, economic, educational, political) between those with access to technology and those without. For example, this committee considered ways to solve the shortage of skilled workers and increase education in the areas of science and technology throughout the Commonwealth. In addition, this committee reviewed the methods of local government compliance with the Federal Telecommunications Act of 1996 as requested by House Joint Resolution 316 (H.J.R. 316).

1. Summary

Advisory Committee Four met twice during this interim on October 25, 2000 and December 14, 2000. The Committee was co-chaired by Delegates Christian and Plum. It was composed of 24 citizen members who possessed a wealth of knowledge in education, technology and telecommunications issues. The main focus of the meetings was efforts to close the digital divide and compliance with the Federal Telecommunications Act of 1996.

a. Current Programs Addressing the Digital Divide in Virginia

i. The Digital Opportunities Task Force

Bette Dillehay, Deputy Secretary of Technology, gave the first presentation on the Secretary of Technology's projects to bridge the digital divide. The "digital divide," as it is commonly called,

describes the gap between those who have access to the Internet and related technology and those who do not. This divide is a compelling and far-reaching social and economic issue.

Information tools, such as the personal computer and the Internet, are increasingly critical to economic success and personal advancement. In early July, the National Telecommunications and Information Administration issued a report, "Falling Through the Net: Defining the Digital Divide," that found a growing gap between those with access to these tools and those without. As information technology plays an ever-increasing role in Americans' economic and social lives, the prospect that some will be left behind in the information age can have serious implications. The digital divide threatens to impede the health of our communities, development of a skilled workforce, and the economic welfare of our nation. The divide is actually widening over time. Minorities, low-income persons, the less educated, and children of single-parent households, particularly when they reside in rural areas or in inner-city areas, are among the groups that lack access to information resources. It is critical that all citizens of the Commonwealth have the opportunity to enjoy the promise and potential of new technology. The Commonwealth is capitalizing on this challenge by turning the digital divide into a digital opportunity.

The Digital Opportunity Initiative addresses the growing disparity between those Virginians who have access to the Internet and related technology and those who do not. The 2000 General Assembly called for the creation of a broad-based task force to address the issues of the digital divide in Virginia and to ensure that all Virginia citizens are able to participate in the benefits of a digital society. The Secretary of Technology will assist the Digital Opportunities Task Force, which was created through the Governor's Executive Order 65, in its efforts to identify ways to expand public access to computers and the Internet through community-based resources.

The goal is to establish a community-based infrastructure, in partnership with government and industry that will support increased access to computers and the Internet for all citizens without barriers of race, income, education level, geography, and disability. The preliminary objectives of the task force are to ensure access to technology and the Internet for all citizens of Virginia, coordinate digital opportunity resources, identify best practices for digital opportunities, develop a plan for the implementation of programs, and encourage community-based initiatives. In addition, a Web-based Virtual Opportunity Center will be established to serve as a clearinghouse of information on best practices and resources available to support government, business and the community to bridge the digital divide.

In September, the governor committed $3 million in partnership with PowerUP to provide technology resources in community and education-based locations. It is a national, non-competitive program intended to specifically work and enhance the context of community centers, schools, existing technology centers and related sites. Currently one site exists in Gum Springs, Virginia (Fairfax County) with an additional 12 sites planned for Fairfax, Richmond, and Hampton by the end of 2000. By 2001, PowerUP is expected to have 100 centers across Virginia.

In Virginia, a 10-member selection committee administered and supported by the Electronic Government Implementation Division will select sites from an applicant pool. Each participant

in the PowerUP program must have or receive an ongoing relationship with a caring adult, structured activities, a healthy start, marketable skills through effective education and an opportunity to give back through community services. Each site, while dedicated for after-school program use by K-12 students, can be made available for additional community activities.

ii. InfoPowering the Commonwealth

Next, Audrey Kelly, Technology Consultant in the Library Development and Networking Division of the Library of Virginia, discussed what the Library is doing to improve technology at all public libraries around the Commonwealth. Although not every locality has its own public library, all Virginia citizens are served by a public library in their area. Of the 90 public library systems in Virginia, only one does not provide public access to the Internet, and that system will be providing access in the near future. The General Assembly appropriated $3.7 million to the Library of Virginia for a program called "Infopowering the Commonwealth." The Library has dedicated $2 million to computers and connectivity and $1.7 million to developing content. The program will permit library users to access the Internet as well as selected subscription information databases, including full text magazines and newspapers.

In addition to state funds, the library is leveraging federal funds. Public libraries are participating in the E-rate program; however, because awards are based on the poverty level, some libraries will not qualify. Many public libraries will also receive hardware, software, and connectivity grants from the Gates Library Foundation, totaling over $3.6 million. Through the federal Library Services and Technology Act (20 U.S.C. §§ 9121 through 9123), public libraries are implementing grants that will enhance technology projects already underway, such as building local area networks. In addition, the Library is working with the community college system and public schools to purchase subscription databases that are made available to all community members.

iii. Kidz Online

Philip Cruver, Director of Kidz Online, addressed his organization's innovative program. Kidz Online is a 501(c)(3) educational organization dedicated to shrinking the digital divide. Its mission is to teach children online communication and information gathering skills that will be important to their futures and encourage them to view technology as an opportunity and not as a threat. They do this by having kids teach kids. They bring children together electronically to share ideas, exchange viewpoints, and learn from each other.

In one of their projects, Kidz Online used the Internet so that teens in Tysons Corner could teach computer skills to at-risk kids from the Tyler House across the water in Washington, D.C. Kidz Online has also partnered with the Center for Innovative Technology (CIT) to develop a webcasting studio using broadband to target after-school programs.

Mr. Cruver recommended that the committee consider a state tax credit similar to the one Congress introduced through the Broadband Internet Act of 2000 (the 106th Congress never acted upon H.R. 4728 or S. 2698). The Act called for a 20 percent federal tax credit for companies that bring broadband to underserved areas. This credit is projected to cost the

treasury approximately $1.5 billion over five years. To stress the impact of this credit, Mr. Cruver explained that the wind energy industry received a 25 percent tax credit and generated more than $1.6 billion in three years.

iv. The Boys & Girls Clubs

Charles Brady, Executive Director of the Boys & Girls Clubs (BGC) of Richmond, explained his organization's role in closing the digital divide. The BGC is a collection of private, nonprofit, autonomous clubs throughout the United States. The BGC has more than 48 centers in Virginia and services more than 32,000 kids in 20 communities. It is the fastest growing youth organization in the world. The BGC is even working with the National Center of Missing and Exploited Children to develop a national kids safety program.

Given the impact that the BGC has on youth today, Mr. Brady believes that his organization can play a vital role in closing the digital divide among children. The BGC of Richmond is currently working with PowerUP to house its Richmond sites. Currently, they need up-to-date equipment, high-speed Internet access, and help to train their staff. The BGC is introducing computers to kids in a practical, real-world way.

v. Oracle Internet Academy & Oracle Academic Initiative

Sue Keith informed the committee about Oracle's initiatives. Her company has developed programs like Think.com, a free, hosted service that can provide a closed, protected, secure network for educational purposes. Oracle has established the Oracle Internet Academy and the Oracle Academic Initiative. The Internet Academy is a partnership with secondary schools through which they teach Java and Web building skills; this is a four-semester program. The Academic Initiative is a degree program based at an accredited institution; it focuses on teaching Oracle databases, tools and web-based skills in a higher education environment.

vi. Woodley Hills Elementary School Computer Project

Trudy Brisendine, Department of Family Services Staff for Fairfax County, enlightened the committee on the Woodley Hills Elementary School Computer Project.

The goal of the project is to help children achieve greater academic success by integrating computer technology into the school curriculum and home environment. Research indicates that early success in school is critical to a child's future academic success and enhances lifelong employment opportunities. Underlying this project is the belief that technology can substantially contribute to children's early academic success if it is available to them with appropriate user support. The project is designed to enhance academic success by improving the learning environment, raising the child's level of self-confidence, and increasing parental involvement in the learning experience.

Twenty fifth-grade students at the school received laptop computers, printers and school-to-home Internet connections. Teachers and community-based partners are providing ongoing training to students and their parents in using the technology. Business partners are working with students

and parents on a one-on-one basis to address their questions and provide opportunities for supervised practice. Each child's progress will be measured by comparing standardized test scores before and after the project.

The Virginia Office of Community Services has provided the Fairfax County Department of Family Services funding for purchasing hardware and software for fifth-grade students eligible for the subsidized lunch program. EarthWalk Communications, Inc. augmented these funds by donating additional computers and in-kind services to ensure that all students in the project have identical computer access. Verizon donated school-to-home Internet access for participating students and their families. Apple Federal Credit Union donated funds to purchase technology.

Over the long term, this public/private partnership is expected to improve Standards of Learning (SOL) scores and familiarize parents with the technology. The computers have built-in tutorials to test the students. Upon completion of the tutorials, participants will receive a certificate from the company that created the software. The certificate can be used to show prospective employers a certain level of computer competency. The government and private industry provided the money and equipment to run the project and the community provided on-site volunteer tutors. The results so far show one student improving his writing and another was doing homework while he was sick at home.

vii. The Longwood College Institute for Teaching Through Technology and Innovative Practices

Carol Inge, Executive Director of the Longwood College Institute for Teaching Through Technology and Innovative Practices (the "Institute"), informed the committee of some of the Institute's initiatives. The Institute serves 23 rural counties in Southside Virginia. Currently, it is attempting to establish a mobile learning unit consortium, which will connect various state-supported mobile learning units throughout the Commonwealth. The most recent addition will be a wireless mobile learning unit, which can better serve localities without high-speed Internet access (or any access at all). The Institute is focusing on teaching administrators and other adults. Ms. Inge stressed the need to provide incentives for businesses to bring access to the rural parts of the Commonwealth.

(a). Virginia Higher Education Mobile Learning Consortium

Ms. Inge informed the committee about the mobile learning units in use throughout the Commonwealth that are designed to provide educational services to underserved areas of the Commonwealth. The costs to run these units are high and the funds are low. She stated that creating partnerships among the sponsoring agencies could benefit the Commonwealth. The sponsoring organizations are J. Sargeant Reynolds Community College (Workforce Development); Longwood College Institute for Teaching Through Innovative Practices (Education); Manufacturing Technology Center in Wytheville, Virginia (Workforce Development and Education); and Virginia Tech (Science Education).

She proposed legislation that would create the Virginia Higher Education Mobile Learning Consortium, a resolution commending the hard work of these organizations, and a study on the

effectiveness of these units on the Commonwealth's educational delivery system and economic development. An established consortium would enable these organizations to apply for grants to continue operating the mobile learning units.

As a result of Ms. Inge's proposal, the committee recommended a resolution recognizing the work of the organizations that operate the mobile learning units. At its meeting on July 25, 2000, the Commission was introduced to the Virginia Tech Mobile Chemistry Laboratory and the Longwood College Institute for Teaching Through Innovative Practices Mobile Learning Unit. The committee also agreed to recommend that during the 2001 interim, the Commission study the impact that these mobile learning units have on the Commonwealth.

(b). Southside Virginia Regional Technology Consortium

Then, Ms. Inge made a presentation on a project of the Southside Virginia Regional Technology Consortium (SVRTC). The SVRTC represents 23 rural, public schools in Southside Virginia. She proposed a project that is intended to help students in the public schools meet the Standards of Learning for the Commonwealth of Virginia and provide advanced content to these students through an Internet-based high speed H.323 network that has access to Internet II resources. This project will establish the Commonwealth's first high speed, broadband, Internet-based, regional system for the delivery of asynchronous and synchronous learning. This model of instructional delivery will help close the "digital divide". She requested and the committee recommended funding a one-time hardware cost of $194,000, which will be used by the SVRTC to establish the network.

b. The Federal Telecommunications Act of 1996 Study

JCOTS was asked to study the methods necessary to ensure compliance by local governments with the Federal Telecommunications Act of 1996 (the Act). Pursuant to this request, the JCOTS requested organizations that represent the localities and companies in the industry to provide testimony. Advisory Committee Four held a hearing on December 14 to receive this testimony.

Before receiving any testimony, Mitchell Goldstein, Director of JCOTS, presented the Committee with an overview of the requirements of the Act (See Appendix 7). Section 15.2-2232 of the Code of Virginia mandates that the local planning commissions comply with the Act when deciding on applications for deployment of telecommunications facilities under its comprehensive plan. The Act preserves the authority of localities over land use and permitting issues, but it prevents them from taking actions that prohibit, or have the effect of prohibiting, the provision of personal wireless services. In addition, the Act requires that all decisions regarding personal wireless facilities be reasonable and in writing.

i. The Localities

Michael L. Edwards, Senior Legislative Analyst of the Virginia Municipal League (VML), began the testimony for the localities by explaining that it is appropriate that the Commonwealth hold conduct this study. Congressmen Bliley, Davis and Moran of the Virginia Congressional

Delegation were instrumental in developing the Act as well as preserving local zoning rules. Mr. Edwards also introduced the local representatives and the topics that they would present. The localities presented the case and legislative history of this topic as well as three case studies. Rockbridge, Henrico and Albemarle Counties provided the case studies.

(a). Case Law

Karen Harwood, Deputy County Attorney of Fairfax County, presented the case history. The only case in this area is *Fairfax County v. Washington, D.C. SMSA*, 522 S.E.2d 876 (1999). The issue in this case was whether telecommunications facilities constructed, or to be constructed, by a private commercial owner on its leasehold on land within the rights-of-way of the Virginia Department of Transportation (VDOT) are exempt from the zoning authority of the locality in which that land is located.

Private telecommunications companies leased land from VDOT and, in many cases, placed towers on that land as part of their telecommunications network. These towers were not included in Fairfax County's comprehensive plan, nor were they part of an application to the County. The lease agreements between VDOT and the telecommunications companies placed primary use and control of the land with the lessees. The towers were owned solely by the telecommunications companies. The Supreme Court of Virginia held that the companies and their leasehold interests were subject to the County's zoning authority under § 15.2-2232 of the Code of Virginia and that they must submit their proposed use of leased land to the County's planning commission.

The Court stated that:

> while VDOT would benefit from the ability to place its equipment on the tower, VDOT [did] not own the towers or have a primary right of use of the land subject to the leases during their terms. The telecommunications companies are in the same position with respect to the towers in question as they would be for any other such towers constructed on land leased or acquired for such purposes. The mere fact that the towers [were] conveniently, or even necessarily, located on state-owned rights-of-way is irrelevant to the question whether they fall within the regulatory authority of the planning commission granted under Code § 15.2-2232(A).

As a result of this decision, the telecommunications companies applied for permits from Fairfax County. Out of 14 permits, 11 were approved, one was denied and is being appealed, and two are still pending.

(b). Statutory Law

Roger Wiley, Telecommunications and Legal Consultant for the Virginia Association of Counties (VACo), presented the legislative history. Mr. Wiley acknowledged that state agencies in the Commonwealth are exempt from local land use and planning laws. However, he qualified this by stating that public utility facilities must go through the local planning commissions (§ 15.2-2232(A) of the Code of Virginia).

During the 2000 Session, legislators introduced Senate Bills 231 and 758. S.B. 231 attempted to codify the Supreme Court of Virginia's decision in *Fairfax County v. Washington, D.C. SMSA* into law by mandating that the use of all publicly and privately owned telecommunications facilities on state property follow the local planning process. S.B. 758 provided detailed requirements relating to leasing or otherwise conveying use of land owned by VDOT to communications companies for construction and operation of communication facilities. Neither S.B. 231 nor S.B. 758 was enacted.

Mr. Wiley informed the committee that new litigation is pending in Rockbridge County, challenging VDOT's new policy. Mr. Wiley stated the VDOT is now planning to install towers that it owns on its rights-of-way and lease space on those towers to telecommunications companies without approval of the locality in which the right-of-way is located. The localities consider VDOT's policy an attempt to "sell its immunity" to private business.

(c). Case Studies

(i). Rockbridge County

The Honorable Nanalou W. Sauder, Chair of the Rockbridge County Board of Supervisors, described the views of a rural county. She said that her county has worked well with telecommunications companies on their requests for towers. Ms. Sauder noted that the requirements for appropriate economic development (e.g., building telecommunications towers) and tourism development (based in part on protecting the scenic nature of the county, including viewsheds) are often in conflict. These conflicts, which sometimes require an appropriate compromise, have not prevented the approval of 21 of 23 applications for towers. Of the remaining two, one was withdrawn and the other requires a final decision by the Virginia Department of Historic Resources. The processing times of the approved applications range from 21 to 126 days with the average being approximately 56 days. She believes that her county's experience shows that it is possible for localities and companies who wish to build telecommunications towers to work together if both sides respect each other's needs.

Ms. Sauder elaborated on Rockbridge County's litigation against VDOT stating that Rockbridge County views VDOT's actions as "a threat to the localities if they find it necessary to deny the company's application for a specific location." The companies had applied for permission to install facilities on towers that they would construct and give to VDOT to both VDOT and the localities. She said that Rockbridge County's interpretation of the current law is that third party communication facilities on state property must have local approval. She opposes any legislation that will change the status quo, diminish local authority or increase the discretion of state agencies in this matter.

(ii). Henrico County

Linda G. Robinson, Legislative Liaison for Henrico County, presented the views and experiences of her county. Henrico County's 2010 Land Use Plan includes the goal of ensuring the adequate provision of a telecommunications infrastructure while minimizing the impacts on surrounding land uses. To achieve this goal, Henrico County maintains an inventory of tower sites and existing telecommunication facilities, requires collocation wherever possible, allow towers by

right up to 100 feet in height in industrial areas, encourages the use of existing structures and has catalogued governmental sites that may appropriate for siting telecommunications facilities. The County has also hired a consultant to assist them and the industry. To preserve the character of the County and to promote public safety, the County discourages towers in residential areas and cemeteries and encourages the use of stealth towers. The County also requires security fencing and screening towers from public view and that towers be built to meet stringent building code and safety standards.

Ms. Robinson also described some real life examples of the relationship the County has with companies in the telecommunications industry. One applicant proposed building a new tower next to an existing tower; the County suggested and approved extending the existing tower for collocation. Another applicant proposed building a tower adjacent to a residential area because of a hole in its coverage; when no suitable was found, the County worked with the applicant to minimize the impact of the tower, which was constructed as 90-foot wooden pole covered by trees. Another applicant proposed a tower that faced strong citizen opposition; the County worked with the applicant and the public and suggested placing the tower in a County-owned park. Henrico County is also working with VDOT to review tower placements in its rights-of-way.

(iii). Albemarle County

William D. Fritz, Development Process Manager of Albemarle County, presented the last local case study. Since 1996, Albemarle County has approved 50 applications for telecommunications tower and denied three. Of those three, one was appealed to court; the decided in favor of the County. The County's policy is to discourage placement of towers on ridgelines and to encourage the companies to limit the tower's height to ten feet above the tallest tree. A telecommunications service provider proposed the idea to limit the tower's height and property owners and residents accepted that standard.

Albemarle County classifies telecommunications facilities into three tiers. Tier 1 facilities require a building permit if the facility is placed inside a current structure. Tier 2 facilities require review by the Planning Commission and involve collocation or placement within 10 feet of the treetops. Tier 3 facilities are all other placements and require special use permits. According to Mr. Fritz, the County's requirements and restrictions are based on visibility as opposed to aesthetics.

Mr. Fritz recommended that the Committee consider legislation that would require that all facilities within VDOT rights-of-way undergo local review. He stated that either a state agency or the regional planning district commissions should create model ordinances and comprehensive plans. Finally, localities should be educated to insure that they understand their rights, responsibilities and options.

(iv). Conclusion

Mr. Edwards returned to answer questions. When asked if additional legislation was necessary, Mr. Edwards stated that the current laws, which preserve local control over land use issues, work

and that no new legislation was needed. He also informed the Committee that both the VML and VACo have made themselves available to help companies work with localities and, they continue to do so. In addition, VACo has developed a model ordinance to use when drafting local ordinances for telecommunications facilities.[3]

ii. The Telecommunications Companies
(a). AT&T Wireless

Edward L. Donohue, an attorney with Cole, Raywid & Braverman, represented AT&T Wireless's views. He informed the committee that the siting of towers is getting more difficult. He asked the committee to direct the localities to articulate their standards for tower sites.

He explained that one wireless customer is added every 40 seconds and that new technology is increasing this demand. Localities must be flexible. Mr. Donohue also explained that elected officials were not surprised by the use of VDOT rights-of-way. In fact, he informed the committee that local officials were driven to the proposed sites prior to tower construction. It even took companies a while to get VDOT to agree to the plan. He also explained that the one tower that was denied by Fairfax County would have been on the Dulles Toll Road where demand is increasing and there are little, if any, residential areas. He also found it surprising that the same people that demand the service also oppose the construction of the towers needed to supply the service.

(b). Sprint

Lisa M. Murphy, an attorney with Huff, Poole & Mahoney provided the committee with a statement about Sprint's experiences with localities. She stated that level of sophistication of local ordinances regarding communications towers varies. In addition, even though § 15.2-2232(F) of the Code of Virginia states if a planning commission fails to act on application for a telecommunications facility within ninety days of submission, it is deemed approved, some municipalities circumvent that requirement by imposing additional filing requirements or threatening denial if the applicant does not agree to an extension.

Part of the process involves public hearings both at the planning commission level and at the city council/board of supervisors level. She states that citizen involvement often leads to denial of towers in residential areas even if an application meets the local guidelines and requirements. This result is due, in part, to the "Not In My Back Yard" mentality.

According to Ms. Murphy, one locality refuses to provide carriers with applications for permits if the staff determines that the site is inappropriate. She believes that this practice prevents nearly all applications for towers in highly residential or visible areas from ever being heard by the planning commission or the board of supervisors. Another locality adopted a tower or facilities plan map as part of its comprehensive plan based on a three-year-old study performed by the county's communications consultant; any sites not already provided for are deferred indefinitely pending an overhaul of the county's current program. If the board of supervisors determines that the application should proceed, the procedure can take months or years involving public hearings

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[3] See http://www.institute.virginia.edu/vaco/modelord.html.

by the board of supervisors and the planning commission, votes to amend the comprehensive plan, a conditional use permit application, and more public hearing. Ms Murphy believes that this process has effectively prevented the construction and operation of communications towers in areas where residential development and customer demand has arisen since the county's tower map was created.

Not all of their experiences have been difficult. Ms. Murphy also stated that localities have become more reasonable and receptive as their education level in this area increases. She recommended that the best way to speed up the delivery of wireless service in the Commonwealth is to develop an administrative process for the review and approval of communications towers. This solution is the same one that the localities steadfastly reject.

(c). Verizon Wireless

Thomas Curran, Director of Public Policy for Verizon Wireless, advocated a balanced approach that takes into consideration the needs of the community. This approach would require carriers to provide service in the most effective way and for local zoning officials to assist in the process. He cautioned that collocation and stealth towers might not always be possible solutions.

Mr. Curran believes that there should be a clarification of the responsibilities of the carriers and the localities so that they can work together to build the necessary facilities while meeting the needs of the community. He stated that the Act requires that a denial of a siting request be supported by "substantial evidence" to sustain the denial. The U.S. Court of Appeals for the Fourth Circuit interpreted this to mean counting the number of people for and against the request. Mr. Curran believes that there should be objective evidence of real harm to the community and that the locality should have to prove this harm by a preponderance of the evidence. He suggests that the General Assembly set the burden of proof and definitions of evidentiary requirements.

Mr. Curran also believes that the carriers have responsibility in this matter as well. They should demonstrate the need for coverage in an area, the minimum height required to satisfy that need, and the search area that would provide the necessary service. Upon demonstrating these facts, if the locality denies the request, he believes that it should have an obligation to assist in locating a comparable alternative.

(d). Cellular One

David W. Clarke, an attorney with McCandlish Kaine, provided Cellular One's comments to the committee. Cellular One agrees that the process can take longer than it should and that while it is supposed to be completed in a reasonable time, what constitutes a reasonable time is determined case by case. Mr. Clarke stated that consideration should be given to streamlining the existing local approval processes by designating rights-of-way as appropriate locations within certain legislated guidelines. He also stated that the VDOT program has been an important vehicle in the deployment of comprehensive wireless telecommunications systems. Mr. Clarke told the committee that it should do what it can to encourage VDOT to continue its program.

Mr. Clarke claimed that some counties are basing their regulations on radio frequency and network design instead of focusing on land use considerations. The Act prohibits state and local governments from regulating the placement, construction, or modification of personal wireless service facilities on the basis of environmental effects of radio frequency emissions to the extent that such emissions comply with FCC regulations.

He suggested that some counties have burdensome regulations. For example, some counties have imposed moratoria on applications until they can amend their comprehensive plans and zoning ordinances. Other counties require that the applicants secure leases for all proposed sites and file all applications at the same time. One ordinance even required that every proposed new tower must have at least one other carrier as a collocator before the application can be filed, even if there are no other companies in that area. Another ordinance specified the type of antenna equipment that could be used. Other ordinances require proof that no other alternatives exist with a technical demonstration that all alternatives have been exhausted from land availability and radio frequency coverage standpoints.

Mr. Clarke provided the example of an ordinance that requires the carrier to pay for radio frequency engineering or other consultants with no limits placed on the fees charged. If the carrier does not pay, the application will be deemed withdrawn. These were just a few of the hurdles that Mr. Clarke stated that unnecessarily and, in some cases, wrongfully complicate and lengthen the process.

Mr. Clarke asked that the committee consider refining the powers of local governments regarding siting decisions by limiting those decisions to traditional land-use and zoning issues, as opposed to technical determinations. Moreover, if the county denies a proposed location, the county should be required to identify alternative sites that are either publicly owned and available, or privately owned and available for leasing at a reasonable commercial rate.

iii. Other Interested Parties
(a). Atlantic Technology Consultants

George N. Condyles, President and COO of Atlantic Technology Consultants (ATC), relayed the experiences of his company and its clients. ATC is a company that specializes in the consulting of wire and wireless technologies for a diversified client portfolio. It provides tower review, E-911 and public safety review for many counties in Virginia and state and federal entities.

Mr. Condyles began by stating that he opposes additional legislation at the state level that would infringe on the rights and sovereignty of local governments. He believes in the ability of citizens to have direct access to and action by locally elected and appointed officials that are accountable to them.

A wireless network became the best way to bring new telecommunications technology and capacity to individual homes and business where the current method is analog telephone lines. Distributing voice and date over a wireless network costs approximately one-eighth the amount of providing the same services over wire networks. Additionally, wireless networks have

mobility and unlimited physical growth potential. However, getting the wireless signal to these places requires cellular telecommunications towers.

The strategy of the carriers changed in the late 1990s when they expanded their networks. They used their capital to update and improve the technology and sold the towers to tower development companies. Mr. Condyles pointed out that this change caused a problem. The Act protects the carrier (if it is has an FCC license) who owns the tower, but gives no protection to the private developer. Therefore, the private tower developer is no different than any other private developer.

In addition to having to comply with local requirements, the tower developer must comply with all federal regulations governing telecommunications towers and facilities as set by the Federal Aviation Administration (FAA), the Federal Communications Commission (FCC), the Environmental Protection Agency (EPA) and the National Environmental Protection Act (NEPA). These requirements govern the height of towers, air obstruction guidelines, and environmental assessments concerning, among other things, wetlands, historical sites, and electromagnetic energy fields. In addition, the Commonwealth reviews each NEPA application through the Department of Historical Resources and evaluates any conflicts at the state and local level pertaining to historical resources. The FCC has delegated the electromagnetic energy field review to the EPA.

Mr. Condyles made some observations regarding both the localities and the applicants. He stated that many counties do not have a comprehensive plan that addresses communications towers. Many applicants do not provide enough information to the localities, which leads to more questions and a longer process. Because many carriers (FCC license holders) and tower applicants use the same attorneys, the localities believe that the carrier and the tower applicant are the same; therefore, the Act would apply to both when it only applies to the license holder.

Localities are not always equipped to handle many of the technical issues. They need to perform a qualified technical review in addition to a land use review and to set standards for approval. The counties will also be required to handle wireless E-911 calls and must work with the carriers to ensure that this happens. Carriers and developers should meet with counties and establish dialog, not litigation. In addition, Mr. Condyles cautions that carriers should have multiple tower developers looking for sites in the same county or search ring.

(b). Crown Castle, USA, Inc.

Frank W. Stearns, an attorney, represented Crown Castle International, the world's leading independent owner and operator of shared wireless communications and broadcast infrastructure. Crown Castle engineers, deploys, owns and operates a technologically advanced shared wireless infrastructure, including extensive networks and towers and rooftops as well as analog and digital radio and television broadcast systems. The Commonwealth of Virginia is a major market for Crown Castle International.

Mr. Stearns raised the concern that public hearings and localities focus on the radiation emitted from telecommunications facilities, even though the facilities comply with FCC regulations and the Act prohibits state and local governments from basing their decisions on this factor.

He found it surprising that houses are built on the beltway with little more than a privacy wall separating the two, but residents will fight a telecommunications tower on the beltway. The belief is a mistaken notion that the tower reduces property values, as opposed to the proximity of the beltway.

Mr. Stearns echoed many of the concerns and recommendations of the telecommunications companies. He also recommended that the Commonwealth eliminate duplicative review requirements and establish statewide pre-approval for structurally similar facilities. In addition, he suggested that the Commonwealth develop procedures and legislation for filing applications, establishing review periods, and clarifying the approval and review authority of localities for the use of rights-of-way.

(c). Virginia Department of Transportation (VDOT)

At Delegate Plum's request, Ed Land represented VDOT before the committee. He explained that VDOT is not accepting any new applications for new towers on its rights-of-way, but that it is accepting applications for collocation. The construction of towers is part of VDOT's plan to deploy a state-of-the-art information technology program (ITS or Intelligent Transportation System) known as Smart Travel. The program uses the technology to provide motorists with up-to-date information about travel conditions, congestion, and alternative routes, among other benefits. VDOT put a hold on processing applications for new sites as a result of the ongoing litigation.

(d). Other Parties

According to Kenneth J. Schrad, Director of the Division of Information Resources for the State Corporation Commission (SCC), the SCC no longer has regulatory oversight of wireless carriers. The SCC's Division of Public Service Taxation still assesses the property of these carriers if they are incorporated in Virginia as a public service corporation. As such, the Division knows where these towers are located. The Division also notified localities if the ownership of these facilities transfers to some other entity that may not be a public service corporation so that the local commissioner of revenue can assess these properties for local taxation.

Kenneth D. Eades, County Administrator of Northumberland County wrote to state that County residents currently have little to no service from Verizon and Cellular One, its current providers. The county is 222 square miles with a summer population of 25,000 people. It has only one tower in the center of the county that provides service for Verizon and two towers (one in Lancaster County and one in Richmond County) that provide service for Cellular One. Mr. Eades stated that he can not use a wireless phone in the county seat of Heathsville and get any reasonable service. Roughly 70 percent of the county can not get service and their emergency services are at a real disadvantage. The service they receive is analog with no plans for digital. He hopes that something can be done to help his county.

iv. Conclusions

Delegate Plum noted that there was no way that the Commonwealth could develop legislation that would the diverse concerns in every case. It appeared from the testimony that the only concern that the parties had in common was misunderstandings and misinterpretations from the other parties. Therefore, the Committee recommended that the parties get together for a summit to discuss telecommunications issues, such as understanding, reviewing and complying with the Federal Telecommunications Act of 1996 and other legal requirements and developing "best practices" in the deployment of wireless service throughout the Commonwealth. The VML, the VACo and the Virginia Telecommunications Industry Association offered to host such an event and to include all interested parties. The Committee also recommended that the Commission ask VDOT to continue the ITS program and to draft guidelines in concert with local governments.

2. Recommendations

Advisory Committee Four recommended:

1. That the Commission adopt a resolution commending J. Sargeant Reynolds Community College (Workforce Development); Longwood College Institute for Teaching Through Innovative Practices (Education); Manufacturing Technology Center in Wytheville, Virginia (Workforce Development and Education); and Virginia Tech (Science Education) for the creation and operation of mobile learning units, which bring advanced opportunities to underserved regions of the Commonwealth;

2. That the Commission request a budget amendment for $194,000 to cover part of the costs associated with the creation of an Internet-based high speed H.323 network that has access to Internet II resources to help schools in Southside Virginia meet the Standards of Learning and to provide advanced content for students;

3. That the Commission study the impact that mobile learning units have on education and economic development in the Commonwealth;

4. That the Commission request that all interested parties, including the Virginia Municipal League, the Virginia Association of Counties and the Virginia Telecommunications Industry Association, meet to discuss telecommunications issues, such as:

    a. Understanding, reviewing and complying with the Federal Telecommunications Act of 1996 and other legal requirements; and

    b. Developing "best practices" in the deployment of wireless service throughout the Commonwealth;

5. That the Commission encourage the Virginia Department of Transportation to continue its Smart Travel system and to develop guidelines for its implementation in consultation with the localities; and

6. That the Commission continue to explore ways to close the digital divide. For example, using school computers when students are not in school; extending library hours; creating incentives for businesses to bring Internet and wireless access to underserved areas; supporting a state tax credit for companies that bring broadband Internet access to underserved areas; creating a database of companies, their contact information and their service areas and of localities and their contact information to better enable them to work together; funding Technology Centers in the Boys & Girls Clubs with a match from private resources; creating an Internet Rural Access Authority that can use consultants, apply for grants, sign contracts and aid localities in bringing Internet access similar to the way Electric Cooperatives bring electricity to these localities; and creating a Technology Corps similar to the Peace Corps for bringing technology and training into areas that need it.

E. ADVISORY COMMITTEE FIVE (UNIFORM COMPUTER INFORMATION TRANSACTIONS ACT - UCITA)

Senator Edward L. Schrock and Delegate Joe T. May, Co-Chairs

Charge: To study the impact of UCITA on Virginia business, libraries and consumers. The General Assembly enacted UCITA during the 2000 Session, but delayed its effective date until July 1, 2001 and directed this study.

1. Summary

Advisory Committee Five held five meetings on June 29, 2000; August 23, 2000; September 12, 2000; October 17, 2000; and November 9, 2000, amounting to over 30 hours of deliberations. To increase the public's input in this study, the committee held public hearings in Richmond, Norfolk, Lynchburg and Fairfax. The committee was comprised of 27 members, four from the Commission and 23 representing other government entities, businesses, consumers and non-profit organizations.

Throughout the meetings, 64 proposed amendments to UCITA were submitted for the Committee's consideration, and many people testified before the Committee on UCITA in general or on specific proposed amendments. Of those proposed amendments, the Committee accepted 23 regarding UCITA and one regarding the Virginia Consumer Protection Act.

For the complete record on the deliberations, see Senate Document 24 (2001).

2. Recommendations

Advisory Committee Five recommended:

1. That the Commission support a legislative draft that incorporates the committee's proposed amendments to UCITA; and

2. That the Commission support a legislative draft that incorporates the committee's proposed amendments to the Virginia Consumer Protection Act.

F. ADVISORY COMMITTEE SIX (CRIMINAL LAW)

Senator Janet D. Howell and Delegate Jay K. O'Brien, Jr., Co-Chairs

Charge: To study Virginia's criminal law and whether it requires amendments to criminalize certain computer-related conduct, such as maliciously spreading a destructive computer virus; to study the issues surrounding using technology to aid law enforcement; and to study the need for developing guidelines for using Photo-Red Enforcement (using cameras to enforce traffic laws) and using portable environmental technology to enforce environmental regulations such as those dealing with automobile exhaust.

1. Summary

Advisory Committee Six met twice during this interim on November 8, 2000 and December 11, 2000. The Committee was co-chaired by Senator Howell and Delegate O'Brien. It was composed of 8 citizen members who possessed a wealth of knowledge in computer crime and enforcement. The committee addressed computer crimes and Photo-Red Enforcement, using cameras to enforce traffic laws.

a. Federal Initiatives

There was once a time when the greatest fear of the American people was a nuclear attack from the Soviet Union. As time went on, the two sides alleviated much of the potential for an unprovoked attack by reducing the amount of weapons and by working together. As the possibility of a Soviet attack faded, the new terror was a nuclear attack from rogue nations. Today, U.S. intelligence knows which nations have these weapons and which have the potential.

The next wave of fear was terrorism. Americans have long believed that terrorism was a foreign problem. While Americans have been the targets of terrorist actions in the past, these actions took place outside the United States and its territories. For example, the bombing of the U.S. Army barracks in 1983 took place in Beirut, Lebanon, the explosion on Pan Am Flight 103 in 1989 took place over Lockerby, Scotland; the massive kidnappings took place after 1979 revolution in Tehran, Iran; and the airplane hijackings that occurred throughout the 1980s always happened on foreign soil or in foreign air space. Even the attacks against the U.S. in 1998 took place at two U.S. embassies in Africa. Terrorism reached U.S. soil in the 1990s with the

bombings at the World Trade Center in New York City and the Murrah Federal Building in Oklahoma City.

It is possible to defend against many of these actions because they originate from a specific place and affect specific geographic area. Other actions are not so easy to defend against. The 1990s saw a rise in chemical and biological attacks like the threatened anthrax attacks in the Middle East and the Saracen attack on the Japanese subways. Chemical and biological weapons are easier to obtain or create, to hide, to move and to use. They can be used on a specific place while the perpetrator is far away. Most important, an attack such as this can spread in unpredictable ways.

All of these attacks, however, have one thing in common: they are based on geographical territories and take place in real time, in real space. America was able to protect its territory, its people and its infrastructure. The first target of an attack was always the nations power grids, its water and food supplies and its munitions plants. Today's attacks do not follow the same rules or patterns. As our infrastructure becomes more diversified and more computerized, the fear is an attack from cyberspace. Today, unknown attackers with little more than a computer and phone line hack into corporate computer systems to wreak havoc on their systems, or release computer viruses. Some attacks do not involve hacking into a system or even directly using the attackers own computer.

An attack in cyberspace differs from the old types of attack in many ways. Some of these actions are minor while others are intended to cause great harm. The attackers are diverse in age, education and purpose. The object of the attack will usually deny that an attack occurred to protect its reputation and its finances. According to Special Agent John Donahue from the Richmond Office of the Federal Bureau of Investigation (FBI), in the United States, over 1.5 million computer attacks took place during 1999. The actual figures are much higher because over 95 percent of all computer attacks go unreported.

i. InfraGard

Reporting an attack is the first step in making sure that it does not happen again. Special Agent John Donahue informed the committee about the federal InfraGard program. The purpose of this initiative is to expand direct contacts with the private sector infrastructure owners and operators and to share information about cyber intrusions, exploited vulnerabilities, and physical infrastructure threats. The initiative encourages the exchange of information by government and private sector members through the formation of local InfraGard chapters within the jurisdiction of each Field Office. Chapter membership includes representatives from the FBI, private industry, other government agencies, State and local law enforcement, and the academic community

The InfraGard program is a new system being instituted with the private sector to get a better pulse on vulnerabilities (i.e., assessment of the number of intrusions, where they are coming from and how). The program aims to help counter threats to computer systems and networks. Its primary aim is to protect "critical infrastructure" such as telecommunications, transportation or emergency services, and its owners, which are primarily private companies. The government

- spurred by its fear of the damage an electronic attack could do to such infrastructures as the electrical power grid and telecommunications systems operated by the private sector - has focused increased attention on tracking threats to the computer systems that operate these critical infrastructures.

InfraGard operates an Alert Network, whereby participating companies can notify each other over a secure communications network of threats or attacks and what measures they have taken. The initiative seeks to have private-sector entities electronically report computer break-ins to field offices using advanced information technology methods. The program allows companies to report computer intrusions without fear that the information will be made public and with anonymity. Participants work directly with an agent from the local office of the FBI and the information that they supply is used to warn other participants about their own vulnerabilities.

ii. Solar Sunrise

The federal government is not immune from attack. To protect the defense infrastructure, the Department of Department (DoD) created the Joint Task Force on Computer Network. The network defense unit grew out of the Eligible Receiver 97 exercise in 1997, in which National Security Agency teams waltzed into DoD systems using off-the-Internet hacking tools. Awareness of the vulnerabilities was reinforced by the monthlong Solar Sunrise assault on DoD systems in 1998 by two young California teenagers, mentored by an Israeli hacker. The DoD and FBI worked together with other federal agencies and picked up the two kids in California and the young man in Israel. These teenagers disguised their identities by using their computers to take over other systems that were actually used in the attack and routing their attack through another country. The task force maintains a working relationship with the FBI and other law enforcement agencies. No longer are attacks on our infrastructure tied to a specific place.

Solar Sunrise was a multi-agency investigation of intrusions into more than 500 military, civilian government, and private sector computer systems in the United States, during February and March 1998. The intrusions occurred during the build-up of United States military personnel in the Persian Gulf in response to tension with Iraq over United Nations weapons inspections. The intruders penetrated at least 200 unclassified U.S. military computer systems, including seven Air Force bases and four Navy installations, Department of Energy National Laboratories, NASA sites, and university sites. Agencies involved in the investigation included the FBI, DOD, NASA, Defense Information Systems Agency, AFOSI, and the Department of Justice (DOJ).

The timing of the intrusions and links to some Internet service providers in the Gulf region caused many to believe that Iraq was behind the intrusions. The investigation revealed that two teenagers in California and several individuals in Israel were the culprits. Solar Sunrise demonstrated to the inter-agency community how difficult it is to identify an intruder until facts are gathered in an investigation, and why assumptions cannot be made until sufficient facts are available. It also demonstrated the vulnerabilities that exist in our networks; if these individuals were able to assume "root access" to DOD systems, it is not difficult to imagine what hostile adversaries with greater skills and resources would be able to do. Finally, Solar Sunrise demonstrated the need for interagency coordination.

Special Agent Donahue pointed out that while everyone is focusing on the infrastructure, no one is addressing the kids. They did not understand the consequences of their actions on both the computers they attacked and on their own futures.

b. Virginia's Computer Crimes Strike Force

In 1999, the Office of the Attorney General of Virginia created the Computer Crimes Strike Force to investigate and prosecute illegal activities conducted in cyberspace. The Virginia State Police will perform investigations and lawyers in the Attorney General's Office will prosecute. Thomas J. Lambert, the director of the Computer Crimes Strike Force, addressed the committee on its function and concerns.

The Computer Crimes Strike Force will investigate and prosecute incidents of consumer fraud conducted in cyberspace, help enforce Virginia's Internet-related legislation, coordinate the state's Internet crime-fighting efforts with other states and the federal government, assist local enforcement and track regional and national trends in computer crime and law enforcement.

The Strike Force had its first prosecution for computer invasion in the year 2000. The incident involved a denial of service attack on the Department of Motor Vehicle's system. A denial of service attack is the name given to a type of attack on a network that is designed to bring down a network by flooding it with useless traffic. Even the Attorney General of Virginia's system was the target of a cyber attack; the perpetrator was tracked to Brazil. Mr. Lambert pointed out a deficiency in the computer trespass law. The current law requires that damages be proven, even for an attack on a government system. The Attorney General's Office believes that government computers should be treated differently.

c. Posting Contact Information

The committee focused on another concerned raised by Mr. Lambert involving two criminal incidents. In one incident, an anonymous person posted on a website personal information about a California woman. The information, purportedly posted by that woman, said that she had a fantasy about having someone break into her house and rape her. The information also informed others how to get into her house and do this. When someone finally committed this act, the instigator could not be prosecuted, because what he did was not a crime.

A similar incident happened involving a teenage girl from Virginia. Again, an anonymous person posted personally identifiable information about a girl in such a way that the system that he used could not detect and remove. He included her photo from elementary school and a provocative statement about her sexual tendencies. Several people showed up at her doorstep thinking that she actually posted the information. The instigator in this case also could not be prosecuted, because what he did was not a crime.

The committee recommended legislation that would make communicating personal contact information, without that person's consent, for the purposes of encouraging a third party to commit an illegal, obscene or immoral act or otherwise harm that person or his property a Class 1 misdemeanor. When the crime involves a minor, the crime may increase to a Class 6 felony.

d. Photo-Red

Richard Retting, Senior Transportation Engineer with the Insurance Institute for Highway Safety (IIHS), explained why photo-red is used and how it works. Drivers who run red lights are responsible for 260,000 crashes in the United States. Red light cameras deter drivers from running red lights and are increasing being used as a supplement to conventional police traffic enforcement.

Photo monitoring systems, known as photo-red, take pictures of a car when it runs a red light. Before the camera is activated, the car must be behind the intersection line when the light turns red and must be travelling greater than a preset rate of speed. The camera will take a second picture of the car showing the violator in the intersection. The camera records the date, time of day, time elapsed since the beginning of the red signal, and speed of the vehicle.

According to a study conduct by the IIHS, 70 to 80 percent of the drivers in urban areas of the United States support the use of this system. Use of these cameras changes a driver's behavior. People are less likely to violate the law if they believe that they will be caught. To alleviate fairness issues, the cameras are only activated after the light turns a solid red. In addition, its use is publicized in the locations where it is used.

Bernie Caton, Legislative Director of the City of Alexandria, explained the current state of the law. Currently § 46.2-833.01 of the Code of Virginia authorizes eight localities to use photo red (the cities of Alexandria, Fairfax, Falls Church, Richmond and Virginia Beach and the counties of Arlington, Fairfax and Loudon). The camera must take a photo of a car both before and after it enters the intersection. The locality must then use DMV records to identify the vehicle's owner and an employee must certify that a violation was photographed. The locality will mail a summons to the owner who is also presumed to be the driver. The owner can challenge that presumption with an affidavit and avoid paying the $50.00 fine. No points can be assessed and the violation will not be reported to the insurance company.

In localities that use this program, violations have dropped by as much as 40 to 50 percent. Few individuals contest the summons or even file an affidavit (less than 1 percent). A majority of those cited through this program pay the fine (70 percent in Alexandria and 90 percent in Fairfax City). The program works and should no longer be viewed as a demonstration or subject to the July 1, 2005 sunset.

At another hearing, Dana Schrad, Legislative Liaison of the Virginia Association of Chiefs of Police (VACP), presented the view of the organization she represents. The VACP supports the use of photo red. Ms. Schrad recommended changing the statute to include some guidance for the localities requesting authorization to use it. For example, law enforcement should be responsible for the program including making decisions about where the cameras should be placed. She also stated that localities should consider the construction and engineering of the intersection as well as its history. Finally, she stated that use of the program should be publicized.

Chief Dan Boring, Chief of Police for the Town of Vienna (Fairfax County), supported Ms. Schrad's comments. The Town of Vienna uses video instead of still photos.

2. Recommendations

Advisory Committee Six recommended:

1. That the Commission support legislation to create a new computer crime. The legislation would criminalize facilitating, encouraging or inviting crimes against a person or property using a computer;

2. That the Commission support legislation to give all localities authority to use a photo monitoring system if they meet certain requirements. This legislation would remove the requirement that each locality petition the General Assembly for such authorization; and

3. That the Commission continue to study computer crimes next year.

III. COMMISSION MEETINGS

A. ORGANIZATIONAL MEETING

The Joint Commission on Technology and Science ("Commission") held its first meeting of the 2000-2001 interim on June 6. After introductory remarks by Mitchell Goldstein, Director of the Commission, the Commission elected Delegate Joe May as chairman and Senator Newman as vice chairman. Chairman May and Vice Chairman Newman then commented on the good work of the Commission's previous chairman, Delegate Kenneth Plum, who still serves as a member of the Commission. The Commission also adopted the workplan, consisting of six advisory committee (AC) topics to be studied: AC1 – Internet Governance; AC2 – Economic Development; AC3 – Electronic Government; AC4 – Digital Divide; AC5 – Uniform Computer Information Transactions Act (UCITA); and AC6 – Criminal Law (see Appendix 1).

B. EDUCATIONAL TECHNOLOGY

On July 25, 2000, the Commission held a meeting to discuss education and technology in the Commonwealth and beyond. The presentations focused on how technology is affecting the way people learn and teach. Advances in technology have changed not only the delivery of education, but also the underlying objectives. For example, a teacher in one state can teach students in classes all over the world - at the same time. Students from the around the world can conduct research in multiple institutions regardless of their location or hours of operation. In today's world, learning with technology is as important as learning how to use it.

1. Status of Educational Technology in K-12 Schools

Lan Neugent, the Virginia Department of Education's Assistant Superintendent for Technology, presented an overview of the current status of educational technology in Virginia's K through 12 schools. He discussed the Commonwealth's progress toward meeting the goals of the Six-Year Educational Technology Plan, funding issues, the status of the web-based Standards of Learning Technology Initiative and a preview of projected goals for the next plan.

Today, 97.28 percent of Virginia's schools are connected to the Internet, but only 55 percent of the classrooms are connected. Over half of these schools (58.9 percent) are connected at the speed of a T1 line or greater. Though the ratios vary greatly across the Commonwealth (between 6.78 and 30.78), there is an average of 16.67 students to one Internet-connected computer in the classrooms statewide. Furthermore, school systems across the Commonwealth are developing programs to train the teachers to use this technology.

2. Universal Laptop Access Project

Dr. J. David Martin, Superintendent of the Henry County Public Schools, discussed Henry County's Universal Laptop Access Project, a collaboration between Henry County's governmental and educational systems to provide computers for school and home use to students in grades 4 through 12. The project's twofold purpose is to train all students in the use of computer technology and to provide both a workforce and an environment that will attract new businesses and industries to the area.

The county created this project to reverse the trend created by numerous plant closings and layoffs in the area (more than 5,000 jobs were lost from late 1998 to early 1999 alone). After installing a fiber optics system and bringing Internet access to the schools, the laptop project was conceived. Today, schools are open longer for technology and adult education classes. All classrooms have telephones and computers and can access laser disc players, satellites, VCRs and parents. Irisburg Elementary School, once known nationally for crime and drugs, is now known for its successes. Bassett Middle School, one of the oldest schools in Virginia, now has a computer in every classroom.

This project has had some amazing benefits for the students and the entire community. It brought the Board of Supervisors, the School Board, the county administration, parents, teachers and the community together. According to an independent evaluation conducted by Virginia Tech, this project has led to increasing grades and Standards of Learning (SOL) scores (scores increased by over 20 percent in just the first year). It has even received recognition from the Smithsonian Institute.

3. Technology in the Classroom

Joe Kitchens, Superintendent of the Western Heights School District in Oklahoma, presented his community's solution to the connectivity problem. Western Heights, a community in which 75 percent of the students qualify for free and reduced lunches, passed four bond issues in five years to fund a state-of-the-art telecommunications network called JetNet. JetNet is an infrastructure

capable of supporting web-based video-streaming, video-conferencing, IP telephony, e-mail, integrated learning systems and data storage and retrieval activities. Student and teacher training is a major component of this nationally recognized project.

4. Thomas Jefferson High School for Science and Technology

In addition to hearing about community-wide and statewide projects, the Commission heard about a technologically advanced public school in Fairfax County. Richard Washer, Technical Field Support Engineer for the Thomas Jefferson High School for Science and Technology, discussed the school's purpose and initiatives. Its fourfold mission is to offer programs that promote enthusiasm, exploration and academic excellence in an evolving economic and scientific/technological community; to serve as a laboratory school examining and developing new methods and materials in curriculum innovation and reform; to foster a broad exchange of ideas and programming through outreach in teacher training, enrichment for students K-12 and networking; and to serve as a model for private sector/public education partnerships.

To achieve its mission of integrating technology in education, the school created IBET (Integrated Biology English and Technology). All students must take these courses in the ninth grade. Last year's focus is on wetland restoration and research. This program, one of many at the school, has brought technology education into the field.

5. Teaching the Teachers Using Technology

Education involves much more than the success of students and schools; it also involves the core student-teacher relationship. Without well-trained teachers, many of these programs will not promote interest and education in science and technology. Randy Bell, Professor of Science Education at the University of Virginia's Curry School of Education, discussed initiatives in Preparing Tomorrow's Science Teachers to Use Technology.

To demonstrate how teachers can integrate technology into science education, Mr. Bell brought a digital microscope. Originally marketed as a toy by Intel and Mattel, the microscope can magnify and project anything placed under its optical lens to an attached computer that can transmit the image to a computer anywhere in the world through the Internet. It can send still images, motion pictures or lapsed-time photographs either pre-recorded or live. Together with the Virginia Educational Technology Alliance (VETA), Mr. Bell is developing a model of teaching focused on content instead of technology to help teachers transition into the classroom.

6. Bringing Educational Programs to the Schools

After the creation of these teacher education programs, someone has to bring them to the schools. A collaboration of Virginia's 14 teacher education institutions formed the Virginia Educational Technology Alliance (VETA). The VETA mission is i) to design, implement and disseminate model technology initiatives that help teachers integrate educational technologies into their content areas; ii) to share resources, expertise and research with postsecondary and K through 12 educational institutions in Virginia; iii) to be an advocate for member institutions and facilitate collaborative efforts to secure resources for future initiatives; and iv) to help Virginia

become a national leader in the use of educational technologies to effectively enhance teaching and learning. L.B. Berg, VETA's Director, discussed his organization's purpose and initiatives. Its mission is to design, implement and disseminate model technology initiatives that help teachers integrate educational technologies into their content areas; to share resources, expertise and research with post secondary and K-12 educational institutions in Virginia; to be an advocate for member institutions and facilitate collaborative efforts to secure resources for future initiatives; and to help Virginia become a national leader in the use of educational technologies to effectively enhance teaching and learning.

VETA has joined together with the Virginia Society of Technology and Education, the State Council for Higher Education for Virginia (SCHEV), the Virginia Department of Education and all 14 public institutions in the Commonwealth to create in-service teacher training institutes. VETA is working on increasing teacher proficiency in various academic areas.

7. Technology Programs to Close the Digital Divide

As educational standards rise, teachers need help to meet the challenges presented. Carol Inge, Director of the Longwood College Institute for Teaching Through Technology and Innovative Practices, discussed how the Institute works with teachers and administrators in the rural part of Virginia to introduce them to the latest technologies and new educational models for serving children and adults.

The Institute researches various methods, policies and models for student learning; develops new applications and trains teachers to integrate them; and provides outreach to K through 12 and adult learning programs. The Institute is also developing standards for adult education, at-risk students and low-performing schools. It is creating a Cyber Center in which it can train teachers and the Institute has a Mobile Learning Unit for outreach programs. After the meeting, the Commission gathered for a tour of the Mobile Learning Unit, a self-contained computer lab with twelve workstations that can be used as a classroom.

8. Virginia Tech Mobile Chemistry Lab

Dr. Barbara Bunn, Director of Virginia Tech's Department of Chemistry's Outreach Project informed the Commission about the University's Mobile Chemistry Lab, a self-contained facility built into a NASCAR transport truck. The lab brings top-level chemistry experiences to students in rural Southwest Virginia where resources for up-to-date labs are insufficient. Teachers choose the experiments that they wish to perform by accessing a website to learn about them. It provides innovative and creative approaches to chemistry, increases the hands-on activities for activities, increases the collaboration between university and public school teachers, and provides an innovative way for students to increase their knowledge of chemistry through experiments that target the Virginia Standards of Learning.

The lab can serve approximately 15-20 schools per year, providing each school with a laboratory 10 times per semester. Instead of spending over one hundred thousand dollars to refurbish, renovate or upgrade facilities, schools have access to a laboratory with state-of-the-art facilities and equipment, including laptop computers connected to the Internet. The lab prepares students

for experiences in higher education, enhances the public's understanding of scientific issues, and trains and motivates public school teachers in the teaching of science. High school teachers conduct the teaching themselves after being trained by the Virginia Tech faculty members.

C. BIOTECHNOLOGY

Virginia's economy is composed of numerous technology industries. The best known is the Information Technology sector in Northern Virginia. This year, for the first time, venture capital funding in the Washington, D.C. area (including Northern Virginia and southern Maryland) exceeded that of New York with more than $1 billion.

What most people do not know is that Virginia is competing to host a commercial spaceport for VentureStar, a fully reusable space plane and possibly the successor to the space shuttle. Also, Virginia is home to one of the most wired rural communities in America: the Blacksburg Electronic Village. In addition, Virginia is home to the nation's largest distance learning provider of its kind, Old Dominion University's TELETECHNET.

1. Virginia's Biotechnology Industry

Virginia has many well-kept secrets in a variety of technology industries. One of Virginia's best-kept secrets is its biotechnology industry, the focus of September 7, 2000's Commission meeting. The meeting was held at the Virginia Biotechnology Research Park (VBRP), an incubator for a number of the businesses in the biotechnology industry. This VBRP is a joint initiative of the Commonwealth, Virginia Commonwealth University and the City of Richmond. It is Virginia's research park for the life sciences and is home to 34 biotechnology, bioscience and related companies and research institutions.

The impact of the biotechnology industry on the United States is illustrated by a May 2000 survey conducted by Ernst & Young. According to that study, the biotechnology industry doubled in size from the years 1993 to 1999. The biotechnology industry added, both directly and indirectly, to the U.S. economy almost 440,000 new jobs, $11 billion in research and development spending, $10 billion in tax revenues, and $47 billion in additional revenues (generated by workers and owners of businesses through the purchases of the goods and services of other industries).

Robert Skunda, the President and CEO of the Virginia Biotechnology Research Park, discussed the impact that this industry has on the Commonwealth. Virginia is home to numerous research institutions and companies in the public, private and non-profit sectors of the economy, which fuel various sectors of the biotechnology industry. Its colleges and universities, research parks, medical centers, federal labs and other organizations emphasize areas like health care, biomedical engineering, bioinformatics, the environment, educational software and training, and diagnostics and so much more. These organizations are spread across the Commonwealth.

Because of the importance of the biotechnology this industry, Mr. Skunda believes that there exists a need for a statewide economic development strategy specifically for the biotechnology industry. This strategy should foster a long-term and continuing relationship between industry

and higher education. It should place a greater emphasis on growing its industry as opposed to recruiting from other parts of the country. Of course, it will require investment, the necessary equipment and tools to grow, and coordination and cooperation among governments, businesses and non-profit institutions.

2. Bioinformatics - Biotechnology meets Information Technology

As the biotechnology industry advances, scientists will continue to gather more information than humans can process. Managing this information would be equivalent to a professional trying to remember everything in his field as he furthers his work and research. To overcome the difficulty of that task, a relatively new field has emerged - Bioinformatics. Bioinformatics is the management and analysis of data using advanced computing techniques.

Dr. Bruno Sobral, Director of the newly opened Virginia Bioinformatics Institute, enlightened the Commission on this marriage of biotechnology and information technology. The Virginia Bioinformatics Institute was established in 2000 with initial funding from the Tobacco Commission for its first two years of operations. It is a Commonwealth of Virginia initiative with a research and economic development mission. The Institute provides new and unprecedented opportunities for the Commonwealth in life sciences.

The Internet has changed the way scientific research is conducted, by allowing creation of large-scale databases for immediate sharing of research results worldwide. Engineering of biological laboratories from cottage industries into data farms has enabled the genome project to achieve its goals and created an inundation of data. Bioinformatics is needed to create knowledge and products from the data. It is creating new requirements for the information technology industry and is transforming it. Corporations from life sciences companies to biotechnology companies to information technology companies are becoming more dependent on each other's technologies and are creating new opportunities for each other. The genome project has revealed the unity of life at the most basic level. This revelation may enable the engineering of a more sustainable agricultural system and radical improvements in human health care.

3. Genetic Engineering - a new lease on life for tobacco

Dr. Carole Cramer is responsible for the research that led to the patent of this product and process. She is a professor at Virginia Tech and one of the founders of CropTech Corp., the company that is planning to commercialize this discovery. The discovery is a genetically altered tobacco plant in which scientists put specific genes. They harvest the product of these genes in the form of human proteins from the leaves. These proteins may be useful in developing new drugs and vaccines to fight disease. They can lower the cost and increase the safety of complex drugs, potentially replace the entire crop of tobacco grown in Virginia by the next decade, and can save many lives by addressing the current limitations in the supply of these drugs.

CropTech uses tobacco because they have found it to be easiest crop to genetically engineer. The company can mass-produce enough raw material to produce the proteins. Each plant produces more than one million seeds. CropTech works with the tobacco growers and together they have the potential to build a new tobacco industry.

4. Applications of the Jefferson Lab Free Electron Laser Facility for Biotechnology

In addition to these research institutions, Virginia is home to two federal labs. One of those labs, Jefferson Labs, has the Free Electron Laser, the world's most powerful, tunable infrared laser, which completed commissioning last year (1999). Dr. George Neil, the Free Electron Laser Deputy Program Manager at the Thomas Jefferson National Accelerator Facility discussed Applications of the Jefferson Lab Free Electron Laser Facility for Biotechnology.

Jefferson Labs acts as a microscope to enable researchers to look into the inner structure of the nucleus. The purpose of their research is to help them (and society) understand how quarks and gluons make up the nucleus and the forces that hold matter together. The Lab has the world's most powerful microscope for studying the nucleus of the atom. The Lab's electron beam travels around a seven-eights-mile tunnel five times in 30 millionths of a second to achieve the necessary power in the most efficient manner. This beam can be split for use by three simultaneous experiments.

The laser research can be used to improve inkjet printers by decreasing the size of the ink cartridge's hole and increasing resolution, coating material to make it impervious to lasers, and localizing the effect of radiation and chemotherapy so that it only kills cancer cells and not the immune system. It can change the characteristics of material so that it resists germs and bacteria; this application is important for sterile environments like medical centers.

5. The Human Genome Project

In 1969, Neil Armstrong said the words "One small step for man; one giant step for mankind" as he landed on the moon. Today, scientists can say those words again, because they have mapped the human genome.

On June 26, 2000, President Bill Clinton's and Prime Minister Tony Blair's announcement that a draft of the human DNA sequence had been completed sent the world a signal that the future of biology has forever been changed. Knowing the human DNA sequence, or the DNA sequence of any other organism, is to have a complete instruction set or blueprint for that organism. Tomorrow's biologists will try to understand and then use this information to improve and protect human health, to develop safer and more plentiful sources of food and energy, to make industrial processes more efficient and to clean up the environment. The success of the Human Genome Project has changed the way biology is studied and the questions and expectations that society has about biology.

Dr. David Thomassen, Program Coordinator at the U.S. Department of Energy's Office of Biological and Environmental Research - one of the partners of the Genome Project - explained how this project is the only beginning of mankind's understanding of genetics. At one time, a scientist spent his entire career studying one DNA sequence. Today, IBM is building a computer so powerful that it can download the entire Internet in one second to determine what one gene does. The results of all of this research can lead to improved and cheaper health care, clean and affordable energy, increased food production, new environmental cleanup strategies and more efficient industrial production. For example, through this research, scientists will be able to

create medications that are specifically tailored to help a portion of the population without causing side effects.

6. TeleMedicine: New Frontiers for Technology and Science

Dr. Ronald C. Merrell, Chair of the VCU Department of Surgery and Director of the Medical Informatics and Technology Applications Consortium, presented "TeleMedicine: New Frontiers for Technology and Science".

Dr. Merrell was closely involved with Senator John Glenn's second space flight. His researchers also monitored the team that scaled Mt. Everest in April and May of 1999, using some of the same technology that Senator Glenn carried into space on the shuttle mission. One of the projects involved using wireless technology to monitor the location and vital signs of the climbers at various altitudes. Another project involved a real-time collaboration of doctors in different locations around the world on a surgical procedure that one of them was performing. With technology, some day doctors will be able to wear a computer device and project an X-ray onto a surgery patient to determine the exact location of a tumor. Some of this technology already exists and much more needs to be developed. From the mountains and jungles on Earth to the vastness of space, telemedicine is revolutionizing human health care.

7. Conclusion

Some of the Commonwealth's best-kept secrets are its world-renowned people and world-renowned projects. It is time to share those secrets. As Virginia increasingly becomes recognized as the most dynamic location for business on the East Coast, these secrets will play a key role in our Commonwealth's economy.

They bring with them a host of issues that the legislature will soon face. Issues like privacy, cloning, testing and use of information. Before policymakers can tackle these issues, they need to learn the secrets. The Joint Commission on Technology and Science provided that forum to its members and the public as a step toward encouraging the beneficial growth of this industry.

IV. FIELD TRIPS

A. Science Museum of Virginia

On August 10, 2000, JCOTS staff attended an informational meeting and tour at the Science Museum of Virginia (the "Museum"). The Museum was working towards its grand reopening, which took place in October 2000. New additions to the museum included a 130-seat theater for science education. Major new attractions included the "BIOSCAPE," a series of indoor and outdoor exhibits on the life sciences, including the largest DNA model in the world.

According to Dr. Walter Witschey, the director of the Science Museum of Virginia, the Museum is currently working to provide curriculum materials, hands-on instruction, and exhibits geared towards the science component of Virginia's Standards of Learning (SOLs). Teacher training is

an integral part of this strategy. Recently, one teacher from Henrico County used the Museum to broadcast live from Mount Everest to his students at the IMAX dome.

Future plans for the Museum include the construction of "Discovery Park," an outdoor extension behind the museum, as well as "On-the-Move," an exhibition about the technology of surface transportation. Further construction plans include integration of the outdoor areas behind the museum. Plans are also underway to celebrate the centennial of flight in 2003 by participating in the Centennial of Flight History Trail, a driving tour from Kitty Hawk, North Carolina to the National Air and Space Museum in Washington, DC.

The Science Museum of Virginia was created by the General Assembly to promote the understanding of science in the Commonwealth (see Chapter 18 of Title 23 of the Code of Virginia, § 23-239 et seq). Along with the main museum facility in downtown Richmond, the Museum operates the Virginia Aviation Museum located at Richmond International Airport as well as the Danville Science Center in Danville, Virginia.

B. Hampton Roads Region

On August 23 and 24, 2000, Commission members and staff toured the high-tech assets of Hampton Roads region. The Hampton Roads Technology Council hosted the Commission's two-day tour, which was led by Dennis O'Donnell, Development Manager.

1. Old Dominion University

The first stop was Old Dominion University (ODU). President James Koch gave the Commission a demonstration of the TELETECHNET program. Students from around the Commonwealth and in several national and international sites can take classes at ODU with live instructors through the Internet. Each site has a director to answer questions and all tests are proctored at these sites. Students can see and hear the professor who uses the latest technology to transmit pictures and draw on them just like they would on a chalkboard. One of the benefits to the TELETECHNET system is that all teachers are trained in using the latest technology to teach students around the Commonwealth and, in some cases, around the world. With more than 50 sites around the Commonwealth, no Virginian is more than 50 miles from a TELETECHNET site.

After the demonstration, President and Mrs. Koch hosted the Commission at their home for a reception and dinner. President Koch continued to enlighten the Commission on some of ODU's other accomplishments. ODU will soon be home to a new transportation system using magnetic levitation technology ("maglev"). The transit system will connect the main campus of ODU with the Constant Convocation Center. Specially designed vehicles will glide on an electromagnetic cushion along an elevated guide way. The project was made possible by a $16 million gift and a partnership between ODU, American Maglev Technology, the Commonwealth, the federal government and Dominion Resources/Virginia Power.

2. Applied Research Center and Jefferson Labs

The Commission began its second day with a tour of the Applied Research Center (ARC). The ARC Consortium consists of universities and the Thomas Jefferson National Accelerator Facility (Jefferson Lab). The Consortium's goals are to increase the quality of research and education, to investigate complex problems identified by industry and to stimulate new economic growth and employment. The Commonwealth has supported these goals by awarding a $2 million, five-year grant through the Center for Innovative Technology (CIT) to develop "The Center for Plasma and Photon Processing."

The Consortium is just one of the many organizations that utilizes the Jefferson Lab for research and collaborates in the development of technologies and processes. The Consortium's areas of expertise are materials processing with light plasmas and other sources of energy, materials characterization and surface analysis, sensors and electronic equipment, thin films and optical materials, environmental testing and monitoring and computational modeling.

To illustrate some of the research that members of the Consortium conduct, one of its researchers showed the Commission an analysis of the Sacagawea Golden Dollar. Using equipment at the ARC, researchers analyzed the content of the coin, the texture of the coin and its markings, the purity of the coin and the size. Through this analysis, the researcher determined that the coin was authentic, met its specifications, and that it had been handled by a human being. The laser research can also be used to improve inkjet printers by decreasing the size of the hole and increasing resolution, coating material to make it impervious to lasers, and localizing the effect of radiation and chemotherapy so that it only kills cancer cells and not the immune system. It can change the characteristics of material so that it resists germs and bacteria; this application is important for sterile environments like medical centers.

The 40 federal research and development centers have received more than $4 billion from the federal government and the Commonwealth. It was built ahead of schedule and under budget. There is currently a five-year wait list to use the free electron laser, which operates 24 hours a day, seven days a week for approximately 40 weeks per year.

3. Gateway

The next stop on the tour was Gateway's only production facility east of the Mississippi River. At this facility, Gateway receives orders from customers and builds the system to the customer's specifications. In many cases, they can build the system and have it in the customer's hands within 48 hours. In addition, at this site Gateway has an extensive customer service center and help desk to assist customers with technical problems and purchases. Employees at this facility can enter with little or no knowledge of computers and can work their way up to higher levels of employment with Gateway's extensive training programs.

4. Newport News Shipbuilding

The third stop of the day was Newport News Shipbuilding (NNS), America's largest privately-owned shipyard and home to the country's seventh largest railroad system. NNS is famous for

building the Nimitz-class aircraft carriers, Virginia-class guided missile cruisers and Los Angeles-class attack submarines. Currently, NNS is co-producing the newest class of submarines, Virginia; is the lead design yard for the Seawolf submarine; and is building a new aircraft carrier, the Ronald Reagan. It is also performing overhaul and refueling work on Navy submarines and Nimitz-class aircraft carriers. NNS is the only private shipyard to perform carrier-related work for the Navy.

The shipyard has modified and improved existing ship designs, and has designed new classes of submarines and surface ships. This 550-acre shipyard includes test laboratories; apprentice and welding schools; a foundry complex; numerous dry docks, outfitting berths and outfitting piers; and a state-of-the-art computer center. The center receives computer support calls and monitors various systems. Through this center, NNS can detect a problem before the problem can disable a computer. The center can also monitor systems in a building thousands of miles away or in a ship on the ocean. NNS has streamlined its computer center to significantly reduce the time people are on hold and to solve problems faster and efficiently.

Newport News Shipbuilding's latest project is the Virginia Advanced Shipbuilding and Carrier Integration Center (VASCIC). VASCIC will enable NNS to support the Navy's mission by planning, building, and integrating the next generation of aircraft carriers. In 1998, the General Assembly appropriated $98 million to establish VASCIC. It will consist of a technology center, research facility and waterfront resources and will bring together NNS, the U.S. Navy, and Virginia's other shipyards, suppliers and universities. VASCIC will serve as a proving ground for advanced shipbuilding and operation technologies before they are introduced on ships.

VASCIC will consist of three business segments. The Integration, Testing and Training unit will focus on areas such as warfare systems, power systems and shipboard networks. The Research and Development Management unit will provide management services for new carrier research and development. The Shared Data Management unit will use NNS's Shared Data Environment computer system experience as a platform to manage the Navy's data and information system for construction, repaid, overhaul and operation of carriers.

5. NASA Langley Research Center

The Commission's final stop of the tour was NASA Langley Research Center. NASA is working with aviation industry teams and other government agencies to develop revolutionary cockpit technologies that would make flying safer and reduce delays. One technology is colored computerized displays that would give pilots a "weather channel" in the sky; they would even be able to detect turbulence and bypass it before the plane hits it and makes passengers sick. Synthetic vision will give pilots a clear view of what is happening outside around the clock and in all weather conditions. Full-time, integrated engine and system monitoring systems will be able to diagnose minor problems and fix them before they become serious problems.

The percentage of accidents for airplanes has remained constant for more than 40 years. With the increase in air traffic, experts expect the rate of accidents to reach one every seven to 10 days by 2010. NASA hopes that these technologies will significantly reduce, or even eliminate, accidents due to detectable weather patterns, fog and other vision obstructions, and collision with

other aircraft. New technologies will even be able to detect how long a plane's wake will last, enabling more planes to land in less time and fewer delays. NASA is testing this technology with its flying lab, a Boeing 757-200 aircraft that it acquired in 1994.

Lastly, the Commission toured NASA's noise reduction facilities. NASA is conducting research to reduce unacceptable noise levels from aircraft takeoffs and landings to within the airport grounds. By modifying the structure of an airplane, NASA can reduce the noise emissions from the engine and the body. Objectionable noise emissions constrain air travel growth and decrease quality of life in and around airports. NASA demonstrated the difference in expected noise levels to the Commission; the result was analogous to the difference between hearing music blasting the window of the car next to you and having a normal conversation.

6. Conclusion

The Hampton Roads region is home to eight local colleges and universities, several satellite colleges and universities and no less than 19 research facilities. These facilities continue to create high-tech jobs in Virginia and further its position as a leader and innovator in the science and technology industries.

V. CONCLUSIONS

The Joint Commission on Technology and Science extends its sincere appreciation to everyone who participated in its work during the past year. We look forward to continuing to build on our work in 2001-2002.

Respectfully submitted,

Delegate Joe T. May, Chair
Senator Stephen D. Newman, Vice Chair
Delegate William W. Bennett, Jr.
Senator William T. Bolling
Delegate Mary T. Christian
Senator Janet D. Howell
Delegate Sam A. Nixon, Jr.
Delegate Jay K. O'Brien, Jr.
Delegate Kenneth R. Plum
Delegate Harry R. Purkey
Senator Edward L. Schrock
Senator Patricia S. Ticer

APPENDICES

Appendix 1
2000-2001 Commission Workplan
(Adopted June 6, 2000)

Issues to Actively Study through Advisory Committees

1. Internet Governance (Senator Bolling and Delegation Nixon)

While the Internet lacks borders, traditional law is grounded in the principles of geography and jurisdiction. As use of the Internet progresses, governments, through their legislatures and their courts, are attempting to apply these traditional laws to cyberspace. This advisory committee will explore the law and its effect on the Internet. It will review whether the law needs to be changed to cover activities in cyberspace and whether those activities should even be legislated. The committee will also the following specific topics:

- Continued Legislation from 2000 Session of the General Assembly
  - House Bill 61 on Internet Gambling
  - House Bill 1491 (and SB 767) creating the Virginia Website Protection Act
- Electronic Employment Law

2. Economic Development (Delegates Bennett and Purkey)

The aerospace, biotechnology and information technology industries are major contributors to the economic prosperity and economic potential facing the Commonwealth today and for the foreseeable future. This advisory committee will continue the work of Advisory Committee Two from the 1999 interim, by further examining the growing aerospace, biotechnology and information technology industries and the legal, technological, scientific, ethical, medical and economic issues that they raise. In addition to studying the economic development policy toward these issues, this committee will also address the following topics:

- House Bills 710 and 711 (Continued from 2000 Session) on Internet domain names
- Technology Transfers from state-owned institutions to the private sector
- Review of Wallop's Island and the Virginia Spaceport
- Strategies to ensure the continued economic development of the information technology, biotechnology and aerospace industries
- Workforce Shortage including telecommuting

3. Electronic Government (Senators Newman and Ticer)

Advanced technologies have enabled the Commonwealth to deliver services to its citizens better, faster and cheaper than ever before. Citizens are now able to register their cars, renew their

drivers' licenses and even pay their taxes, but there is much more that can be done and is being done. This advisory committee will continue the work of Advisory Committee Three from the 1999 interim. Among the topics that it will address are:

- Identifying and eliminating obstructions to delivering government services electronically
- Monitoring the study by the Auditor of Public Accounts on electronic contracting and procurement (Senate Join Resolution 72, 2000 Session)
- Monitoring Urofsky v. Gilmore - a case challenging the constitutionality of Chapter 52 (§§ 2.1-804 et seq.) of Title 2.1 which restricts the state employee access on information infrastructure
- The use of electronic notaries

4. Digital Divide (Delegates Christian and Plum)

As new technological and scientific advances change the way our society functions, the economic divide between rich and poor is getting larger. This increase is fueled by another distinction know as the digital divide, the difference between those who have access to technology and those who do not. This advisory committee will review the various programs currently in effect that are attempting to close the divide and analyze some new ideas. Among the topics that it will address are:

- House Joint Resolutions 251 and 316 (2000 Session) Study
  - Providing wireless telecommunications services throughout the Commonwealth
  - Compliance by the localities with the Federal Telecommunications Act of 1996
  - Permit process in constructing telecommunications facilities including use of public rights-of-way
- Education and Technology including distance learning

5. Uniform Computer Information Transactions Act (Senator Schrock and Delegate May)

The Commission has previously studied the development of the Uniform Computer Information Transactions Act (UCITA), which was developed by the National Conference of Commissioners on Uniform State Laws (NCCUSL). During the 2000 Session, the General Assembly adopted the Commission's recommendations and enacted Senate Bill 372 and House Bill 561 with a delayed effective date of July 1, 2001. In the meantime, the General Assembly directed the Commission to conduct a further study on the impact of UCITA on Virginia businesses, libraries and consumers. This Advisory Committee will conduct that study.

6. Criminal Law (Senator Howell and Delegate O'Brien)

New technology not only brings new opportunities for citizens and businesses, but it also brings new opportunities for criminals. In addition to the usual crimes (e.g., pyramid schemes, fraud) and some newer ones (e.g., identity theft), criminals are doing other "activities" that society considers criminal, but the law may not. While new technologies may help the criminals, they also assist law enforcement officials in capturing them – that is, if they can keep up. The committee will review the current state of the law and the technological attempts to circumvent it. Among the topics that this committee will study are:

- Law Enforcement - enforcement and prosecution of the Virginia Computer Crimes Act, Chapter 5, Article 7.1 (§§ 18.2-152.1 et seq.) of Title 18.2, and other computer related crimes.
- Cyber Crimes - computer crimes not covered under the Virginia Computer Crimes Act
- Using technology to aid law enforcement
  - Develop guidelines for the use of Photo-Red Enforcement
  - Study use of portable environmental technology

Appendix 2
2000 - 2001 JCOTS Calendar

- **June 6, 2000** - Organizational Meeting (10 a.m.)

- **Mid-June 2000 through Late-December 2000** - Advisory Committees meet

- **June 29, 2000** - AC5 Organizational Meeting & First Public Comment Session in Richmond at the GAB (10 a.m.)

- **July 25, 2000** - Full Commission Meeting in Richmond at the GAB (*Topic: Education*) (10 a.m.)

- **August 23 - 24, 2000 -** Field Trip to Hampton Roads
  - AC5 Meeting and Second Public Comment Session in Hampton Roads at Old Dominion University's Board Room (1 p.m.)
  - Hampton Roads Technology Council Tour

- **August 29, 2000** - AC1 Meeting in Richmond at the GAB (10 a.m.)

- **September 7, 2000** - Full Commission Meeting (*Topic: Biotechnology* - Virginia Biotechnology Research Park) (10 a.m.)

- **September 12, 2000** - AC5 Meeting and Third Public Comment Session at Lynchburg College's Ball Room (1 p.m.)

- **October 11, 2000** - AC3 Meeting in Richmond at the GAB (10 a.m.)

- **October 12, 2000** - AC2 Meeting in Richmond at the GAB (1 p.m.)

- **October 17, 2000** - AC5 Meeting and Fourth Public Comment Session George Mason University's Johnson Center (10 a.m.)

- **October 18, 2000** - AC1 Second Meeting in Richmond at GAB (10 a.m.)

- **October 25, 2000** - AC4 Meeting at The College of William & Mary (1 p.m.)

- **October 30, 2000** - AC2 Second Meeting in Richmond at the GAB (1 p.m.)

- **November 8, 2000** - AC6 Meeting in Richmond at the GAB (2 p.m.)

- **November 9, 2000 -** Fifth Final AC5 Meeting in Richmond at the GAB (10 a.m.)

- **November 16, 2000** - Full Commission Meeting (Topic: UCITA and continued legislation, HB 61, HB 710, HB 711, HB 1491, SB 767) (10 a.m.)

- **November 29, 2000** - AC3 Second Meeting in Richmond at the GAB (1 p.m.)

- **December 1, 2000** - UCITA study report due to the General Assembly and the Governor

- **December 5, 2000** - AC2 Third Meeting in Richmond at the GAB (1 p.m.)

- **December 11, 2000** - AC6 Second Meeting in Richmond at the Capitol (10 a.m.)

- **December 14, 2000** - AC4 Second Meeting in Richmond at the GAB (10 a.m.)

- **December 18, 2000** - AC3 Third Meeting in Richmond at the GAB (10 a.m.)

- **Late December 2000** - Advisory Committees to conclude their work

- **January 9, 2001** - Full Commission Meeting (*Topic: 2001 Legislative Proposals*)

- **January 10, 2001** - First day of 2001 Session

Appendix 3

JCOTS 2000 Advisory Committees
(Final 12/31/2000)

Advisory Committee One (Internet Governance)
Senator Bolling and Delegate Nixon (10)[1]

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[1] Numbers in parentheses represent the number of non-Commission members on each committee.

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Appendix 4

Summary of 2001 JCOTS Recommended Legislation By Subject Area

ECONOMIC DEVELOPMENT

BILL NUMBER: House Bill 2184 - Tabled in House Finance Committee
PATRON: Purkey
SUMMARY: ***Virginia Technology and Biotechnology Research and Development Act created.*** Creates the Virginia Technology and Biotechnology Research and Development Act. This bill creates a tax credit for qualified research expenses, which is defined by § 41 of the Internal Revenue Code as in-house expenses or contract research expenses, paid by a technology or biotechnology company. This credit is for an amount equal to 50 percent of the qualified research expenses paid in excess of the base amount, calculated in accordance with § 41 of the Internal Revenue Code. Also created is a credit for basic research payments, which, in accordance with § 41 of the Internal Revenue Code and modified to benefit the Commonwealth, means payments made to companies and nonprofit research institution and organizations located in the Commonwealth for research in technology and biotechnology. Neither credit is to exceed 50 percent of the tax liability due nor exceed $500,000. Any unusable tax credit may be carried over for 10 succeeding taxable years. Each tax credit is capped at $5 million per taxable year; however, if the cap is not reached in a given taxable year, any amount left over shall be utilized in the succeeding taxable year, in addition to that year's caps of $5 million. The bill also creates the "Corporation Tax Benefit Certificate Program" to be administered by the Department of Taxation in cooperation with the Innovative Technology Authority. Under the program, technology or biotechnology companies may transfer their unused but otherwise allowable qualified research expenses tax credits for a minimum of 75 cents on the dollar to another corporation taxpayer provided neither is an affiliate or a subsidiary of the other. The proceeds from the transfer can be used for a broad range of "costs" associated with operating a technology or biotechnology company. These tax credits and the Corporation Tax Benefit Certificate Program are for taxable years beginning on or after January 1, 2002.

BILL NUMBER: House Bill 2466 - Tabled in House Finance Committee
PATRON: Bennett
SUMMARY: ***Qualified equity and subordinated debt investments tax credit.*** Amends the qualified equity and subordinated debt investment tax credit (§ 58.1-339.4) in the following manner: (i) increases the total amount of tax credit available in a calendar year from $5 million to $20 million; (ii) changes

the $50,000 cap per taxpayer to an amount equal to 10 percent of the total amount of tax credit available in a calendar year; (iii) reduces the tax credit from an amount equal to 50 percent of the investment to 25 percent of the investment so that the total amount invested would be higher; and (iv) reduces the number of years an investor must retain the equities from five years to two years. Therefore, the amount required to claim the maximum amount of credit is raised from $100,000 per taxpayer to $8 million, and the amount of the total potential investments under the credit is raised from $10 million to $80 million. These changes are to be made for taxable years beginning on or after January 1, 2002.

BILL NUMBER: House Bill 2467 - Tabled in House Finance Committee
PATRON: Bennett
SUMMARY: ***Tax credit for investing in a small technology business.*** Creates a state tax credit for individuals, partnerships, and corporations that invest in small technology businesses for taxable years beginning on and after January 1, 2002. A small technology business is defined as a private business that (i) is engaged in research and development or commercialization of information technology or biotechnology, (ii) has 10 or fewer full-time employees, and (iii) is engaged in business in the Commonwealth. An individual taxpayer is allowed a credit in the amount equal to 25 percent of the investment, not to exceed $50,000. A partnership or a corporation is allowed a credit in the amount equal to 25 percent of the investment, not to exceed $100,000. The Secretary of Technology and the Tax Commissioner are given authority to promulgate regulations governing the credit.

ELECTRONIC GOVERNMENT

BILL NUMBER: House Bill 2169 - Enacted (Chapter 415, 2001 Acts of Assembly)
PATRON: Nixon
SUMMARY: ***Agencies' and court clerks' disclosure of certain account information prohibited.*** Prohibits agencies and court clerks that accept methods of payment other than cash, including but not limited to credit cards, debit cards, electronic checks, and other electronic payment and billing systems, for fees, services, taxes, or other charges, to disclose such account information or social security numbers or other identification numbers on driver's licenses. The prohibition does not apply if such disclosure is required to conduct and complete the transaction for which other methods of payment are used or if such disclosure is required by other law or ordered by the courts.

BILL NUMBER: House Joint Resolution 624 - Agreed to
PATRON: Plum
SUMMARY: ***VDOT's Intelligent Transportation System.*** Encouraging the Virginia Department of Transportation to continue implementing its Intelligent Transportation System, known as Smart Travel, and to draft guidelines for that implementation in consultation with localities.

BILL NUMBER: House Joint Resolution 625 - Agreed to
PATRON: Nixon
SUMMARY: ***Competitive procurements via electronic means and electronic sealed bids.*** Requests the Departments of General Services, Transportation, and Technology Planning, in consultation with the Joint Commission on Technology and Science, to study the methods and technologies needed to implement competitive procurement via electronic means, including electronic sealed bidding. In conducting this study, the Departments of General Services, Transportation, and Technology Planning are also requested to determine and recommend any changes to the applicable provisions of the Code of Virginia necessary to accommodate competitive procurement via electronic means.

BILL NUMBER: House Joint Resolution 724 - Agreed to
PATRON: May
SUMMARY: ***Commending the staff of the former Century Date Change Initiative Project Office.***

BILL NUMBER: Senate Bill 1023 - Enacted (Chapter 213, 2001 Acts of Assembly)
PATRON: Newman
SUMMARY: ***Virginia Information Providers Network Authority; powers and duties; financing and operations.*** Clarifies that state agencies and local governments, whom already had statutory authority to contract with the Virginia Information Providers Network Authority (Authority) for use of the Authority's facilities and Authority's services, may pay for such use and services. Provides that the Authority may fix and collect fees for such use and services, and further clarifies that state funds may not be used for the Authority's purposes except as provided by the Code of Virginia.

BILL NUMBER: Senate Joint Resolution 360 - Sticken in Senate Rules Committee at Request of Patron
PATRON: Newman
SUMMARY: ***Advertising on government websites.*** Requesting the Secretary of Technology, in consultation with the Joint Commission on Technology and Science, to study and develop guidelines for advertising on government websites and report findings and recommendations to the Governor and the 2002 General Assembly.

BILL NUMBER: Senate Joint Resolution 361 - Agreed to
PATRON: Newman
SUMMARY: ***Transaction fees for using credit cards or other electronic methods payment.*** Requests the Secretary of Finance to study the assessment of additional transaction fees charged when citizens pay Commonwealth penalties, taxes, license fees and other fees with credit cards or other electronic methods of payment. The Secretary shall determine whether using credit cards or other electronic methods of payment to pay these charges reduces processing costs, losses due to bad checks and other receivable related costs enough so that the Commonwealth should waive the additional transaction fees associated with their use. The Secretary must report his findings and recommendations to the Governor and the 2002 General Assembly.

BILL NUMBER: Senate Joint Resolution 402 - Agreed to
PATRON: Ticer
SUMMARY: ***Commending the Virginia Department of Motor Vehicles.***

BILL NUMBER: Senate Joint Resolution 403 - Agreed to
PATRON: Ticer
SUMMARY: ***Public procurement of information technology services.*** Requests the Departments of General Services, Transportation, and Technology Planning, in consultation with the Joint Commission on Technology and Science, be requested to study the methods and technologies needed to implement competitive procurement via electronic means, including electronic sealed bidding. In conducting this study, each Department shall also determine and recommend any changes to the provisions of the Code of Virginia that are specific to that Department and are necessary to accommodate that Department's electronic competitive procurement, in light of the provisions of the Uniform Electronic Transactions Act under § 59.1-486 of the Code of Virginia. The Departments are requested to submit their findings and recommendations to the Governor and the 2002 Session of the General Assembly.

BILL NUMBER: Senate Joint Resolution 404 - Left in Senate Rules Committee
PATRON: Ticer
SUMMARY: ***Electronic procurement process.*** Requests the Department of General Services, in consultation with the Joint Commission on Technology and Science, to study the effects of electronic procurement on small businesses and businesses owned by women and minorities. The Department shall report its findings and recommendations to the Governor and the 2003 General Assembly.

EDUCATION

BUDGET AMENDMENT: No action taken
Appropriates $194,000 to the Southside Virginia Regional Technology Consortium to help establish a brodband Internet protocol network.

BILL NUMBER: House Joint Resolution 706 - Agreed to
PATRON: Plum
SUMMARY: ***Commending Mobile Learning Units.*** Commending Virginia Tech, J. Sargeant Reynolds Community College, the Manufacturing Technology Center and the Longwood College Institute for Teaching Through Technology and Innovative Practices for their use of mobile learning units to further Virginia's goal of closing the digital divide.

ELECTRONIC COMMERCE

BILL NUMBER: House Bill 2411 - Enacted (Chapter 86, 2001 Acts of Assembly)
PATRON: May
SUMMARY: ***Uniform Electronic Transactions Act; technical amendments.*** Makes two technical amendments to the Uniform Electronic Transactions Act (UETA) (§ 59.1-479 et seq.). The predecessor electronic signatures and records law, Chapter 39 (§ 59.1-467 et seq.) of Title 59.1, repealed in 2000, had excluded electronic filing with the courts from its scope to protect the autonomy and integrity of the courts. Instead, Article 4 (§ 17.1-255 et seq.) of Chapter 2 of Title 17.1 had provided that the courts were to follow the rules adopted by the Supreme Court of Virginia regarding electronic filing. When the 2000 General Assembly adopted UETA, the General Assembly retained the exclusion for the courts. However, the 2000 General Assembly also enacted legislation that modified Article 4 of Chapter 2 of Title 17.1 to provide that electronic filing with the courts must meet the requirements set out under UETA. Thus a conflict was created in that one section of the Code of Virginia excludes the court filings from UETA and another section of the Code of Virginia requires electronic filings with the courts to be in accordance with UETA. The bill remedies this conflict by deleting the court filing exclusion from UETA. In addition, several provisions of UETA refer to Title 8.9 of the Code of Virginia. The 2000 General Assembly enacted legislation that would repeal Title 8.9 and replace it with new Title 8.9A effective July 1, 2001. The bill amends the cross-references from Title 8.9 to Title 8.9A.

BILL NUMBER: House Bill 2412 - Enacted (Chapter 763, 2001 Acts of Assembly)
PATRON: May
SUMMARY: ***Uniform Computer Information Transactions Act.*** Amends several provisions of the Uniform Computer Information Transactions Act (UCITA) to clarify the definitions of "electronic agent" and "mass-market transaction"; modify UCITA's scope over motion pictures and online service providers; clarify the applicability of other statutes, rules and regulations; provide that a contract term that specifies a judicial forum must be expressly stated, and in a mass-market transaction, such contract term must be expressly and conspicuously stated; modify the terms of mass-market licenses; create a special rule for using standard form licenses with nonprofit libraries, archives, and educational institutions; modify the terms governing transferability; clarifies the definition of automatic restraint; and modifies the restrictions on use of electronic self-help.

BILL NUMBER: Senate Bill 1017 - Enacted (Chapter 741, 2001 Acts of Assembly)
PATRON: Newman
SUMMARY: ***Virginia Consumer Protection Act; computer information.*** Amends the definition of (i) "consumer transaction" to include license, (ii) "goods" to include computer information and informational rights, (iii) "services" to include electronic access to information system, and (iv) "supplier" to include licensors of computer information.

BILL NUMBER: Senate Bill 1019 - Enacted (Chapter 212, 2001 Acts of Assembly)
PATRON: Newman
SUMMARY: ***Attorney General; Secretary of Technology; guidelines to the Uniform Electronic Transactions Act's implications on state agencies.*** Directs the Attorney General, in consultation with the Secretary of Technology, to develop guidelines to the Uniform Electronic Transactions Act's implications on state agencies' implementation of electronic transactions. Upon receiving the guidelines, each agency is directed to examine the provisions of the Code of Virginia specific to that agency and identify where changes are necessary to facilitate the agency's implementation of electronic transactions and report its findings to the Secretary of Technology.

CRIMINAL LAW AND LAW ENFORCEMENT

BILL NUMBER: House Bill 2555 - Incorporated into HB2593 (Enacted - Chapter 782, 2001 Acts of Assembly)

PATRON: O'Brien

SUMMARY: ***Facilitating, encouraging, or inviting crimes against person or property by computer; penalty.*** Provides that using a computer or computer network to communicate another person's contact information, including but not limited to identifying information, phone number, street address, and electronic mail address (i) to facilitate, encourage, or invite a third party to contact the other person to make any suggestion or proposal of an obscene nature or threaten any illegal or immoral act, or (ii) to facilitate, encourage, or invite a third party to cause harm to the other person's property or person, and the third party attempts to cause harm to the other person's property or person is a Class 1 misdemeanor. If the victim of such crime is a minor, and the person committing the crime knew or should have known that the victim was a minor, the person is guilty of a Class 6 felony. This bill was incorporated into HB 2593.

BILL NUMBER: Senate Bill 1156 - Left in Senate Finance Committee

PATRON: Howell

SUMMARY: ***Facilitating, encouraging, or inviting crimes against person or property by computer; penalty.*** Provides that using a computer or computer network to communicate another person's contact information, including but not limited to identifying information, phone number, street address, and electronic mail address (i) to facilitate, encourage, or invite a third party to contact the other person to make any suggestion or proposal of an obscene nature or threaten any illegal or immoral act, or (ii) to facilitate, encourage, or invite a third party to cause harm to the other person's property or person, and the third party attempts to cause harm to the other person's property or person is a Class 1 misdemeanor. If the victim of such crime is a minor, and the person committing the crime knew or should have known that the victim was a minor, the person is guilty of a Class 6 felony.

Appendix 5

Electronic Notaries

Presentation to Advisory Committee 3 (E-Government)
October 11, 2000
by John S. Jung

I. Notary Public
   - A. By affixing his signature, a notary public certifies that a person claiming to have signed a specific document appeared before the notary and in fact signed that document in the notary's presence.
   - B. Most documents that need to be notarized are documents that need to be filed with or submitted to the courts.

II. E-Notary Provision in Code of Virginia
   - A. In Virginia's Uniform Electronic Transactions Act (UETA)
   - B. Provision is as it was promulgated by the National Conference of Commissioners on Uniform State Laws
   - C. § 59.1-489. Notarization and acknowledgment
     "If a law requires a signature or record to be notarized, acknowledged, verified, or made under oath, the requirement is satisfied if the electronic signature of the person authorized to perform those acts, together with all other information required to be included by other applicable law, is attached to or logically associated with the signature or record."
   - D. Allows for electronically notarizing documents as long as other laws are followed.
   - E. "Other laws" - Title 47.1 of the Code of Virginia (Notaries and Out-of-State Commissioners).
     1. Traditional notary statute
     2. Does not have provisions for electronically notarizing documents
   - F. Read together:
     1. If a person appears before a notary public and electronically signs the electronic document, the notary public may notarize the document by affixing his own electronic signature.
     2. Possible process:
        - a. The signer delivers the electronic document to the notary public.
        - b. The notary public has a computer system that is equipped to allow for the signer and the notary public to electronically sign the electronic document.
        - c. The notary public must return the electronically- notarized document to the signer.
     3. Concerns
        - a. Security and Integrity of the Document
          - i. Under current Virginia law, any type of electronic signature, even those with minimal security, may qualify.
          - ii. Need to provide for security and integrity

1) that the electronic document cannot or would not be altered after being notarized
2) that the electronic signatures of the signer and the notary public cannot be forged

b. Interoperability
   i. That all parties involved have an electronic signature system that can read and write electronically notarized documents.
   ii. Signer, notary public, courts, Secretary of the Commonwealth

III. Arizona's Electronic Notary Provisions - Arizona's Version of UETA

§ 44-7011. Four requirements for electronic notarization

1. Sign in the presence of the notary public
2. Notary to confirm that the electronic signature on the document is that of the signer
3. Notary signs the document with an electronic signature that is consistent with other provisions of the Arizona laws (§ 44-7034).
4. Notary to provide traditional information regarding himself

§ 44-7034. Additional requirements for electronic notary

1. Notary must sign the document with a secure electronic signature (§ 44-7031, which defines secure electronic signature, describes the digital signature)
2. The electronic document must contain time stamp token recognized by the Secretary of State.
3. The electronic document must not be able to be altered without invalidating the time stamp token.

Appendix 6

Digital Signatures
Presentation to Advisory Committee 3 (E-Government)
November 28, 2000
by Jennifer Hunt

On the Federal level, the Environmental Protection Agency (EPA) developed an internal electronic signature policy in 1993.[1] As stated in the purpose, the policy establishes criteria to ensure that agencies implement the technology in a manner that is consistent across the agency and compatible with the practices of other government agencies and members of the regulated community. The policy specifically applies to electronic transactions originating from the EPA.

In October 1998, the Government Paperwork Elimination Act (GPEA) was signed into law in an effort to reduce the amount of wasted paper by allowing Federal agencies to accept and disperse electronic information and transactions.[2] The U.S. General Services Administration (GSA) was charged with implementing the Access Certificates for Electronic Signature (ACES) program to provide a means for both citizens and businesses to obtain digital certificates that will be used to authenticate their identity in conducting transactions with government agencies. The GSA created the ACES program to provide digital certificates to businesses and the general public that could be used in electronic transactions with the Federal Government.

ACES certificates authoritatively identify participants in electronic transactions and support digital signature, allowing many currently paper-based transactions to be converted to electronic. Certificates issued under the ACES program in support of one federal agency can also be accepted by other federal agencies participating in ACES. In 1999, the GSA contracted with AT&T (partnered with Verisign, Inc.), Digital Signature Trust Company of Salt Lake City, Utah, and Operational Research Consultants, Inc., of Chesapeake, Virginia, to provide public key infrastructure services under the ACES program.[3]

This will be used to implement common digital signature processes for multiple federal agencies through the initiative called "Access America for Students." Since the enactment of GPEA, five government agencies are participating in the Access America for Students program to provide electronic access to the post-secondary student, school, and lending communities. The agencies are: 1) Department of Education's Office of Student Financial Assistance, 2) Department of Labor, 3) Department of Veteran's Affairs, 4) U.S. Postal Service, and 5) General Services Administration.

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[1] *IRM Policy Manual Chapter 16 – EPA Internal Electronic Signatures Policy*, <http://www.epa.gov/impoli8/polman/chaptr16.htm> (visited November 15, 2000).
[2] *Highlights of the ACES Forum*, <http://gsa.gov/aces/news.htm> (visited November 20, 2000).
[3] *ACES News & Events*, <http://www.gsa.gov/aces/news.htm> (visited November 27, 2000).

On June 30, 2000, the E-sign act was enacted making digital signatures as legally binding as written, ink signatures. However, the law is silent about what technical solutions companies should use to implement the technology necessary for using digital signatures.[4] There are roughly two groups of vendors offering digital signature solutions. The first group will help companies overhaul business processes and implement policy changes that must accompany digital signature use. The other group pushes simpler software packages that stamp a digital signature onto existing documents.

The Department of Defense (DoD) has taken the initiative to implement this new technology by using Public Key (PK) technology at multiple levels of assurance.[5] However, the DoD recognizes that Public Key Infrastructure (PKI) technology is still immature and rapidly changing. Thus, DoD strategy is to pursue early adoption and to actively participate with industry to obtain the detailed technical understanding needed to fully specify requirements, resolve standards issues, and accelerate industry-wide convergence to a purely standards-based, interoperable capability not dependent upon vendor-specific capabilities or technologies.

Following E-Sign, the Office of Management and Budget wrote a memorandum and guidance document.[6] This document will guide Executive Agencies regarding the interpretation and implementation of the E-Sign Act. Basically, it states that if all parties choose to use electronic signatures and records, E-Sign recognizes these methods with the same legal effect as written. Suggested steps for the implementation of E-Sign include: 1) identifying affected agency regulations, policies and procedures; 2) determining whether it is necessary to issue guidance or regulations concerning the use of electronic records or signatures in particular transactions; 3) determining the extent to which you have authority to issue guidance or regulations concerning the use of electronic records or signatures in particular transactions; and 4) adopting guidance or regulations for the use of electronic records and signatures, where necessary.[7]

As a rule, parties should be able to choose the electronic contracting method they will use. However, in some cases, an agency may want to ensure that consumers or businesses have accessible copies of electronic contracts or disclosures related to certain types of transactions. Agencies have interpretive authority for developing rules. Thus, rules: 1) must be substantially equivalent to those for paper records; 2) may not impose unreasonable costs; 3) must be technology-neutral; and 4) may not require the use of paper.[8] The provision about being technology-neutral requires that "the methods selected to carry out" the agency's purpose must not "require, or accord greater legal status or effect to, the implementation or application of a specific technology or technical specification for performing the functions of creating, storing, generating, receiving, communicating, or authenticating electronic records or signatures."

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[4] *CTO Zone*, <http://www.infoworld.om/articles/hn/xml/00/08/07/000807/hndigital_cxo.xml> (visited November 20, 2000).

[5] *DoD PKI Medium Assurance Interoperability*, <http://www.disa.mil/infosec/pki-int.html> (visited November 20, 2000).

[6] *Office of Management and Budget*, <http://www.whitehouse.gov/OMB/memoranda/m00-15.html> (visited November 20, 2000).

[7] Guidance on Implementing the Electronic Signatures in Global and National Commerce Act (E-SIGN), pg. 5, found at *Office of Management and Budget*, <http://www.whitehouse.gov/OMB/memoranda/m00-15.html> (visited November 20, 2000).

[8] *Id.* at pg. 10-11.

Although this provision bars agencies from prescribing specific technologies, it does not bar an agency from adopting a performance standard for a particular technology. Such standards could address such issues as security, record integrity, record or identity authentication, or interoperability of systems.

As with many laws, there is an exception to this rule. E-Sign permits agencies to adopt standards that are "specified in a manner that imposes a requirement of a specific technology or technical specification (violation of paragraph (2)(C)(iii)), if the agency finds that the requirement serves an important government objective and is substantially related to the achievement of that objective.[9] This does not allow agencies to require use of a particular type of software or hardware in order to comply with section 101(d) of E-Sign.

On October 24, 2000, the Environmental Protection Agency (EPA) selected Digital Signature Trust Co., an affiliate of Zions Bancorporation and the first licensed Certificate Authority in the United States, to provide digital certificate expertise to support the agency's Central Data Exchange (CDX).[10] Under the task order, DST will develop and implement the necessary infrastructure within the EPA and issue digital certificates to individuals at businesses choosing to participate in the program.

Digital Signature Trust (DST) partnered with PTI, a non-profit technology research and development organization that serves city, county and state governments, to enhance local and state governments' ability to securely transact business electronically among themselves and with citizens.[11] DST will provide certification authority and repository services to state and local government entities by issuing PTI secure digital certificates for secure e-mail, communications and electronic commerce. By providing a standard public key infrastructure (PKI) that incorporates common policies and technology and introducing a solution that enables an interoperable platform, DST hopes to eliminate the need for organizations to negotiate certificate policies and agree on technology with each new entity.

In addition to DST's commitment to the EPA and the local and state governments, DST has become the nation's leading provider of secure digital identification technology to the government sector.[12] DST is one of three approved vendors for the ACES contract. Also, DST is an approved certificate authority for DoD Interim External Certificate Authority (IECA) PKI.

With the exception of Arkansas, South Carolina, and South Dakota, all states have considered or enacted some form of electronic authentication law. In the area of digital signatures or PKI technologies, 20 states have introduced or considered 36 different initiatives or regulations with 10 states adopting some form into law. At the state level, three models have developed: 1) the "Utah" or "prescriptive" model with a specific public key infrastructure scheme including state-licensed certificate authorities; 2) the "California" or "criteria-based" model that requires digital

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[9] *Id.* at pg. 13.

[10] *Headlines: Government Contract Announcements + Business Headlines, eBusiness, Technolo ...*, <http://www.smallbusiness.com/headlines/govcon/2000/10/24/pr/0000-2696-ut-digital-signature.html> (visited on November 22, 2000).

[11] *Digital Signature Trust Co.*, <http://www.digsigtrust.com/solutions/pti.html> (visited November 22, 2000).

[12] *Digital Signature Trust Co.*, <http://www.digsigtrust.com/solutions/government.html> (visited November 22, 2000).

or electronic signatures to satisfy certain criteria of reliability and security; and 3) the "Massachusetts" or "signature enabling" model that adopts no specific technological approach or criteria, but recognizes electronic signatures and documents in a manner parallel to traditional signatures.

California approved a set of digital signature regulations on June 12, 1998.[13] According to these regulations, for a digital signature to be valid for use by a public entity, it must be created by a technology that is acceptable for use by the State of California. The regulations also establish a criterion for determining whether a digital signature technology is acceptable and provides a list of acceptable technologies.

[13] California Code of Regulations, tit. 2, div. 7, ch. 10, found at *California Secretary of State – California Digital Signature Regulations*, <http://www.ss.ca.gov/digsig/regulations.htm> (visited on November 15, 2000).

Appendix 7

Federal Telecommunications Act of 1996 Study

Presentation to Advisory Committee 4 (Digital Divide)
December 14, 2000
by Jennifer Hunt

I. Background

Based on House Joint Resolution No. 316, the Joint Commission on Technology and Science (JCOTS) was directed to study the methods necessary to ensure compliance by local governments with the Federal Telecommunications Act of 1996. JCOTS' study involved:

> 1) a review of permitting processes involved in constructing cellular telecommunications facilities and providing cellular telecommunications throughout Virginia;
>
> 2) an evaluation of the feasibility of use of public rights-of-way to comply with provisions of the Federal Telecommunications Act of 1996; and
>
> 3) recommendations for appropriate regulations, if any, that should be adopted regarding the use of public rights-of-way for cellular telecommunications facilities.

This study was initiated from concerns of competitiveness, infrastructure needs, telecommunications facilities, and the involvement of localities.

The Federal Telecommunications Act of 1996 (TCA or Act) established duties and obligations for telecommunications carriers. Each telecommunications carrier has the duty to: (1) to interconnect directly or indirectly with the facilities and equipment of other telecommunications carriers and 2) not to install network features, functions or capabilities that do not comply with the guidelines and standards established pursuant to section 255 or 256.[1] In addition, each local exchange carrier is obligated to afford access to poles, ducts, conduits, and rights-of-way of such carrier to competing providers of telecommunications services on rates, terms, and conditions that are consistent with section 224.[2]

The Federal Communications Commission (FCC or Commission) was given the authority to establish regulations to implement the requirements of section 251.[3] However, the Commission can not preclude the enforcement of any regulation, order, or policy of a State commission that (a) establishes access and interconnection obligations of local

[1] 47 U.S.C. § 251(a)
[2] 47 U.S.C. § 251(b)(4)
[3] 47 U.S.C. § 251(d)(1)

exchange carriers, (b) is consistent with the requirements of this section, and (c) does not substantially prevent implementation of the requirements of this section and the purpose of this part.[4]

II. Permitting processes involved in constructing cellular telecommunications facilities and providing cellular telecommunications throughout Virginia

When attempting to locate a wireless telephone communications facility, such as a cellular transmission tower, a service provider typically has to apply for and receive either a permit to construct the tower or a rezoning of the land at issue to allow for such construction.[5] Section 704 of the Act, to be codified at 47 U.S.C. § 332(c), provides certain statutory protections to an applicant who applies for such a permit or rezoning, provided the application involves the siting of a personal wireless service facility such as a cellular tower. These protections, of course, are in addition to the standard protections afforded by equal protection, due process, and applicable state law doctrines such as mandamus.

Without completely preempting the authority of local governments to make decisions regarding the placement of wireless communications facilities, the Act provides five separate and substantial protections for the telecommunications facility applicant in the amended 47 U.S.C. § 332 (entitled National Wireless Telecommunications Siting Policy).[6] Section 332 provides that:

> (A) the regulation of placement, construction, and modification of personal wireless services facilities by any state or local government shall not unreasonably discriminate among providers of functionally equivalent services;
>
> (B) the regulation of the placement, construction, and modification of personal wireless service facilities by any state or local government shall not prohibit or have the effect of prohibiting the provision of personal wireless services;
>
> (C) once an applicant files a request for authorization to place, construct, or modify a personal wireless service facility, the governmental entity shall act on the application "within a reasonable period of time after the request is duly filed";
>
> (D) no state or local governmental entity may regulate the placement, construction, or modification of personal wireless service facilities on the basis of environmental effects of radio frequency emissions to the extent that such emissions comply with FCC regulations; and

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[4] 47 U.S.C. § 251(d)(3)

[5] Peter Degnan et al., *Telecommunications Act of 1996: § 704 of the Act and Protections Afforded the Telecommunications Provider in the Facilities Siting Context*, 3 Mich. Telecomm. Tech. L. Rev. 1 (1997), available at <http://www.mttlr.org/volthree/mclaren.html> (visited November 29, 2000).

[6] *Id.*

(E) any decision by a state or local governmental entity to deny an application to place, construct, or modify a personal wireless service facility shall be in writing and supported by substantial evidence contained in a written record.

While most courts recognized that Section 704 effects "substantial changes to the local zoning process," they have struggled to find a balance between allowing local authorities to regulate the location of telecommunication facilities while not "prohibiting" wireless service, and, thus, interfering with the principal purpose of the Act.[7] Most courts agree that a general policy or ordinance that flatly prohibits the construction of any such facilities is clearly prohibited by the Act.

Although the case law in this area is still developing, it is clear that no municipality may flatly exclude personal wireless service facilities from within its borders.[8] Hence, regulations and decisions that have the effect of preventing a personal wireless service provided from offering effective service are clearly illegal. Further, regulations must not give local authorities "open ended discretion to prohibit towers."

Examples of regulations and decisions that have the effect of denying the provision of personal wireless services include the denial of permission to construct a PCS site in an area necessary to serve a busy interstate highway corridor where competing companies were providing uninterrupted service. In another recent example, a state land use court invalidated the zoning regulations of a Vermont town that effectively excluded cell sites from all of the high ground in that town and limited sites to valleys and floodplains. Recently, a federal court in Florida construed this section of the TCA as allowing communications facilities to be "located in areas in which they have not been traditionally located, such as residential, commercial and rural areas" in order to meet increasing demand by consumers. Finally, the New Jersey Supreme Court recognized the relevance of the need for a proposed cell site to provide an unbroken link with the proximate sites on a particular carrier's network.

In the first months after the enactment of the TCA, the delays in local hearing processes that Congress feared materialized.[9] These delays and concerns remanding an overturned denial to a local zoning board would simply result in more delays of another denial, and thus, many courts have issued writs of *mandamus*, or granted similar relief, compelling boards to issue permits as soon as possible. Since the enactment of TCA, many municipalities throughout the country have adopted moratoria halting the issuance of permits and, in many cases, the submission of applications for personal wireless sites.

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[7] Paul Yesawich III and Anne Riley, *Second Circuit Rejects "Attractively Simple" Interpretation of Siting Provisions in Telecommunications Act of 1996*, citing *Westel-Milwaukee Co. v. Walworth County*, 205 Wis. 2d 244, 556 N.W. 2d 107 (Wis. App. 1996).

[8] Sullivan, Brian, member of Burak Anderson & Melloni, PLC, *Evolution of Technology – Revolution in Land Use Law: The Effect of the Telecommunications Act of 1996 on Zoning and Planning*, article published in *Communications Lawyer*, the *Planning Commissioners Journal*, the *Vermont Business Magazine* and the *Vermont Bar Journal*.

[9] *Supra* note 8.

Local governments negotiated a compromise with the cellular industry on the siting of wireless facilities in cities and towns. The compromise, brokered by Rep. Bob Goodlatte (R.-Va.), affirms the authority of local governments' to control siting, construction and modification of wireless facilities.[10] The legislation protects from federal intrusion any local zoning decision concerning wireless facilities, so long as municipal zoning decisions do not unreasonably discriminate among providers of functionally equivalent services or preclude cellular service from a community.

All challenges to municipal zoning decisions would have to be appealed to the courts, rather than the FCC. As a result, the negotiated agreement largely prohibits the FCC from preempting local decisions regarding zoning.

Section 402 of Title 47 of the United States Code gives the right of appeal for decisions and orders of the Commission in the following cases:
(i) by any applicant for a construction permit or station license, whose application is denied by the Commission; (ii) by any applicant for the permit required by section 325 of this Act whose application has been denied by the Commission, or by any permittee under said section whose permit has been revoked by the Commission; or (iii) by the holder of any construction permit or station license which has been modified or revoked by the Commission.

III. Evaluation of feasibility of use of public rights-of-way to comply with provisions of Federal Telecommunications Act of 1996

In general, section 253 of the Act states that "no state or local statute or regulation, or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service.[11] This section does not affect the authority of State or local governments to manage the public rights-of way or to require fair and reasonable compensation from telecommunication providers or use of public rights-of-way on a nondiscriminatory basis, if the compensation is publicly disclosed by such government.[12] In other words, this section's "barrier to entry" clause should not interfere with local governments' ability to manage their public rights-of-way and to be compensated for their use, so long as they manage and charge compensation for the rights-of-way in a nondiscriminatory fashion.[13]

The new law makes clear that this authority covers all telecommunications providers who use the municipal rights-of-way. With this traditional local authority protected, local governments will need to put in place procedures for negotiating nondiscriminatory rights-of-way agreements with a variety of telecommunications providers. Many

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[10] Tabin, Barrie and Nicholas Miller, *The Federal Telecommunications Act of 1996: What it Means for Cities*, NLC Nation's Cities Weekly, vol. 19, no. 6, Feb. 12, 1996.
[11] *Supra* note 10.
[12] *Id.*
[13] *Id.*

communities will want to enact general telecommunications ordinances to provide a framework for agreements and compensation.

IV. Recommendations for appropriate regulations, if any, that should be adopted regarding the use of public rights-of-way for cellular telecommunications facilities

In section 253(b) of the Act, it provides that states shall maintain their ability "to impose . . . requirements necessary to . . . protect the public safety and welfare . . ."[14] Additionally, according to section 253(c), the authority of a State or local government to manage a public rights-of-way or to require fair and reasonable compensation from telecommunication providers for use of public rights-of- way is not affected.[15] However, that language is followed, in section 253(d), by the warning that if the FCC "determines that a State or local government has permitted or imposed any statute, regulation or legal requirement that violates subsection (a) . . . the commission shall preempt the enforcement of such statute, regulation, or legal requirement to the extent necessary to correct such violation or inconsistency."[16]

Since the enactment of the Federal Telecommunications Act of 1996, the contest between localities and telecommunications services providers has raised the issue of whether the state can step in. In *AT&T Communications, Inc. v. City of Austin*, the court held that entrant to local telecommunications service market did not "use" public rights-of-way and thus 47 U.S.C. § 253, in conjunction with state law, preempted city ordinance requiring municipal consent before entrant could operation telecommunications services in city.[17] Thus, the TCA allows state law to prevent localities from denying telecommunications services opportunities afforded under the Act.

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[14] 47 U.S.C. § 253(b)
[15] 47 U.S.C. § 253(c)
[16] 47 U.S.C. § 253(d)
[17] *AT&T Communications, Inc. v. City of Austin*, 40 F.Supp.2d 852 (W.D. Tex. 1998), reported at 42 F.Supp.2d 708 (W.D. Tex. 1998).

Appendix 8
2001 Legislation with Technology and Science Content
(Alphabetically by Subject Matter)

Legislation recommended by the Joint Commission on Technology and Science is in **bold**. Passed legislation is *italicized*. Bills carried over from the 2000 Session that failed in 2001 are not included in this appendix.

	HBs	HJRs	HRs	SBs	SJRs	SRs	Totals
Introduced	69	17	0	39	13	0	138
Passed	31	9	0	21	8	0	69
Failed	38	8	0	18	5	0	69

Civil Law and Court Procedures

HB1612 – Expert testimony by a biomechanical engineer.[1]
HB1772 – Remote access to nonconfidential circuit court records.
HB1793 – Fees collected by clerks of circuit courts.[2]
HB2043 – Privacy of electronically filed court records.
HB2308 – Unsolicited faxes.[3]
HB2411 – Uniform Electronic Transactions Act; technical amendments.
HB2427 – Virginia Telephone Privacy Protection Act.
HB2463 – Human cloning.
HB2536 – Electronic filing of documents.[4]
HB2731 – Remote access to nonconfidential court records.[5]
HJ789 – Study; remote electronic access to court cases.
SB1295 – Virginia Telephone Privacy Protection Act.
SB1305 – Human cloning.
SJ334 – Study; discovery of electronic data.

Criminal Law and Practice

HB1311 - Capital case bill of review (Preservation and retention of DNA in felony cases).
HB2555 – Crimes against person or property by computer, penalty.[6]
HB2586 – Sexually explicit material.[7]
HB2593 – Use of a person's identity with the intent to coerce, intimidate or harass; penalty.
HB2666 – Sending of obscene pornography to a minor by computer; penalty.[8]
HB2677 – Procedure for taking DUI blood samples.[9]
HB2807 – Obscenity, pornography.[10]
HB2824 – Identity fraud; assistance of Attorney General.
HJ687 – Study; Title 18.2 reorganization.

[1] Tabled in House Committee on Courts of Justice
[2] Tabled in House Committee on Courts of Justice
[3] Stricken at request of Patron in House Committee on Science & Technology
[4] Stricken at request of Patron in House Committee on Courts of Justice
[5] Stricken at request of Patron in House Committee on Courts of Justice
[6] Incorporated into HB 2593 by House Committee on Science & Technology (HB2593)
[7] Left in Senate Committee on Courts of Justice
[8] Stricken at request of Patron in House Committee on Courts of Justice
[9] Tabled in House Committee on Courts of Justice
[10] Passed by indefinitely by House Courts of Justice

HJ692 – Study; digital court reporters.[11]
SB850 – Criminal procedure; compensation of forensic experts.
SB1156 – Crimes against person or property by computer; penalty.[12]
SB1235 – Interception, disclosure, etc., of wire, electronic, or oral communications unlawful.[13]
SB1246 – Use of a person's identity with the intent to coerce, intimidate or harass; penalty.
SB1287 – Sexually explicit material.[14]
SB1294 – Computer trespass.[15]
SB1366 – Storage and testing of certain evidence, writ of actual innocence.
SB1394 – Computer invasion of privacy.

Economic Development
HB2161 – Money order sales and money transmission services.
HB2382 – Internet Privacy Protection Act; created.[16]
HB2387 – Uniform Computer Information Transactions Act; consumer protection.
HB2412 – Uniform Computer Information Transactions Act.
HB2462 – Telephone Solicitation Act.[17]
HB2643 – Telephone Solicitation Act.[18]
HB2812 – Telemarketing Privacy Act.[19]
HJ805 – Virginia Biotechnology Month.
SB926 – Telephone Solicitation Act.[20]
SB1017 – Virginia Consumer Protection Act; computer information.
SB1109 – Semiconductor Manufacturing Performance Grant Programs.
SJ355 – Study; employment opportunities for workers with disabilities.[21]

Education
HB1691 – Internet access in public schools.
HB1841 – Standards of Learning; availability on Internet.[22]
HB2565 – The Advantage Virginia Incentive Program; qualified jobs; selection of beneficiaries.
HJ706 – Commending Mobile Learning Units.
HJ764 – Study; technology training and leadership of principals.[23]
SB1055 – Career and technical education.
SB1057 – Educational technology in career and technical education programs.

Electronic Procurement
HJ625 – Study; competitive procurements via electronic means; sealed bids.
SB961 – Public Procurement Act; use of best value concepts.[24]

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[11] Tabled in House Committee on Rules
[12] Left in Senate Committee on Finance
[13] Left in Senate Committee on Courts of Justice
[14] Left in Senate Committee on Courts of Justice
[15] Left in Senate Committee on Finance
[16] Tabled in House Science & Technology
[17] Left in House Committee on Corporations, Insurance and Banking
[18] Left in House Committee on Corporations, Insurance and Banking
[19] Incorporated into HB 2427 by House Committee on Corporations, Insurance and Banking
[20] Left in Senate Committee on Commerce & Labor
[21] Left in Senate Committee on Finance
[22] Tabled in House Committee on Education
[23] Tabled in House Committee on Rules
[24] Defeated by the Senate

SB1024 – Virginia Public Procurement Act; procurement by reverse auctioning.
SB1351 – Advantage Virginia Electronic Procurement Program.[25]
SJ403 – Study; public procurement of information technology services.
SJ404 – Study; electronic procurement process.[26]

General

HB1588 – Medicine and healing arts; auricular acupuncture.
SJ377 – African-American Scientist and Inventor Day.

State and Local Government

HB1597 – Access to scientific date from state-funded studies.[27]
HB1611 – Local emergency telecommunications requirements.
HB1713 – Creates Telecommuting Incentive Act.
HB1745 – Thermal Imaging Camera Advisory Board and Fund.
HB1846 – Deaf and hard-of-hearing; Virginia Relay.[28]
HB1926 – Virginia Information Providers Network Authority; powers and duties; financing and operations.
HB1943 – Secretary of Administration; creation of teleworking pilot program.[29]
HB1958 – Uncollectable electronic payments to Department of Motor Vehicles (DMV).
HB2025 – Publication of comprehensive telecommunications directory.[30]
HB2094 – Granting of franchises.
HB2168 – Center for Innovative Technology.
HB2169 – Agencies' and court clerks' disclosure of certain account information prohibited.
HB2183 – Virginia Public Procurement Act; procurement of professional services.
HB2187 – Local governing bodies to deliver public notices electronically.[31]
HB2454 – Payment of fees by credit card.
HB2470 – Electric utility restructuring; green power.[32]
HB2472 – Electric utility restructuring; renewable energy.
HB2473 – Home Energy Assistance Program.
HB2743 – Creation of the Virginia Research and Technology Advisory Commission.
HJ607 – Eugenics.
HJ724 – Commending staff of the former Century Date Change Initiative Project Office.
SB918 - Fees collected by clerks of circuit courts.
SB993 – Voluntary bone marrow donation by prisoners.[33]
SB1018 – Information Providers Network Authority.[34]
SB1019 – Attorney General; Secretary of Technology; guidelines to Uniform Electronic Transactions Act's implications on state agencies.
SB1023 – Virginia Information Providers Network Authority; powers and duties; financing and operations.
SB1117 – Thermal Imaging Camera Fund.

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[25] Stricken at request of Patron in Senate Committee on General Laws
[26] Left in Senate Committee on Rules
[27] Tabled in House Committee on General Laws
[28] Stricken at request of Patron in House Committee on General Laws
[29] Incorporated into HB 1713 by House Committee on Science & Technology
[30] Tabled in House Committee on Science & Technology
[31] Stricken at request of Patron in Senate Committee on Local Government
[32] Stricken at request of Patron in House Committee on Corporations, Insurance and Banking
[33] Stricken at request of Patron in Senate Committee on Courts of Justice
[34] Stricken at request of Patron in Senate Committee on General Laws

SB1245 – Department of Technology Planning; Virginia Geographic Information Network.
SB1322 – Freedom of Information Act; exemption for certain electronic communications.
SB1336 – Telecommuting Incentive Act created; Chief Information Officer to report.[35]
SB1371 – Typed, preprinted, and electronically printed prescriptions.[36]
SJ360 – Study; advertising on government websites.[37]
SJ361 – Study; fees for using credit cards or other electronic methods payment.
SJ402 – Commending the Department of Motor Vehicles.
SJ457 – Confirming Governor's appointments; technology.

Taxation and Tax Credits

HB1774 - Filing the annual return with employee withholding tax statements by electronic means.
HB2001 – Sales and use tax; use of property by service providers.[38]
HB2064- Sales and use tax; use of property by service providers.[39]
HB2184 – Technology and Biotechnology Research and Development Act; created.[40]
HB2326 – Technology Internship Program tax credits.[41]
HB2414 – Sales and use tax; commercial and industrial exemptions.
HB2416 – Income tax; credits for solar energy.[42]
HB2440 – Sales tax exemption; equipment used to produce software.[43]
HB2466 – Qualified equity and subordinated debt investments tax credit.[44]
HB2467 – Tax credit for investing in a small technology business.[45]
HB2469 – Income tax deduction; energy program contributions.[46]
HB2474 – Income tax credit; solar energy equipment.[47]
HB2806 – Income tax; Broadband Internet Access Tax Credit.[48]
SB832 – Telephone and enhanced 911 service taxes; exemptions.[49]
SB852 – Filing the annual return with employee withholding tax statements by electronic means.
SB1106 – Sales and use tax; use of property by service providers.[50]
SB1260 – Technology and Biotechnology Investment Act created.[51]
SB1261 – Technology Internship Program tax credits.[52]
SB1292 – Sales tax exemption; Internet service providers.[53]
SB1349 – Wireless Enhanced Public Safety Telephone Service Act; E-911 surcharge; local tax for E-911 service.

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[35] Left in Senate Committee on Finance
[36] Passed by indefinitely by Senate Committee on Education & Health
[37] Stricken at request of Patron in Senate Committee on Rules
[38] Incorporated into HB 2064 by House Committee on Finance
[39] Left in Senate Committee on Finance
[40] Tabled in House Committee on Finance
[41] Stricken at request of Patron in House Committee on Finance
[42] Incorporated into HB 2474 by House Committee on Finance
[43] Tabled in House Committee on Finance
[44] Tabled in House Committee on Finance
[45] Tabled in House Committee on Finance
[46] Left in House Committee on Finance
[47] Left in Senate Committee on Finance
[48] Left in House Committee on Finance
[49] Failed to report (defeated) in Senate Committee on Finance
[50] Left in Senate Committee on Finance
[51] Left in Senate Committee on Finance
[52] Left in Senate Committee on Finance
[53] Left in Senate Committee on Finance

Transportation

HB1629 – Use of wireless communications devices while driving.[54]
HB1884 – Use of certain communication devices by motor vehicle drivers.[55]
HB2019 – "Photo-toll" toll payment photo-monitoring program.
HB2058 – Photo-monitoring system to enforce traffic light signals.[56]
HB2415 – Legislative consideration of use of photo-monitoring system.[57]
HB2518 - Vision examinations for issuance or renewal of driver's licenses.[58]
HB2560 – Special license plates; Home of the Internet.[59]
HJ624 – VDOT's Intelligent Transportation System.
SB846 – "Photo-red" traffic light signal enforcement program.[60]
SB947 – "Photo-red" traffic light signal enforcement programs.[61]
SB1108 – Photo-monitoring system to enforce traffic light signals.[62]
SB1291 – "Photo-toll" toll payment photo-monitoring program.
SJ336 – Study; distracted drivers.

Voting and Elections

HB1843 – Election recount procedures and ballots cast on electronic voting devices.
HJ529 – Study; procedures for ascertaining results of elections.[63]
HJ575 – Virginia election procedures and process.[64]
HJ606 – Study; pollbooks.[65]
HJ621 – Study; application of technologies to voting procedures.[66]
HJ659 – Study; career development program for voter registrars.[67]
HJ681 – Study; election process.
HJ798 – Study; election policies and procedures.[68]
SJ352 – Study; modernizing voter equipment and election procedures.[69]
SJ 363 Study; election process and voting technologies.
SJ376 – Study; voting systems.[70]

[54] Left in House Committee on Militia & Police
[55] Left in House Committee on Militia & Police
[56] Left in House Committee on Militia & Police
[57] Left in House Committee on Militia & Police
[58] Left in Senate Committee on Transportation
[59] Incorporated into HB 2556 by House Committee on Transportation
[60] Failed to report (defeated) in House Committee on Militia & Police
[61] Failed to report (defeated) in House Committee on Militia & Police
[62] Left in Senate Committee on Transportation
[63] Incorporated into HJ 681 by House Committee on Rules
[64] Incorporated into HJ 681 by House Committee on Rules
[65] Incorporated into HJ 681 by House Committee on Rules
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[67] Incorporated into HJ 681 by House Committee on Rules
[68] Incorporated into HJ 681 by House Committee on Rules
[69] Incorporated inot SJ 363 by Senate Committee on Rules
[70] Incorporated into SJ 363 by Senate Committee on Rules

Appendix 9

Final Summaries of 2001 Enacted Legislation with Technology or Science Content

(In Numerical Order by HBs, HJRs, SBs, and SJRs)

Full Text of Legislation Appears in the 2001 Acts of the Assembly

BILL NUMBER: House Bill 1311 (Chapter 874)
PATRON: Almand
SUMMARY: ***Capital case bill of review. (Preservation and retention of DNA in felony cases.)*** Establishes a procedure for the storage, preservation and retention of human biological evidence in felony cases. The bill also establishes a procedure for a convicted felon to petition the circuit court that entered the conviction to apply for a new scientific investigation of human biological evidence. The following elements must be met for the court to order the testing: (i) the evidence was not known or available at the time the conviction became final or not previously tested because the testing procedure was not available at the Division of Forensic Science at the time; (ii) the chain of custody establishes that the evidence has not been altered, tampered with, or substituted; (iii) the testing is materially relevant, noncumulative, and necessary and may prove the convicted person's actual innocence; (iv) the testing requested involves a scientific method employed by the Division of Forensic Science; and (v) the convicted person did not unreasonably delay the filing of the petition after the evidence or the test for the evidence became available. The petition must also state the reasons the evidence was not known or tested by the time the conviction became final and the reasons that the newly discovered or untested evidence may prove the actual innocence of the person convicted. A procedure for the issuance of a writ of actual innocence for persons convicted of a felony upon a plea of not guilty or for any person sentenced to death or convicted of (i) a Class 1 felony, (ii) a Class 2 felony or (iii) any felony for which the maximum penalty is imprisonment for life, is established. The petition is to be filed with the Supreme Court and must allege: (a) that the petitioner pleaded not guilty or that he is under a sentence of death or convicted of (i) a Class 1 felony, (ii) a Class 2 felony or (iii) any felony for which the maximum penalty is imprisonment for life; (b) that the petitioner is actually innocent of the crime for which he was convicted; (c) an exact description of the human biological evidence and the scientific testing supporting the allegation of innocence; (d) that the evidence was not previously known or available to the petitioner or his trial attorney of record at the time the conviction became final, or if known, was not subject to the scientific testing for the reasons set forth in the petition; (e) the date the test results under § 19.2-

327.1 became known to the petitioner or any attorney of record; (f) that the petitioner or his attorney of record has filed the petition within 60 days of obtaining the test results under §19.2-327.1; (g) that the petitioner is currently incarcerated; (h) the reasons the evidence will prove that no rational trier of fact could have found proof of guilt beyond a reasonable doubt; and (i) for any conviction that became final in the circuit court after June 30, 1996, that the evidence was not available for testing under § 9-196.11. A petitioner filing a writ of actual innocence is entitled to court-appointed counsel in the same manner as an indigent defendant in a criminal case. If the Supreme Court determines that a resolution of the case requires further development of the facts, it may order the circuit court to conduct a hearing to certify findings of fact on certain issues. After considering the petition and the Commonwealth's response, the previous records of the case, the record of any hearing on newly tested evidence and any findings certified from the circuit court, the Supreme Court may dismiss the petition or vacate or modify the conviction. The provisions of the Act relating to the issuance of the writ of actual innocence become effective November 15, 2002. The rest of the Act becomes effective upon passage. This bill is identical to SB 1366 (Stolle).

BILL NUMBER: House Bill 1588 (Chapter 533)
PATRON: Van Yahres
SUMMARY: ***Medicine and healing arts; auricular acupuncture.*** Clarifies that acupuncture detoxification specialists who are certified by the National Acupuncture Detoxification Association or an equivalent certifying body, and who are currently exempt from licensure when they are supervised by a National Acupuncture Detoxification Association certified licensed physician acupuncturist or licensed acupuncturist, may perform auricular acupuncture in the context of a chemical dependency treatment program for patients eligible for federal, state or local public funds.

BILL NUMBER: House Bill 1611 (Chapter 713)
PATRON: Deeds
SUMMARY: ***Local emergency telecommunications requirements.*** Exempts from the duty of all localities to have specific wireline and wireless 911 and E-911 service available by certain dates, any locality in which (i) 50 percent or more of the geographic area is unable to receive wireless telecommunications service; (ii) no taxes are imposed for E-911 services; and (iii) the Wireless E-911 Services Board has designated a specific public safety answering point or the Virginia State Police to answer wireless 911 or wireless E-911 calls originating in the locality.

BILL NUMBER: House Bill 1691 (Chapter 269)
PATRON: Black
SUMMARY: ***Internet access in public schools.*** Requires, as part of the acceptable Internet use policies that must be filed every two years for public school divisions by each division superintendent, a technology be selected for the

division's computers having Internet access to filter or block Internet access through such computers to child pornography and obscenity as defined in Title 18.2. In addition, this bill requires the principal or other chief administrator of any private school that satisfies the compulsory school attendance law and accepts federal funds for Internet access (E-rate funds) to select a technology for its computers having Internet access to filter or block Internet access through such computers to child pornography and obscenity.

BILL NUMBER: House Bill 1713 (Chapter 405)
PATRON: Scott
SUMMARY: ***Creates Telecommuting Incentive Act.*** Directs the Secretary of Administration to direct the formulation and promulgation of policies, standards, specifications, and guidelines for information technology concerning telecommuting by the employees of state agencies. The head of each state agency is directed to develop a telecommuting policy, which shall be in accordance with the statewide policy to be developed by the Secretary of Administration, to maximize telecommuting without diminished employee work performance or service delivery. The Secretary of Administration is also directed to advise and assist state agencies in developing the state agencies' telecommuting policies, and the Secretary may provide advice and assistance to a local government or a private sector employer upon the local government or the private sector employer's request. This incorporates HB 1943.

BILL NUMBER: House Bill 1745 (Chapter 871)
PATRON: Thomas
SUMMARY: ***Thermal Imaging Camera Advisory Board and Fund.*** Establishes the Thermal Imaging Camera Fund administered by the Department of Fire Programs to assist local fire departments, other fire services organizations and local governments to purchase thermal imaging cameras. The provisions of the bill will only become effective if an appropriation of General Funds effectuating the purposes of the bill is included in the 2001 Appropriations Act.

BILL NUMBER: House Bill 1772 (Chapter 497)
PATRON: Howell
SUMMARY: ***Remote access to nonconfidential circuit court records.*** Clarifies that those records held by a circuit court clerk include records stored in electronic format whether the storage media for such electronic records are on premises or elsewhere. The bill provides that remote access users are individuals who are not employees of the clerk's office.

BILL NUMBER: House Bill 1774 (Chapter 297)
PATRON: Howell
SUMMARY: ***Filing the annual return with employee withholding tax statements by electronic means.*** Provides that an employer who furnishes 250 or more withholding tax statements to employees must file the annual withholding report using an electronic medium. An employer who furnishes less than 250 statements may file the annual report using an electronic medium. This requirement is effective for annual reports filed on and after January 1, 2002, and the Tax Commissioner may waive the requirement if it creates an unreasonable burden on the employer. The Tax Commissioner is to adopt guidelines providing standards for filing the annual report on an electronic medium. This bill is identical to SB 852.

BILL NUMBER: House Bill 1843 (Chapter 641)
PATRON: Marshall
SUMMARY: ***Election recount procedures and ballots cast on electronic voting devices.*** Provides that, where voting systems that count ballots by means of insertion in electronic counting devices are used, recounts shall examine only those ballots on which voters have apparently voted for fewer than or more than the number of candidates for which they are legally entitled to vote. The State Board of Elections is to provide standards by September 1, 2001, applicable for all recounts, for determining whether a ballot has or has not been voted for a candidate and for promoting a timely and accurate resolution of recount questions. The current statutory provision that allows parties to a recount to examine all ballots and materials is modified and replaced by a more limited examination.

BILL NUMBER: House Bill 1926 (Chapter 216)
PATRON: May
SUMMARY: ***Virginia Information Providers Network Authority; powers and duties; financing and operations.*** Clarifies that state agencies and local governments, whom already had statutory authority to contract with the Virginia Information Providers Network Authority (Authority) for use of the Authority's facilities and Authority's services, may pay for such use and services. Provides that the Authority may fix and collect fees for such use and services, and further clarifies that state funds may not be used for the Authority's purposes except as provided by the Code of Virginia. This bill is identical to SB 1023.

BILL NUMBER: House Bill 1958 (Chapter 800)
PATRON: Rollison
SUMMARY: ***Uncollectable electronic payments to Department of Motor Vehicles (DMV).*** Treats uncollectable electronic payments to DMV the same way as uncollectable checks.

BILL NUMBER: House Bill 2019 (Chapter 803)
PATRON: May
SUMMARY: ***"Photo-toll" toll payment photo-monitoring program.*** Allows operators of toll facilities to send vehicle owners bills or invoices prior to pursuing other remedies provided for collecting unpaid tolls. This bill is a duplicate of SB 1291 (Mims).

BILL NUMBER: House Bill 2043 (Chapter 220)
PATRON: Rust
SUMMARY: ***Privacy of electronically filed court records.*** Requires the Supreme Court to promulgate rules to restrict remote electronic access to records in any cases filed electronically in the electronic filing pilot projects, to judges, court personnel, any persons assisting such persons in the administration of the electronic filing system, counsel of record, and parties appearing pro se. The bill expires on July 1, 2002.

BILL NUMBER: House Bill 2094 (Chapter 498)
PATRON: Devolites
SUMMARY: ***Granting of franchises.*** Provides that prior to granting certain franchises, municipalities shall advertise the proposed ordinance two successive weeks, rather than four. Other amendments clarify the method for receiving bids for franchises.

BILL NUMBER: House Bill 2161 (Chapter 372)
PATRON: Woodrum
SUMMARY: ***Money order sales and money transmission services.*** Eliminates the requirement that a licensee have a physical presence in Virginia, so long as transactions are being conducted by Virginia citizens. Applicants for licenses are now required to submit audited financial statements and have a minimum net worth between $100,000 and $1 million dollars. The penalty for unlicensed entities engaging in these regulated businesses is raised from a Class 3 misdemeanor to a Class 1 misdemeanor. The State Corporation Commission has enhanced examination powers over licensees, may examine licensees in conjunction with the regulatory authorities of other states, and may now impose civil penalties for violations.

BILL NUMBER: House Bill 2168 (Chapter 57)
PATRON: Nixon
SUMMARY: ***Center for Innovative Technology.*** Requires the president of the Center for Innovative Technology to report annually to the Joint Commission on Technology and Science regarding the Center's initiatives, projects and work plans.

BILL NUMBER: House Bill 2169 (Chapter 415)
PATRON: Nixon
SUMMARY: ***Agencies' and court clerks' disclosure of certain account information prohibited.*** Prohibits agencies and court clerks that accept methods of payment other than cash, including but not limited to credit cards, debit cards, electronic checks, and other electronic payment and billing systems, for fees, services, taxes, or other charges, to disclose such account information or social security numbers or other identification numbers on driver's licenses. The prohibition does not apply if such disclosure is required to conduct and complete the transaction for which other methods of payment are used or if such disclosure is required by other law or ordered by the courts.

BILL NUMBER: House Bill 2183 (Chapter 675)
PATRON: Purkey
SUMMARY: ***Virginia Public Procurement Act; procurement of professional services.*** Expands to all public bodies the authority to award term contracts for architectural and engineering services for multiple projects. The bill increases certain monetary limits for any locality having a population in excess of 80,000.

BILL NUMBER: House Bill 2387 (Chapter 762)
PATRON: Clement
SUMMARY: ***Uniform Computer Information Transactions Act; consumer protection.*** Makes several amendments to the Uniform Computer Information Transactions Act (UCITA) (§ 59.1-501.1 et seq.) and the Virginia Consumer Protection Act (VCPA) (§ 59.1-196 et seq.). The bill changes UCITA's references to other laws or rules to other statutes, administrative rules, regulations or procedures where applicable. The bill also changes references to the VCPA to other consumer protection statutes, administrative rules or regulations including, but not limited to, the VCPA. The bill provides that a mass-market license may be transferred if such transfer involves making a gift or donation of a computer along with mass-market software to a public school, a public library, a charity or a consumer. The bill amends the definition of "goods" as used in the VCPA to include "computer information" and "informational rights" as defined in UCITA.

BILL NUMBER: House Bill 2411 (Chapter 86)
PATRON: May
SUMMARY: ***Uniform Electronic Transactions Act; technical amendments.*** Makes two technical amendments to the Uniform Electronic Transactions Act (UETA) (§ 59.1-479 et seq.). The predecessor electronic signatures and records law, Chapter 39 (§ 59.1-467 et seq.) of Title 59.1, repealed in 2000, had excluded electronic filing with the courts from its scope to protect the autonomy and integrity of the courts. Instead, Article 4 (§ 17.1-255 et seq.) of Chapter 2 of Title 17.1 had provided that the courts

were to follow the rules adopted by the Supreme Court of Virginia regarding electronic filing. When the 2000 General Assembly adopted UETA, the General Assembly retained the exclusion for the courts. However, the 2000 General Assembly also enacted legislation that modified Article 4 of Chapter 2 of Title 17.1 to provide that electronic filing with the courts must meet the requirements set out under UETA. Thus a conflict was created in that one section of the Code of Virginia excludes the court filings from UETA and another section of the Code of Virginia requires electronic filings with the courts to be in accordance with UETA. The bill remedies this conflict by deleting the court filing exclusion from UETA. In addition, several provisions of UETA refer to Title 8.9 of the Code of Virginia. The 2000 General Assembly enacted legislation that would repeal Title 8.9 and replace it with new Title 8.9A effective July 1, 2001. The bill amends the cross-references from Title 8.9 to Title 8.9A.

BILL NUMBER: House Bill 2412 (Chapter 763)
PATRON: May
SUMMARY: ***Uniform Computer Information Transactions Act.*** Amends several provisions of the Uniform Computer Information Transactions Act (UCITA) to clarify the definitions of "electronic agent" and "mass-market transaction"; modify UCITA's scope over motion pictures and online service providers; clarify the applicability of other statutes, rules and regulations; provide that a contract term that specifies a judicial forum must be expressly stated, and in a mass-market transaction, such contract term must be expressly and conspicuously stated; modify the terms of mass-market licenses; create a special rule for using standard form licenses with nonprofit libraries, archives, and educational institutions; modify the terms governing transferability; clarifies the definition of automatic restraint; and modifies the restrictions on use of electronic self-help.

BILL NUMBER: House Bill 2414 (Chapter 468)
PATRON: May
SUMMARY: ***Sales and use tax; commercial and industrial exemptions.*** Extends the sunset to July 1, 2005, from the sales and use tax exemption for activities and items associated with space facilities, satellites, and vehicles.

BILL NUMBER: House Bill 2427 (Chapter 553)
PATRON: Suit
SUMMARY: ***Virginia Telephone Privacy Protection Act.*** Creates the Telephone Privacy Protection Act, which (i) prohibits telephone solicitation calls to residences at any time other than between 8:00 a.m. and 9:00 p.m.; (ii) requires telephone solicitors to identify themselves; (iii) prohibits telephone solicitors from intentionally blocking caller identification services; (iv) prohibits telephone solicitors from calling a telephone number when a person at such telephone number has stated that he does

not wish to receive solicitation calls by or on behalf of the entity for whom the call is being made; (v) authorizes the Commissioner of the Department of Agriculture and Consumer Services to inquire into possible violations and authorizes the Attorney General to issue civil investigative demands; (vi) permits individuals to sue to enjoin violations, recover damages in the amount of $500 per violation, or up to $1,500 for willful violations, and recover attorneys' fees and court costs; and (vii) permits the Attorney General, attorney for the Commonwealth, and attorneys for any municipality to sue to enjoin violations, recover damages for aggrieved persons in the amount of $500 per violation, recover a civil penalty of up to $1,000 for each willful violation, and recover attorneys' fees and expenses. This bill is identical to SB 1295 and incorporates HB 2812.

BILL NUMBER: House Bill 2454 (Chapter 501)
PATRON: Phillips
SUMMARY: ***Payment of fees by credit card.*** Clarifies that circuit court clerks may accept credit cards for the payment of filing fees. This bill is identical to SB 918.

BILL NUMBER: House Bill 2463 (Chapter 868)
PATRON: McDonnell
SUMMARY: ***Human cloning.*** Prohibits the cloning of humans, i.e., the creation of or attempt to create a human being by transferring the nucleus from a human cell from whatever source into an oocyte from which the nucleus has been removed. Cloning of animals is accomplished by withdrawing or otherwise rendering inert the chromosomes (the linear threads containing the genes) from a somatic cell (a mature, diploid cell having a complete set of chromosomes) and inserting the genetic material of the individual to be reproduced into an oocyte (an ovum or egg). The altered cell is then implanted into a uterus. This bill defines several scientific terms, e.g., cloning, human cloning, nucleus, oocyte, somatic cell, and somatic cell nuclear transfer. The following acts are prohibited: the performance of human cloning; the implantation or attempted implantation of the product of somatic cell nuclear transfer into an uterine environment so as to initiate a pregnancy; the possession of the product of human cloning; and the shipping or receiving of the product of a somatic cell nuclear transfer in commerce for the purpose of implantation of such product into an uterine environment so as to initiate a pregnancy. In addition to any other applicable penalty, any person violating this law will be liable for a civil penalty not to exceed $50,000 per incident. The use of somatic cell nuclear transfer or other cloning technologies for biomedical and agricultural research, of gene therapy, and of somatic cell nuclear transfer techniques to create animals other than humans are not restricted. This bill is identical to SB 1305.

BILL NUMBER: House Bill 2472 (Chapter 421)
PATRON: Plum
SUMMARY: ***Electric utility restructuring; renewable energy.*** Defines renewable energy as energy derived from sunlight, wind, falling water, sustainable biomass, energy from waste, wave motion, tides, and geothermal power, and excludes energy derived from coal, oil, natural gas or nuclear power

BILL NUMBER: House Bill 2473 (Chapter 676)
PATRON: Plum

Home Energy Assistance Program. Establishes the Home Energy Assistance Program in the Department of Social Services, which is designated as the state agency responsible for coordinating state efforts in furtherance of the policy to support the work of public agencies, private utility service providers, and charitable and community groups seeking to assist low-income Virginians in meeting their seasonal residential energy needs. The Department is charged with (i) administering distributions from the Home Energy Assistance Fund created by this measure; and (ii) reporting on the effectiveness of low-income energy assistance programs in meeting the needs of low-income Virginians. The Department is authorized to assume responsibility for administering all or any portion of any private, voluntary low-energy fuel assistance program, if requested by the administrator of such program. The Home Energy Assistance Fund will be used to supplement the federal Low Income Home Energy Assistance Program Block Grant and to assist the Commonwealth in maximizing the amount of federal funds available under the Low Income Home Energy Assistance Program and the Weatherization Assistance Program by providing funds to comply with fund matching requirements. The Fund shall consist of moneys appropriated by the General Assembly and donations and contributions. The bill requires the State Board of Social Services to promulgate regulations to implement provisions of the bill within 280 days of its enactment, and the bill will become effective from its passage.

BILL NUMBER: House Bill 2565 (Chapter 765)
PATRON: Scott
SUMMARY: ***The Advantage Virginia Incentive Program; qualified jobs; selection of beneficiaries.*** Revises the focus of the Advantage Virginia Incentive Program, i.e., a program focused on and designed to provide scholarships for job training. This bill changes "occupational areas where there is a high demand for workers" to "qualified jobs," which is defined as jobs that are in high demand in the Commonwealth and designated as such by the Virginia Workforce Council. The bill deletes the requirement that the qualified jobs must be located in high unemployment areas and replaces the requirement with a provision that students who attended high schools located in high unemployment areas will be given preferences in selecting beneficiaries for the Advantage Virginia Incentive Program.

BILL NUMBER: House Bill 2593 (Chapter 782)
PATRON: Albo
SUMMARY: ***Use of a person's identity with the intent to coerce, intimidate, or harass; penalty.*** Provides that publishing a person's name or picture along with certain identifying information, with the intent to coerce, intimidate, or harass, is a Class 1 misdemeanor. This bill is identical to SB 1246 and incorporates HB 2555.

BILL NUMBER: House Bill 2743 (Chapter 788)
PATRON: May
SUMMARY: ***Creation of the Virginia Research and Technology Advisory Commission.*** Creates the Virginia Research and Technology Advisory Commission ("Commission"), which is to be an advisory commission under the executive branch. The Commission will consist of 27 members, including three legislative members, 20 citizen members, and the Secretaries of Commerce and Trade, Education, and Technology, or their designees, and the Director of the State Council of Higher Education or her designee. Members will be appointed by the Speaker of the House, the Senate Committee on Privileges and Elections, and the Governor. Legislative members will be appointed to serve terms coincident with their terms of office, and citizen members will be appointed for terms of four years. The Commission shall study and advise the Governor on appropriate research and technology strategies for the Commonwealth with emphasis on policy recommendations that will enhance the global competitive advantage of both research institutions and technology-based commercial endeavors within the Commonwealth. In addition, the Commission must make recommendations to the allocation committee of the Commonwealth Technology Research Fund regarding disbursements from the fund.

BILL NUMBER: House Bill 2824 (Chapter 423)
PATRON: Byron
SUMMARY: ***Identity fraud; assistance of the Attorney General.*** Provides that the Attorney General may provide assistance, not to include legal representation, to a victim of identity fraud in obtaining information necessary to correct inaccuracies or errors in his credit report or identifying information. The bill clarifies that the restitution allowed under the current law may include the person's actual expenses associated with correcting errors in the victim's credit report or other identifying information.

BILL NUMBER: House Joint Resolution 607
PATRON: Van Yahres
SUMMARY: ***Eugenics.*** Expresses the General Assembly's profound regret over the Commonwealth's involvement in the discredited eugenics movement from 1924 until 1979.

BILL NUMBER: House Joint Resolution 624
PATRON: Plum
SUMMARY: ***VDOT's Intelligent Transportation System.*** Encouraging the Virginia Department of Transportation to continue implementing its Intelligent Transportation System, known as Smart Travel, and to draft guidelines for that implementation in consultation with localities.

BILL NUMBER: House Joint Resolution 625
PATRON: Nixon
SUMMARY: ***Competitive procurements via electronic means and electronic sealed bids.*** Requests the Departments of General Services, Transportation, and Technology Planning, in consultation with the Joint Commission on Technology and Science, to study the methods and technologies needed to implement competitive procurement via electronic means, including electronic sealed bidding. In conducting this study, the Departments of General Services, Transportation, and Technology Planning are also requested to determine and recommend any changes to the applicable provisions of the Code of Virginia necessary to accommodate competitive procurement via electronic means.

BILL NUMBER: House Joint Resolution 681
PATRON: O'Brien
SUMMARY: ***Election process.*** Establishes a joint subcommittee to study the election process. In conducting the study, the joint subcommittee shall (i) examine the reliability and performance of the various types of voting systems in use throughout Virginia and in other states; (ii) examine the feasibility, advisability and costs of standardizing voting systems throughout the Commonwealth; (iii) consider ways to encourage localities to purchase or phase-in upgraded voting systems, including match grant programs; (iv) examine new and developing technologies that might advance the goals of better determining vote eligibility, ensuring voter privacy, enhancing the ability of voters to cast accurate and legal ballots and reducing the potential for election officials and individual interests to seek to interpret the intent of voters from ballots cast; (v) establish the extent to which, and the circumstances under which, spoiled ballots are cast or rescinded in elections; (vi) collect information regarding possible or actual voter misunderstanding of the ballot in elections throughout the Commonwealth; (vii) solicit the advice and experience of local electoral boards in ascertaining, establishing, and certifying the results of elections for accuracy and fairness; (viii) investigate the extent of and legality of vote-swapping strategies; (ix) examine local electoral board membership and qualification; (x) consider procedures for voter-friendly registration; (xi) examine standard procedures for assisting voters at the polls; (xii) ascertain the training needs of election officials and monitor the study by the State Board of Elections and the Weldon Cooper Center for Public Service on establishing a career development program for voter registrars; (xiii) consider procedures for standardizing absentee voting; (xiv) examine

legal, technological, logistical and other related issues, including privacy involved in the handling and security of a merged pollbook; (xv) investigate the experience of, and monitor current actions in, other states; and (xvi) make any other recommendations for changes that may be desirable to advance the certainty of, and fairness in establishing, the outcome of elections in the Commonwealth. The aforementioned objectives represent the incorporation of HJR 529 (Marshall), HJR 575, HJR 606, HJR 621 (Drake), HJR 659 (Landes), HJR 798 (Crittenden), SJR 352 (Rerras) and SJR 376 (Lambert). This resolution is identical to SJR 363 (Miller, K.G.).

BILL NUMBER: House Joint Resolution 687
PATRON: McDonnell
SUMMARY: ***Title 18.2 reorganization.*** Directs the Virginia State Crime Commission to study the organization of and inconsistencies in Title 18.2 of the Code of Virginia, including the level and extent of and the rationale for the penalties set forth therein. In conducting the study, the Commission shall (i) review the proportionality of the criminal penalties throughout the Code of Virginia; (ii) make recommendations for necessary amendments; and (iii) recommend whether or not Title 18.2 should also be revised at this time.

BILL NUMBER: House Joint Resolution 706
PATRON: Plum
SUMMARY: ***Commending Mobile Learning Units.*** Commending Virginia Tech, J. Sargeant Reynolds Community College, the Manufacturing Technology Center and the Longwood College Institute for Teaching Through Technology and Innovative Practices for their use of mobile learning units to further Virginia's goal of closing the digital divide.

BILL NUMBER: House Joint Resolution 724
PATRON: May
SUMMARY: ***Commending the staff of the former Century Date Change Initiative Project Office.***

BILL NUMBER: House Joint Resolution 789
PATRON: Rust
SUMMARY: ***Remote electronic access to court cases.*** Establishes a joint subcommittee to study the protection of information contained in the records, documents and cases filed in the courts of the Commonwealth.

BILL NUMBER: House Joint Resolution 805
PATRON: O'Bannon
SUMMARY: ***Virginia Biotechnology Month.*** Designates October, in 2001 and in each succeeding year, as Virginia Biotechnology Month.

BILL NUMBER: Senate Bill 850 (Chapter 480)
PATRON: Couric
SUMMARY: ***Criminal procedure; compensation of forensic experts.*** Increases from $400 to $800 the maximum basic fee allowed for experts who perform forensic psychological services to courts. A second enacting clause provides that the increase is not effective unless the money is appropriated.

BILL NUMBER: Senate Bill 852 (Chapter 307)
PATRON: Miller, K.G.
SUMMARY: ***Filing the annual return with employee withholding tax statements by electronic means.*** This bill is identical to HB 1774.

BILL NUMBER: Senate Bill 918 (Chapter 481)
PATRON: Wampler
SUMMARY: ***Fees collected by clerks of circuit courts.*** This bill is identical to HB2454.

BILL NUMBER: Senate Bill 1017 (Chapter 741)
PATRON: Newman
SUMMARY: ***Virginia Consumer Protection Act; computer information.*** Amends the definition of (i) "consumer transaction" to include license, (ii) "goods" to include computer information and informational rights, (iii) "services" to include electronic access to information system, and (iv) "supplier" to include licensors of computer information.

BILL NUMBER: Senate Bill 1019 (Chapter 212)
PATRON: Newman
SUMMARY: ***Attorney General; Secretary of Technology; guidelines to the Uniform Electronic Transactions Act's implications on state agencies.*** Directs the Attorney General, in consultation with the Secretary of Technology, to develop guidelines to the Uniform Electronic Transactions Act's implications on state agencies' implementation of electronic transactions. Upon receiving the guidelines, each agency is directed to examine the provisions of the Code of Virginia specific to that agency and identify where changes are necessary to facilitate the agency's implementation of electronic transactions and report its findings to the Secretary of Technology.

BILL NUMBER: Senate Bill 1023 (Chapter 213)
PATRON: Newman
SUMMARY: ***Virginia Information Providers Network Authority; powers and duties; financing and operations.*** This bill is identical to HB 1926.

BILL NUMBER: Senate Bill 1024 (Chapter 395)
PATRON: Stosch
SUMMARY: ***Virginia Public Procurement Act; procurement by reverse auctioning.*** Allows the purchase of goods and nonprofessional services by reverse auctioning. Reverse auctioning is defined as a procurement method wherein bidders are invited to bid on specified goods or nonprofessional services through real-time electronic bidding, with the award being made to the lowest responsive and responsible bidder. In addition, during the bidding process, bidders' prices are revealed and bidders shall have the opportunity to modify their bid prices for the duration of the time period established for bid opening. The bill contains a sunset provision of July 1, 2003.

BILL NUMBER: Senate Bill 1055 (Chapter 483)
PATRON: Quayle

Career and technical education. Changes the name of vocational technical education in the Code of Virginia to refer to "career and technical" education, in conformance with the currently accepted national view. The name, career and technical education, reflect the increased status and complexity of vocational education programs (for example, complex diagnostic computers for auto mechanics and computer technician certification programs that qualify graduates for profitable careers). Enactment clauses clarify that no public school need change its name; however, regardless of the name, a vocational school must continue to comply with the relevant requirements in law and regulation. Further, no stationery, logo, pamphlets or other printed materials or websites must be redesigned and, where any name change is dictated in this bill, all materials with the current name may be depleted before being redesigned or reprinted. No additional services are required in any state or local program by reason of this name change. References to vocational education will be synonymous with and subsumed by "career and technical" education. This bill is a recommendation of the Joint Subcommittee to Study Continuing and Vocational/Technical Education.

BILL NUMBER: Senate Bill 1057 (Chapter 484)
PATRON: Quayle
SUMMARY: ***Educational technology in career and technical education programs.*** Clarifies that funds provided for educational technology may be used for career and technical education, i.e., vocational programs as well as academic programs. This bill also clarifies that the Board of Education's six-year technology plan must integrate the Standards of Learning into career and technical education programs as well as academic programs, and that local school division technology plans must be designed to integrate educational technology into the career and technical education programs as well as the academic programs. A second enactment specifically notes that school boards may use any educational technology funds for career and technical education programs, including, but not

limited to, funding allocated for professional development in educational technology. This provision is a recommendation of the Joint Subcommittee to Study Continuing and Vocational/Technical Education.

BILL NUMBER: Senate Bill 1109 (Chapter 863)
PATRON: Stosch
SUMMARY: ***Semiconductor Manufacturing Performance Grant Programs.*** Creates additional grant programs for manufacturers of semiconductor memory or logic wafers. One program provides grants to semiconductor manufacturers for capital investments and job creation within the City of Manassas. The grant amounts are (i) up to $25 million, if $700 million in new capital investments result in the creation of 600 new full-time jobs by January 1, 2003, and (ii) up to an additional $45 million, if an additional $2 billion in new capital investments results in the creation of an additional 1,350 new full-time jobs by January 1, 2007. A second program provides grants to semiconductor manufacturers for capital investments and job creation within the County of Henrico. The grant amounts are (i) up to $15 million, if $1.1 billion in new capital investments results in the creation of a new manufacturing module for the production of a semiconductor related product and (ii) up to an additional $40 million if 1,400 new full-time jobs are created by January 1, 2005. The capital investments and job creation provided in the bill may not be used to claim any other grants payable to semiconductor manufacturers. The terms for the payment of grants under both programs are to be included in a memorandum of agreement between the Commonwealth and the semiconductor manufacturer. The Senate Committee on Finance and the House Committees on Appropriations and Finance may review the unsigned memorandum of agreement before any grants are paid.

BILL NUMBER: Senate Bill 1117 (Chapter 864)
PATRON: Edwards
SUMMARY: ***Thermal Imaging Camera Fund.*** Establishes the Thermal Imaging Camera Fund to assist local fire departments, other fire services organizations and local governments to purchase thermal imaging cameras and other related equipment. The bill also authorizes the Department of Fire Programs to establish an advisory panel to make recommendations for the use of the Fund. The members of the board consist of three members each from the following organizations: the State Fire Chief's Association, the Virginia Professional Firefighters Association, and the Virginia Firefighters Association. The bill further provides that the act shall not become effective unless an appropriation of general funds effectuating its purposes is included in the 2001 appropriations act.

BILL NUMBER: Senate Bill 1245 (Chapter 709)
PATRON: Watkins
SUMMARY: ***Department of Technology Planning; Virginia Geographic Information Network.*** Authorizes the Department of Technology Planning to establish

a nonstock corporation as an instrumentality to assist the Department and its Geographic Information Network Division in the development and acquisition of geographic data and statewide base map data. The bill requires the Department to annually report to the Governor and General Assembly on the activities of the nonstock corporation.

BILL NUMBER: Senate Bill 1246 (Chapter 775)
PATRON: Watkins
SUMMARY: ***Use of a person's identity with the intent to coerce, intimidate, or harass; penalty.*** This bill is identical to House Bill 2593.

BILL NUMBER: Senate Bill 1291 (Chapter 852)
PATRON: Mims
SUMMARY: ***"Photo-toll" toll payment photo-monitoring program.*** This bill is the same as HB 2019 (May).

BILL NUMBER: Senate Bill 1295 (Chapter 528)
PATRON: Mims
SUMMARY: ***Virginia Telephone Privacy Protection Act.*** Identical to HB 2427.

BILL NUMBER: Senate Bill 1305 (Chapter 870)
PATRON: Newman
SUMMARY: ***Human cloning.*** This bill is identical to HB 2463.

BILL NUMBER: Senate Bill 1322 (Chapter 710)
PATRON: Hawkins
SUMMARY: ***Freedom of Information Act; exemption for certain electronic communications.*** Clarifies that separately contacting the membership, or any part thereof, of any public body for the purpose of ascertaining a member's position with respect to the transaction of public business, whether such contact is done in person, by telephone or by electronic communication is not prohibited, provided the contact is done on a basis that does not constitute a meeting as defined by FOIA. The bill also clarifies that any electronic communication generated by the separate contacts is still a "public record" under FOIA.

BILL NUMBER: Senate Bill 1349 (Chapter 529)
PATRON: Barry
SUMMARY: ***Wireless Enhanced Public Safety Telephone Service Act; E-911 surcharge; local tax for E-911 service.*** Exempts consumers of commercial mobile radio service (CMRS) from the special tax of up to three dollars that localities with enhanced 911 service are authorized to assess on consumers of telephone service. Customers of CMRS providers and CMRS resellers must pay a monthly wireless E-911 surcharge of 75 cents. Localities may recover their public safety answering point costs from the proceeds of the wireless E-911 surcharge.

BILL NUMBER: Senate Bill 1366 (Chapter 873)
PATRON: Stolle
SUMMARY: ***Storage and testing of certain evidence, writ of actual innocence.*** This bill is identical to HB 1311 (Almand).

BILL NUMBER: Senate Bill 1394 (Chapter 358)
PATRON: Hanger
SUMMARY: ***Computer invasion of privacy.*** Raises the penalty for committing the crime of computer invasion of privacy from a Class 3 misdemeanor to a Class 1 misdemeanor. Computer invasion of privacy is using a computer to intentionally examine without authority any employment, salary, credit or other financial or personal information relating to another person when the offender knows or should know that he is without authority to view the information displayed.

BILL NUMBER: Senate Joint Resolution 334
PATRON: Mims
SUMMARY: ***Discovery of electronic data.*** Requests the Office of the Executive Secretary of the Virginia Supreme Court, with assistance from the Joint Commission on Technology and Science, to study and develop a procedural scheme, by statute or by rules of evidence, for discovery of electronic data in civil cases. The Executive Secretary must report his findings and recommendations to the Governor and 2002 Session of the General Assembly.

BILL NUMBER: Senate Joint Resolution 336
PATRON: Norment
SUMMARY: ***Distracted drivers.*** Requests the Department of Motor Vehicles to study the dangers imposed by distracted drivers and to specifically examine the use of telecommunications devices by motor vehicle operators. In conducting the study, the Department shall consider all types of distractions affecting drivers, including, but not limited to, telecommunication devices used by motorists, and assess the dangers posed to highway safety by distractions. The Department shall conduct this study in consultation with representatives of state and local law enforcement, the telecommunications industry, the insurance industry, and any other appropriate highway safety organizations. The Department must submit its findings and recommendations to the Governor and the 2002 Session of the General Assembly.

BILL NUMBER: Senate Joint Resolution 361
PATRON: Newman
SUMMARY: ***Transaction fees for using credit cards or other electronic methods payment.*** Requests the Secretary of Finance to study the assessment of additional transaction fees charged when citizens pay Commonwealth penalties, taxes, license fees and other fees with credit cards or other electronic methods of payment. The Secretary shall determine whether

using credit cards or other electronic methods of payment to pay these charges reduces processing costs, losses due to bad checks and other receivable related costs enough so that the Commonwealth should waive the additional transaction fees associated with their use. The Secretary must report his findings and recommendations to the Governor and the 2002 General Assembly.

BILL NUMBER: Senate Joint Resolution 363
PATRON: Miller, K.G.
SUMMARY: ***Election process and voting technologies.*** This resolution is identical to HJR 681 (2001), and incorporates Senators Lambert [SJR 376] and Rerras [SJR 352] and Delegates Crittenden [HJR 798], Drake [HJR 621], Landes [HJR 659], Marshall [HJR 529], O'Brien [HJR 681], Putney [HJR 606], and Williams [HJR 575].

BILL NUMBER: Senate Joint Resolution 377
PATRON: Lambert
SUMMARY: ***African-American Scientist and Inventor Day.*** Designates February 25 each year as "African-American Scientist and Inventor Day" to acknowledge and recognize the significant achievements and contributions of African-American scientists, mathematicians, and inventors, many of whom were native sons and daughters of Virginia, with a special day on which these great minds may be honored and esteemed.

BILL NUMBER: Senate Joint Resolution 402
PATRON: Ticer
SUMMARY: ***Commending the Virginia Department of Motor Vehicles.***

BILL NUMBER: Senate Joint Resolution 403
PATRON: Ticer
SUMMARY: ***Public procurement of information technology services.*** Requests the Departments of General Services, Transportation, and Technology Planning, in consultation with the Joint Commission on Technology and Science, be requested to study the methods and technologies needed to implement competitive procurement via electronic means, including electronic sealed bidding. In conducting this study, each Department shall also determine and recommend any changes to the provisions of the Code of Virginia that are specific to that Department and are necessary to accommodate that Department's electronic competitive procurement, in light of the provisions of the Uniform Electronic Transactions Act under § 59.1-486 of the Code of Virginia. The Departments are requested to submit their findings and recommendations to the Governor and the 2002 Session of the General Assembly.

BILL NUMBER: Senate Joint Resolution 457
PATRON: Miller, K.G.
SUMMARY: ***Confirming Governor's appointments; technology.*** Confirms interim appointments made by Governor Gilmore related to technology.