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 ORIGIN AND BACKGROUND

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) 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 and to promote the development of technology and science in the Commonwealth of Virginia through sound public policies. (See Chapter 11 (§ 30-85 et seq.) of Title 30 of the Code of Virginia.) JCOTS consists of nine legislators (five Delegates and four 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://legis.state.va.us/jcots/jcots.htm.

At its meeting on May 13, 1998, JCOTS adopted its 1998-1999 workplan. (See Appendix 1.) The workplan identified four issues for study through the establishment and work of advisory committees, co-chaired by JCOTS members: Internet Access (Delegate Bennett and Senator Newman, co-chairs); State Agency Applications (Delegate Purkey and Senator Schrock, co-chairs); Year 2000 (Delegate May and Senator Howell, co-chairs); and Uniform Commercial Code Revised Article 2B (Delegate Diamonstein and Senator Ticer, co-chairs). An advisory committee on workforce training issues, co-chaired by Senators Howell and Newman, also developed during the study interim. During the period from September to December 1998, advisory committees held six meetings. Approximately 40 people participated in JCOTS' work through membership on advisory committees. (See Appendix 7.) Advisory committee reports, presented to JCOTS at meetings on November 18 and December 18, 1998, 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, JCOTS met as a full commission six times from May 1998 to January 1999. Members of the House Committee on Science and Technology, established during the 1998 Session, were always invited and often attended these meetings. (More information about the committee is available from the General Assembly's

website at http://legis.state.va.us.) At its meeting on January 13, 1999, JCOTS finalized its legislative and budget recommendations for the 1999 Session, which included 24 bills and resolutions and 11 budget amendments. (See Appendix 2.)

II. ADVISORY COMMITTEE REPORTS

A. ADVISORY COMMITTEE ONE (INTERNET ACCESS) DEL. WILLIAM W. BENNETT, JR., AND SEN. STEPHEN D. NEWMAN, CO-CHAIRS

1. Summary

Charged with studying the issues surrounding access to the Internet in Virginia's public schools and libraries, Advisory Committee One met twice during the interim at The Library of Virginia (LVA) in Richmond—on September 22 and December 4, 1998. The advisory committee was specifically charged with reviewing House Bill 1043, patroned by Delegate Jackson, and House Bills 348 and 1317, patroned by Delegate Marshall. House Bill 1043 would have created the Virginia Information Access Intranet for use in public schools and libraries. House Bill 1317 would have restricted Internet access in public schools. Both bills were carried over in the 1998 Session in the House Committee on Science and Technology. House Bill 348, carried over in the House Committee for Courts of Justice, would have restricted Internet access in public libraries.

The September meeting began with an overview of the JCOTS staff report on Internet access. (See Appendix 3.) State agency personnel from the LVA, the Virginia Department of Education (VDOE), and the Department of Planning and Budget (DPB) provided more specific information about current practices in Virginia's libraries and schools and the costs associated with installing filtering software. Nelson Worley, from LVA, reported that there are about 600 public access computers in Virginia's 90 public library systems, translating into a ratio of about one computer for every 11,000 citizens. Results from a recent LVA survey indicated that as of July 24, 1998, fifty-eight of Virginia's public libraries offer public Internet access. Of these, 42 libraries offer unrestricted access only; eight offer both unrestricted and restricted access; and eight offer restricted access only. Of those offering restricted access, seven libraries use filtering software. Of the 58 libraries that offer public Internet access, 53 use Acceptable Use Policies (AUP), i.e., a policy that a prospective computer user must agree to abide by before using a computer.

Carole Inge, from VDOE, reported that each of Virginia's 132 public school divisions has Internet access, although the Internet is not available in every school. In November 1997, VDOE sent a questionnaire to the technology directors of each public school division. Of the 47 divisions that responded, 40 divisions had AUPs and 28 divisions filtered access to the Internet.

Rob Lockridge and Gary Janak, both from DPB, reported that DPB had prepared fiscal impact statements on House Bills 348, 1043, and 1317. Specific figures were not released since the patrons of the legislation had not been informed; however, generally speaking, an intranet approach is much more costly than installing filtering software. The advisory committee asked for follow-up information on the total cost and the per-unit cost in those Virginia schools and libraries where filters are currently used. The advisory committee also asked for follow-up

information about circumstances which may add to the total cost or per-unit cost of filtering software, e.g., increased staff to maintain and update the filters.

Delegate Marshall, patron of House Bills 348 and 1317, stated the need for legislation mandating the use of filters in Virginia's public schools and libraries. While admitting that no filter is perfect, Delegate Marshall reiterated his belief that public resources should be spent for the public good, which does not include pornographic and obscene material.

Douglas Koelemay, from the Northern Virginia Technology Council (http://www.nvtc.org), a trade association representing information technology companies in Northern Virginia, voiced the industry's opposition to each of the three bills as currently drafted. Mr. Koelemay expressed the industry's vision of a Virginia that is the global center for Internet services and electronic commerce—a vision which does not include hate, violence, or pornography.

At its December meeting, JCOTS staff updated the advisory committee on recent developments affecting Internet access in public schools. The most significant development was the decision on November 23, 1998, by Judge Leonie Brinkema in *Mainstream Loudoun v. Board of Trustees of the Loudoun County Library* in the U.S. District Court for the Eastern District of Virginia. The judge granted the plaintiff's motion for summary judgment and permanently enjoined the Loudoun County Library Board from enforcing its policy of equipping all computers with software that blocked all sites displaying "(a) child pornography and obscene material and (b) material deemed harmful to juveniles." The judge ruled, inter alia, that:

- The decision to block certain websites is not an acquisition decision to which the First Amendment would not apply; rather, it is a decision analogous to removing books from the library's shelves, to which the First Amendment does apply. (See *Board of Education v. Pico*, 457 U.S. 853, 102 S.Ct. 2799 (1982).)
- The policy must be examined under strict scrutiny analysis because the Loudoun County libraries are limited public fora established to enable the public to receive and communicate information.
- The policy is not a content-neutral time, place, or manner restriction on speech because its primary effect is to restrict speech based on content.
- Minimizing access to illegal pornography and avoiding the creation of a sexually hostile environment are compelling government interests which satisfy the first prong of the strict scrutiny test. However, the evidence proffered by the Library Board to sustain the second prong—that the policy be reasonably necessary to further those compelling interests—was insufficient as a matter of law.
- The policy fails the third and final prong—that the policy be narrowly tailored to achieve those compelling interests—because alternatives less restrictive than the policy are available. (The judge enumerated three alternatives but specifically refused to opine on whether any of them would be constitutional.) Additionally, the policy is over-inclusive because it reduces the level of protected adult speech to that which is fit for juveniles, a long-settled violation of free speech. (Recently reaffirmed in *Reno v. ACLU*, 117 S. Ct. 2329 (1997).)

According to a *Washington Post* story on December 2, 1998, Loudoun County turned off all public access to the Internet from its libraries after the judge's ruling. At a meeting of the Library Board on December 1, 1998, the Board adopted a new policy which permits adults to choose unfiltered Internet access for themselves and their children if parents sign a statement allowing children to have unfiltered Internet access. Public access to the Internet was restored on December 3, 1998, when the new policy went into effect.

A lengthy discussion of HBs 1043 and 1317 in light of the *Mainstream Loudoun* decision ensued. It was noted that on November 16, 1998, the State Library Board passed a resolution regarding access to the Internet in public libraries in Virginia. The resolution requires each local and regional library board to adopt acceptable use policies for Internet access which minimize harm to minor patrons. Sam Clay, director of the Fairfax County Public Library (http://www.co.fairfax.va.us/library), indicated that his library board has been very active in developing its acceptable use policy. In November 1997, the library board voted to provide unfiltered access to the Internet to library patrons. In conjunction with that decision, the acceptable use policy was developed. The decision to provide unfiltered access has been closely monitored and no reason to modify the decision has surfaced.

Chris Glover, network administrator for the Central Rappahannock Regional Library (http://www.crrl.org/index.htm), indicated that his library board has provided unfiltered Internet access since January 1997 through 20 personal computers that are located throughout the Central Rappahannock library system. There have been no patron requests to filter the computers which access the Internet. Mr. Glover, who tests filters as part of his job, recommended against them. His primary concern was the potential for over- and under-inclusiveness. Other concerns included the newness of filtering technology (about two years old); the very rapidly changing content, organization, and style of the Internet, which can include pictures, text, audio, and video all on one webpage; the structure of a library's computer network, which may include several branches being connected through a wide area network and several others on local dial-up service; increased staff time to update filtering lists; the cost of maintaining and upgrading filtering software, which is often two to three times the initial investment; the difficulty in maintaining different versions of filtering software; and the false sense of security that filters may provide. Mr. Glover cautioned against filtering software supplanting the role of parents and librarians in helping minors navigate the Internet.

Dr. Daniel Arkin, president of the workSmart Group, Inc., (http://www.worksmart-group.com/treasures/educ.html) and executive officer of the Virginia Society for Technology in Education (http://vste.org), reported that filtering involves more than sex and obscenity. Parents, teachers, and librarians are concerned about the availability of other materials on the World Wide Web that might be socially or culturally inappropriate for certain age groups or maturity levels, such as plans for building atomic bombs, the subject matter of certain newsgroups and chat rooms, and the language and content of electronic mail. By taking all of these sources for potentially inappropriate materials into consideration, decisions about whether and how to filter become very complex.

Despite their increasing popularity in Virginia's schools and libraries, Dr. Arkin noted a number of shortcomings with acceptable Internet use policies. His primary concern was that the policies are premised on malicious intent, which may be a valid assumption for secondary school students. However, in citing a simple misspelling of "six" as "sex" in a search engine by a first grader, Dr. Arkin reported that accidents happen all the time at the elementary school level. By themselves, acceptable use policies do not address that issue, and for that reason, Dr. Arkin suggested that standing alone, such policies do not work.

The meeting closed with a discussion of the fiscal impact of filtering software. Lan Neugent, from VDOE, provided an update on information the Department had provided in September. Mr. Neugent reported that 93 percent of Virginia's school divisions have acceptable use policies in place. Regarding filters, localities are buying the technology that they can afford. About 70 percent of Virginia's school divisions use filtering software in some or all of their schools. The cost ranges from $0.03 to $25.19 per student. The average cost per student, which does not include installation, training, maintenance, product support, and product upgrades, is $3.68. On average, it costs between $5500 and $6000 a year to educate a child. There are approximately 1.2 million students in Virginia's K-12 public schools. Carol Adams, from LVA, reported that LVA's survey of the cost of filtering software per workstation currently installed in Virginia's public libraries ranged from $30 to $115.

The issue of filters in Virginia's public libraries was put in a broader context at the full Commission meeting on November 18, 1998. Nelson Worley reported on the strategic information technology plan for the Commonwealth's public library system requested by House Joint Resolution 444, passed in 1997. The report, *InfoPowering the Commonwealth: A Strategic Technology Plan for Public Libraries*, was unanimously endorsed by the Library Board on November 16, 1998. The Plan sets as its vision that "[e]very individual in the Commonwealth of Virginia will have access to a public library that serves as an Electronic Resource Library for 21st Century Information." To implement this vision, the Plan's five recommendations cover infrastructure, content, acceptable Internet use policies, retrospective conversion of bibliographic records, and monitoring and evaluation. The estimated cost of implementing the Plan over a three-year period is $17.5 million, which includes about $5.2 million in fiscal year 1999-2000. (See http://leo.vsla.edu/techplan/techplan98/index.html for the text of the report.)

2. Recommendations

Advisory Committee One developed the following recommendations:

1. The Commonwealth should not mandate the use of filtering software that blocks access to certain sites on the Internet in its public schools and libraries.
2. Decisions about when, where, how, and whether to filter are best made at the local level by local school and library boards.
3. The Commonwealth should require public schools and libraries to adopt acceptable use policies or guidelines for Internet use.

4. In keeping with guidance provided in recent federal court decisions, acceptable use policies or guidelines for Internet use should distinguish between adults and juveniles under the age of 18.
5. The report of the Library of Virginia, *InfoPowering the Commonwealth: A Strategic Technology Plan for Public Libraries*, should be fully endorsed.
6. The 1999-2000 appropriation act should be amended to permit K-12 public schools to use some technology funds for the purchase, installation, and maintenance of filtering software if they so choose.

The advisory committee's recommendations are supported by a document entitled "A Framework for the Virginia Internet Policy Act" (the "Framework"), which was submitted to the Governor on December 2, 1998, by his Blue Ribbon Commission on Information Technology. (For more information about the Governor's Commission and the text of the Framework, see http://www.sotech.state.va.us/gcoit.htm.) The Framework "recognizes and supports the role of the public library system, schools and other community organizations in assuring widespread citizen access to the Internet and the vast educational and informational resources it provides as well as to government services available via the Internet." Additionally, the Framework calls on "all public institutions and publicly funded institutions in the Commonwealth to establish a management system and appropriate use policy for Internet access within their facilities."

B. ADVISORY COMMITTEE TWO (STATE AGENGY APPLICATIONS) DEL. HARRY R. PURKEY AND SEN. EDWARD L. SCHROCK, CO-CHAIRS

1. Summary

Advisory Committee Two met on Wednesday, October 14, 1998, in the General Assembly Building. Advisory Committee Two was charged with studying House Bill 1115 and House Joint Resolution 231 from the 1998 Session. House Bill 1115, patroned by Delegate Karen Darner, would have created the Information Technology Access Act to secure the benefits of access to information technology for individuals who are blind or visually impaired. HB 1115 was carried over in the House Committee on Science and Technology. House Joint Resolution 231, patroned by Delegate Jay O'Brien, would have created a joint legislative subcommittee to study the use of the Internet as a means of filing tax returns. The resolution was passed by indefinitely in the House Rules Committee in favor of a letter from the Speaker of the House to JCOTS requesting that the Commission study the issue.

Efforts to study House Bill 1115 were greatly assisted by the Virginia Department for the Visually Handicapped (VDVH) and representatives from other state agencies who formed the nonvisual access technology study work group in response to Item 410 of Chapter 464 of the 1998 Acts of Assembly (the budget bill). Joseph A. Bowman, Deputy Commissioner for VDVH, presented the work group's report, which included specific changes to House Bill 1115. Nonvisual access technology includes speech recognition software, Braille keyboards, and any access technology that does not require the use of sight. Such technology is important because it provides visually handicapped persons with a way to obtain information independently, levels the playing field between sighted and nonsighted persons, and opens many doors to employment

opportunities. National statistics indicate a 70 percent unemployment rate for visually impaired persons, compared to about five percent for the general population.

Virginians with disabilities are provided accommodation and access to public programs and services by the Americans with Disabilities Act, the Virginians with Disabilities Act, and the Rehabilitation Act of 1973 (the "Acts"). As Mr. Bowman explained, however, the time to address accommodation and access issues is at the time computers are procured, which is the focus of House Bill 1115. By setting a baseline standard which all computers procured by the state must meet, compliance with the Acts is more easily and cheaply obtained when agencies are later required by the Acts to provide accommodation and access for a visually impaired person. For example, computers equipped with a Windows 95 operating system and Pentium processing are necessary to equip a computer with software that translates text into speech. Setting a baseline standard also forces all vendors to bid on identical specifications. Since House Bill 1115 addresses procurement specifications and does not require specific purchases or retrofitting, its estimated fiscal impact is zero. Costs would be incurred when the Acts require accommodation and access for a specific nonsighted individual. The current cost for the adaptive technology described above is approximately $1500 for the top-of-the-line software and hardware, and such costs are continually declining.

The advisory committee saw demonstrations of adaptive technologies. One was provided by representatives from the Bartimaeus Group, a software company headquartered in Northern Virginia and developer of the NavigAide training CD-Rom for visually impaired persons. (For more information, see http://www.bartsite.com.) The other was ERICA (eye-gaze response interface computer aid), which is based on the movement of the user's eye. (For more information, see http://www.ericainc.com.)

Janie Bowen, Assistant Commissioner for the Virginia Department of Taxation, discussed the Department's new public-private partnership with American Management Systems (AMS), headquartered in Fairfax. The purposes of the partnership are to reinvent business, reengineer business processes, implement cultural and organizational change, provide training, change management support, and allow access to new technology to enable change. While filing state tax returns via the Internet is not yet possible, electronic filing could be available within the next five years. The major obstacles to Internet tax filing are converting the Tax Department's computer system, built in the 1980s, into a state-of-the-art system and implementing security measures. It is hoped that the information technology infrastructure built in partnership with AMS will help eliminate these obstacles and permit many electronic applications to be developed in the Department for the benefit of Virginia's taxpayers.

With the federal/state electronic filing program that currently exists, however, taxpayers can have their returns prepared by a certified transmitter who transmits the return to the Internal Revenue Service using approved filing software. In the 1997 taxable year, 223,551 Virginia returns were filed electronically, a 33.9 percent increase over taxable year 1996 (166,779 returns). Also in 1997, eleven Virginia localities participated as electronic filing centers and processed 4,853 returns.

Ms. Bowen indicated that the Tax Department's partnership with AMS will permit incremental steps to be made over the next five years which advance the Department's information technology goals. When asked directly whether any legislation was necessary that could advance those goals, Ms. Bowen responded that there was none at this time. Based on her testimony, the advisory committee saw no need to recommend legislation for the 1999 Session regarding filing of tax returns via the Internet. It is also apparent that some time will be required to allow the Tax Department's partnership with AMS to develop.

2. Recommendations

Advisory Committee Two developed the following recommendations:

1. House Bill 1115 should be amended pursuant to the recommendations of the nonvisual access technology study work group and then reported by the House Committee on Science and Technology in the 1999 Session.
2. JCOTS should consider supporting legislation in the 1999 Session that requires census data to be collected on college, university, and community college students with disabilities. Part of the challenge to study House Bill 1115 was a lack of data indicating how many students with visual impairments are enrolled in Virginia's colleges, universities, and community colleges and what kind of adaptive technologies they may need.
3. The Tax Department's partnership with AMS should be permitted to develop before specifically requiring, via legislation, that Virginia's citizens be able to file their taxes electronically over the Internet.

C. ADVISORY COMMITTEE THREE (YEAR 2000) DEL. JOE T. MAY AND SEN. JANET D. HOWELL, CO-CHAIRS

1. Summary

Advisory Committee Three met on Tuesday, October 27, 1998, in the General Assembly Building. Advisory Committee Three, initially established in the 1997 interim, was charged with studying the Year 2000 problem, which stems from the use in many computer systems of a two-digit date system that assumes the first two digits of the year are "1" and "9." This convention was adopted years ago when coding space was at a premium. Without specialized programming, these computer systems will recognize "00" as 1900, not 2000.

Bette Dillehay, director of the Century Date Change Initiative (CDCI) Project Office, indicated that her office has conducted a very public process about the Commonwealth's Year 2000 project because remediation efforts will be very expensive, and, as the new millenium draws closer, individuals are expected to become increasingly concerned about the effects the century date change may have on their lives. The timeline for completing the project that the CDCI is following reflects what other states and the federal government are pursuing. At that time, the next milestone was December 31, 1998, the date by which all Year 2000 renovation is to be completed. Validation is to be completed by April 1, 1999; implementation by July 1, 1999.

At the beginning of the project, state agencies focused on the number of lines of computer code that needed to be reprogrammed. The focus has since shifted to business continuity, i.e., keeping critical services and priority business activities operating and available. CDCI looks at agencies' priority business activities from a multi-layered perspective: information systems, building facilities and embedded technologies, telecommunications, supply chains, and data exchanges. To determine where agencies stand in each of these layers, CDCI requires monthly reports from each state agency and institution, which many states are not requiring. Effective May 21, 1998, CDCI introduced a new on-line reporting procedure for state agencies and institutions. All executive branch agencies and institutions were required to submit their initial reports under the new procedure by July 15, 1998. The new procedure requires agencies and institutions to identify their priority business activities and to track Year 2000 efforts related to them. CDCI held three workshops to assist agencies in meeting the requirements of the new procedure. All independent agencies, the Office of the Attorney General, and the Virginia Supreme Court indicated their willingness to participate in the new reporting procedure. Reports are posted on CDCI's website at http://www.cdci.state.va.us.

One of CDCI's charges is to review and approve agencies' Year 2000 plans. As of late October 1998, 77 plans had been approved and 19 plans were still under CDCI review, primarily because of multiple resubmissions. CDCI's most extensive involvement in a state agency's Year 2000 efforts came on June 8, 1998, when CDCI wrote to Dr. Randolph Gordon, Commissioner of Health, and outlined CDCI's expanded role in directing the Year 2000 activities of the Virginia Department of Health (VDOH). A CDCI staff member was assigned to manage the VDOH effort. Additionally, VDOH was directed to create a steering committee to provide information on its priority business activities, complete its Year 2000 assessment in cooperation with James Martin Government Consulting, develop a Year 2000 project plan based on the assessment, and meet weekly with CDCI.

CDCI has rejected two other agencies' plans after five and four resubmissions, respectively--the Departments of Social Services (DSS) and Mental Health, Mental Retardation and Substance Abuse Services (MHMRSAS). Pending the outcome of ongoing efforts to establish approved Year 2000 plans for DSS and MHMRSAS, CDCI is prepared to assume expanded involvement, as it did at VDOH, to assist these two departments. Maintaining priority business activities at DSS is especially difficult since the agency's Year 2000 problems are in addition to other computer problems the agency faces, e.g., case conversion, for which local governments are the source of the data.

Based on data supplied by state agencies, CDCI projects the total cost of the Commonwealth's Year 2000 effort to be about $160 million, which includes general fund, non-general fund, and absorbed agency costs. About 50 percent of the total cost has been spent. Because Virginia is one of the few states that is covering more than information systems, the Commonwealth's total cost for Year 2000 remediation is likely to be higher than those of other states. Similarly, comparisons to other states' costs are not necessarily helpful or relevant if building facilities and embedded technologies, telecommunications, supply chains, data exchanges, and contingency plans have been ignored in cost projections. Revised funding requests by executive-branch

secretariats were expected to be included in the Governor's budget amendments for the 1999 Session.

Another of CDCI's charges is to provide Year 2000 outreach services. On June 29-30, 1998, CDCI sponsored a workshop with the Virginia Association of Counties (VACO), the Virginia Municipal League (VML), the Secretary of Education, and the Virginia Department of Education to address data interface between state agencies and local governments. The workshop was attended by 280 people. Additional plans call for CDCI to sponsor workshops for or collaborate with local governments, school divisions, small and midsize companies, and public utilities and other suppliers of critical services to exchange information and discuss best practices. By the end of November, CDCI expected to have a full-time employee assigned to assist localities' Year 2000 efforts.

Steve Craig, from VML (http://www.institute.virginia.edu/vml/default.html), and several representatives from Virginia's counties, cities, and towns discussed how the state could help local governments in their Year 2000 efforts. The suggestions included:

- Liability protection from Year 2000 lawsuits;
- More and better technological support and training programs;
- Enhanced communication and information, especially concerning data exchanges between state agencies and localities;
- Sharing of best practices through workshops and the CDCI website;
- Help in identifying pre-qualified contractors to perform Year 2000 remediation services;
- Access to buying remediation services from state contracts;
- Checklists of products, vendors, and equipment previously bought from state contracts that are Year 2000 compliant;
- Assistance with contingency planning;
- More coordination between CDCI, VML, and VACO;
- Improved cooperation between contiguous regions and major public utilities; and
- Money.

Beverly Lucas, vice president of The Software Factory (http://swfactory.com), and Vincent Cordivano, vice president and director of Year 2000 for James Martin Government Consulting (http://www.jamesmartin.com), provided a "view from the trenches" from private contractors involved in Year 2000 remediation efforts. Ms. Lucas emphasized awareness of the potential for multiple date failures between 1999 and 2001, at least 13 of which have been identified. The earliest occurs April 1, 1999, when New York State becomes the first state to begin its 1999-2000 fiscal year budget. Other dates include July 1, 1999, when 46 of 50 states begin their fiscal year 2000 budgets (including Virginia), and October 1, 1999, when the federal budget begins. Ms. Lucas also suggested that problems associated with the Year 2000 date change be distinguished between inconveniences and tragedies. In so doing, she urged emergency preparedness in dealing with the Year 2000 issue. Mr. Cordivano reiterated information that the advisory committee has heard before, i.e., that there is no silver bullet to fix the Year 2000 problem. As such, government must continue to focus on its critical applications. This is best

accomplished by partnering with contractors, relying on their ability to complete the project, and working closely with them until the goal is achieved.

2. Recommendations

Advisory Committee Three endorsed suggestions by:

1. Douglas Koelemay, from the Northern Virginia Technology Council (http://www.nvtc.org), for legislation to encourage businesses to share Year 2000 information among themselves without fear of litigation. Recent federal legislation, the "Year 2000 Information and Readiness Disclosure Act" (S. 2392), and a new California statute (Senate Bill 1173, Chapter 860) address this issue. However, Mr. Koelemay urged the General Assembly to express Virginia's policy on Year 2000 information-sharing during the 1999 Session.
2. Lyn McDermid, vice president and chief information officer of Virginia Power, for legislation protecting voluntary self-assessments of Year 2000 problems from unconsented disclosure in litigation or otherwise. With 80 full-time personnel and a $30-$50 million budget committed to addressing the Year 2000 problem, Virginia Power is confident that it will be ready. However, to assist ongoing risk assessment and contingency planning, outside contractors and even Virginia Power's competitors must be consulted. Ms. McDermid emphasized that Virginia Power is not requesting immunity from litigation—only a limited evidentiary privilege for Year 2000 assessments—and that precedent for such legislation exists in environmental self-assessments.
3. Commission staff, for legislation:

- Designating Monday, January 3, 2000, as the New Year's holiday (per § 2.1-21)—state and local offices to be closed.
- Amending any significant dates in the Code of Virginia that fall within the first quarter of 2000 to a later date in the second or third quarter of 2000.
- Requesting agencies to select dates for deadlines (e.g., in regulations) or internal or external operating procedures (e.g., electronic timecards), that, to the greatest extent possible, fall in the second or third quarter of 2000.
- Requiring state agency heads to designate a chief information officer.

D. ADVISORY COMMITTEE FOUR (U.C.C. REVISED ARTICLE 2B) DEL. ALAN A. DIAMONSTEIN AND SEN. PATRICIA S. TICER, CO-CHAIRS

1. Summary

Advisory Committee Four met on Monday, November 2, 1998, in the General Assembly Building. The advisory committee was charged to study House Joint Resolution 38, a 1998 JCOTS recommendation patroned by Delegate Diamonstein. The resolution would have created a joint legislative subcommittee to draft legislation for the 1999 Session which implemented the Uniform Commercial Code (UCC) Revised Article 2B, a model act currently under development. The resolution was passed by indefinitely in the House Rules Committee in favor of a letter from the Speaker of the House requesting that JCOTS study the issue.

The advisory committee was briefed on proposed Article 2B by Connie Ring, a Virginia Commissioner to the National Conference of Commissioners on Uniform State Laws who is serving as national chairman of the drafting committee formulating the uniform law. The draft is a joint project of the National Conference of Commissioners on Uniform State Laws and the American Law Institute. The details of this model legislation are still being worked out, with the hope that legislation will be ready for consideration by individual states as early as January of 2000. (For information about the project and the text of the proposed draft, see http://www.law.upenn.edu/library/ulc/ulc.htm.)

UCC Revised Article 2B deals with transactions in information. The traditional UCC focuses on the sale of tangible goods, while proposed Article 2B deals with information and the right to use information. According to the draft's introduction, proposed Article 2B is in effect a "cyberspace contract statute." National and international commerce conducted over the Internet is currently governed by a variety of rules, including federal law and common law, which may potentially differ from jurisdiction to jurisdiction.

The fundamental premise of the UCC has been freedom of contract and the provision of "default" rules as gap fillers when the parties have not covered the point in their contract. Under Article 2B, parties may form a contract through conduct rather than merely through the exchange of communications constituting "offer and acceptance," including assent by authentication (e.g., an electronic signature) or by conduct (e.g., clicking a computer mouse on a button labeled "I agree").

Some of the key features of Article 2B discussed by Mr. Ring included (i) the scope of Article 2B, (ii) contract formation rules for electronic commerce, and (iii) offer terms. According to Mr. Ring, Article 2B covers the licensing of noncomputer information and the sale and licensing of computer information. Mr. Ring noted that many of today's paper contracts with standard terms (airline tickets, car rentals, hotel accommodations, etc.) are not read but are enforced under Article 2 or common law. Electronic contracts with standard terms likewise may not be read but are enforceable under current law and would be enforceable under Article 2B if there is opportunity for review and assent by authentication or by conduct. Article 2B recognizes the need for sales and licensing contracts that contain common terms along with the ability of consumers to negotiate the best terms. Article 2B also establishes uniform default rules to be used when the terms and conditions of the agreement are not spelled out.

Mr. Ring indicated that the positions in the current draft are generally supported by the banking and securities industries, software manufacturers, the on-line industry, book publishers, and libraries. Broadly speaking, opponents of the current draft include the movie industry, newspapers and other mass media, and broadcasting, recording and television conglomerates. Consumer groups are also not supporting the current draft, primarily because the consumer groups want stronger mandatory terms, an opposition that these groups also direct at the present Article 2.

2. Recommendations

Advisory Committee Four recommended that its study of UCC Revised Article 2B be continued during the 1999-2000 interim in anticipation of the draft's completion in 1999. To the extent that computer crimes or electronic signatures are addressed in the final draft, these issues should also be included in the study.

E. WORKFORCE ADVISORY COMMITTEE SENS. JANET D. HOWELL AND STEPHEN D. NEWMAN, CO-CHAIRS

1. Summary

During the 1997-1998 interim, JCOTS established an advisory committee, co-chaired by Senators Howell and Newman, to study *Building a CommonWealth of Technology: A Blueprint for Technology-Based Economic Growth in Virginia* and to make recommendations on its implementation. Published in August 1997 by a statewide business leadership group and endorsed by 25 organizations across Virginia, the *Blueprint* helped contribute to raising public consciousness of technology issues and defining a technology agenda. It addressed short, medium, and long-term goals for the Commonwealth's information technology workforce, infrastructure, entrepreneurial environment, and technology deployment.

The *Blueprint* advisory committee's chief recommendation was to fully fund implementation of the *Blueprint*: $26.5 million for workforce training and $9.5 million for initiatives developed by the Center for Innovative Technology related to technology infrastructure, the entrepreneurial environment, and technology deployment. JCOTS whole-heartedly embraced the recommendation. Information technology workforce issues attracted much attention during the 1998 Session of the General Assembly. Overall, some $44 million was appropriated in the 1998-2000 biennium to either begin or continue the Commonwealth's programs to prepare, train, or retrain a world-class workforce for the twenty-first century. The money was used to establish four Workforce Development Centers; designate three Workforce Institutes for Excellence; create the Statewide Workforce Training Council; assign the Virginia Community College System with increased responsibility for workforce training; authorize a worker retraining tax credit which became effective January 1, 1999; and provide additional funding to George Mason University and Old Dominion University to increase technology graduates.

To follow up on these 1998 initiatives, JCOTS established a Workforce Advisory Committee, chaired by Senators Howell and Newman. The advisory committee met on December 11, 1998, at Electronic Data Systems in Herndon (http://www.eds.com). Josh Lief, Deputy Secretary of Commerce and Trade, discussed *The Virginia Strategy: Prosperity Into the New Century* (http://www.vipnet.org/commerce/plan.htm). This report, presented to the Governor on December 9, 1998, was developed in response to the statutorily mandated process for updating Virginia's strategic plan for economic development. With regard to workforce issues, the *Strategy* recommends:

•Implementing a coordinated approach to workforce development;

• Ensuring that Virginia's education system provides all students with a solid academic foundation;

• Focusing workforce efforts at community colleges;

• Increasing emphasis on technical training and apprenticeships; and

• Developing a statewide strategy for retraining existing workers.

Of these recommendations, Mr. Leif reported that the Governor's top priority is to provide a coordinated approach to workforce development. Fifteen separate actors are currently charged with some responsibility for workforce development, and several executive secretariats are also involved. Although these efforts seem very fragmented, much of the work that is underway is very good. Thus, the challenge is to put the best efforts together to make the whole greater than the sum of the individual parts. Toward that end, Mr. Lief reported that the Governor recently announced the inclusion of $150,000 in his 1999-2000 budget to fund an inventory of state, local, and federal workforce development programs.

Katherine Hanley, chair of the Fairfax County Board of Supervisors and Northern Virginia Regional Partnership, discussed the Partnership, which is one of 16 regional partnerships operating in Virginia. (See http://www.nvrp.org for more information.) Utilizing $2.5 million in state Regional Competitiveness Act funding to implement several short-term and long-range workforce strategies, the Partnership is working closely with the information technology industry to determine what its workforce needs are and the best way to develop specific training programs that meet those needs. Ms. Hanley also reported that the Federal Workforce Investment Act, recently passed by the Congress and signed by the President, completely replaces the Job Training Partnership Act and will provide local boards with much more flexibility in developing workforce programs.

Bob Bailey, from the Advanced Manufacturing Technology Association in Lynchburg, discussed his association's efforts to provide training in manufacturing technology. (See http://www.region2000.org for more information.) The Association is an industry-led organization which has partnered with K-12 schools, community colleges, and local governments to achieve its objectives. To assist workforce development in manufacturing, Mr. Bailey suggested that:

• Additional incentives for public-private-educational partnerships could be provided by the state;

• A marketing campaign to educate the public about manufacturing technology could be initiated;

• Funding for noncredit instruction could be increased;

• Virginia's Standards of Learning in K-12 education could be more closely tied to the workforce skills needed by industry; and

• Apprenticeship programs offered in Virginia could be expanded and standardized.

David Dickson and Catherine Hart, from the Department of Business Assistance, reported that the Department's Workforce Services Division trained or retrained nearly 20,000 workers in 348 companies in fiscal year 1998. Average training costs per worker were $769, an $88 increase from the previous five fiscal years ($681). To be eligible for the Department's programs, a company must, within a one-year period, make a $1 million capital investment or create 25 new jobs. This criterion is an administrative policy set by the Secretary of Commerce and Trade. The Department's primary focus is on training for new jobs, but retraining is occasionally provided if a company is undergoing a technological change and funds are available.

Joy Graham, Vice Chancellor of the Virginia Community College System (VCCS), reported on the status of the Workforce Training Council established through legislation passed in the 1998 Session. The Council, whose primary mission is to certify noncredit training and retraining courses and programs, was to hold its first meeting in January 1999. Dr. Graham also reported on other efforts by the VCCS in keeping with its statutory designation, also passed in the 1998 Session, as the state agency with primary responsibility for coordinating workforce training at or below the associate degree level.

Dan Malone, of Telecommunications Consultancy, discussed the historical evolution of the deployment of networks from canals to turnpikes to railroads to Information Age workports and teleports. Douglas Koelemay, from the Northern Virginia Technology Council (http://www.nvtc.org), urged Virginia to make bold new public investments in workforce development, education, transportation, and the entrepreneurial environment.

Patricia Brown, from Virginia's Center for Innovative Technology (CIT), presented preliminary findings in response to Senate Joint Resolution 37, a JCOTS recommendation passed in the 1998 Session, that requested CIT to develop statewide strategies to attract and retain technological and scientific research and development assets. Preliminary findings indicated that federal dollars are leaving Virginia to support research and development in other states and that the two federal agencies that Virginia most heavily relies on for funds, the Department of Defense and NASA, have shrinking federal budgets. In stressing the need for new or different funding sources, Dr. Brown encouraged support for Virginia's Technology Growth Fund as a way to attract federal dollars with matching state money. CIT's final report, The *Status of the Commonwealth's Technology Assets*, has since been published as Senate Document No. 19 (1999).

2. Recommendations

The Workforce Advisory Committee developed the following recommendations:

1. Funding for Regional Competitiveness Act grants should be increased beyond the levels in the 1998-1999 budget.
2. Apprenticeship programs should be expanded and standardized.
3. Funding should be provided to support worker re-training programs at the Department of Business Assistance.
4. Eligibility requirements for participation in the programs sponsored by the Department of Business Assistance should be relaxed from their current requirements.

5. Funding for the Virginia Community College System should be supported at levels consistent with its new, increased statutory responsibilities for workforce training.
6. Funding for additional Workforce Development Centers should be provided.
7. Funding for the Virginia Technology Growth Fund and Technology Innovation Centers should be increased.

III. TESTIMONY AND PRESENTATIONS

A. THE HONORABLE DONALD W. UPSON, SECRETARY OF TECHNOLOGY

On May 21, 1998, the Governor signed Executive Order 9 (1998), which created the Office of the Secretary of Technology and the Governor's Blue Ribbon Commission on Information Technology. On September, 28, 1998, Executive Order 33 (1998) amended the original order. Donald W. Upson was appointed Secretary of Technology. In a presentation to JCOTS on September 16, 1998, Secretary Upson discussed the overall goal of his office to make Virginia a world technology center. Achieving this goal has operational and policy components.

On the operations side, the Council on Technology Services (COTS) was recently established. The formation of COTS follows a recommendation of the Joint Legislative Audit and Review Commission in its report on information technology (IT) in Virginia state government. (See *Overview: Review of Information Technology in Virginia State Government*, House Document 42 (1998).) COTS, which consists of about 25 state and local government employees, is charged to identify and resolve IT issues in government, mindful of the tremendous leverage that the Commonwealth's buying power can bring in the IT marketplace. (During fiscal year 1998, Virginia will spend over $4.5 billion in goods and services.) Such issues will include desktop computer leasing, public-private partnerships in developing and maintaining the state's IT infrastructures, creating an overall government IT strategy, and reforming procurement practices and policies. (See Executive Order 30 (1998).)

Created to address IT policy matters, the Governor's Blue Ribbon IT Commission consists of 21 business leaders, six legislators, and the Secretaries of Commerce and Trade, Education, and Technology. Secretary Upson expressed his hope that the IT Commission members can prevent government from going one way on an IT issue and the IT industry the opposite direction. To conclude his remarks, the Secretary expressed his belief that the legislature and the executive branch are partners in achieving the overall goal of making Virginia a world technology center.

B. INTEGRATED DOCUMENT MANAGEMENT SYSTEM/AUTOMATED RECORDS MANAGEMENT SYSTEM PROJECT OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION

On September 16, 1998, Bill Lindsey, director of the administrative services division of the Virginia Department of Transportation (VDOT), reported on recent developments in the Integrated Document Management System/Automated Records Management System Project. VDOT began this project about three years ago in an effort to reduce paperwork and save time and money. The project involves a close examination of the agency's business processes to (i)

develop records management policies and procedures; (ii) determine what documents can be converted to electronic records; and (iii) assess whether a particular electronic record is amenable to an electronic signature. Early in 1998, VDOT pilot-tested pieces of the overall project to determine how the use of electronic signatures affects electronic recordkeeping. In July 1998, VDOT investigated and subsequently adopted CyberSIGN, the electronic signature software that is part of TeamWARE, a workflow product purchased by VDOT from Fujitsu. VDOT is the first state agency to adopt an electronic signature technology. As a result of a JCOTS legislative recommendation, electronic signatures were authorized for state agencies and localities in 1998 by Senate Bill 153 (Chapter 127 of the 1998 Acts of Assembly).

CyberSIGN combines biometrics—an ability to gather information about the signer—and cryptography—an ability to encode information. Biometric signature verification is used to establish a link between a person and her handwritten signature; cryptography is used to link the signature to a particular document. With CyberSIGN, a person signs her name on an electronic notepad with an electronic pen or stylus (which can be purchased "off the shelf" for as low as $79). The signature is captured by the electronic notepad, which takes measurements of the signature to create and record an electronic signature that is as legally effective as a paper signature. As a result of the passage of Senate Bill 153 (1997), § 59.1-469 authorizes state agencies and localities to use electronic signatures if the signature is: (i) unique to the signer, (ii) capable of verification, (iii) under the signer's sole control, (iv) linked to the record in such a manner that it can be determined if any data contained in the record was changed subsequent to the electronic signature being affixed to the record, and (v) created by a method appropriately reliable for the purpose for which the electronic signature was used. In matching CyberSIGN to these statutory criteria, VDOT reported that each criterion is met.

(i) Unique to the signer.

Prior to using CyberSIGN, an authorized user registers her signature with the system by signing three times. The system records the user's signature as a file containing information about the signature, including the X and Y coordinates, speed, and pressure of the electronic stylus. This file, which averages the various measurements of the three signatures, is registered for the user under her user name. In averaging measurements of three signatures, the CyberSIGN system recognizes that it is humanly impossible for two signatures to be signed exactly the same, even by the same person. Exact matches to the registered signature file are not accepted by the CyberSIGN system.

(ii) Capable of verification.

At any time determined by the system designers, the system may request a signature from a current user to be verified against the registered signature file for the authorized user. In addition, there are 10 levels of security (1-10) for verification sensitivity. Based on the security level set by the system designers, CyberSIGN may permit a certain tolerance in the difference between the user's signature and the registered signature file.

Fujitsu has provided information relating to the "false acceptance rate" of its CyberSIGN technology. False acceptance, or forgery, occurs when an unauthorized person attempts to sign an authorized signature and that signature is accepted by the CyberSIGN system as genuine. Fujitsu conducted internal studies with multiple data bases of over 1,000 genuine signatures during a six-week period. When the security level was set at the highest level (10), CyberSIGN did not permit any forged signatures to be accepted as genuine. According to Fujitsu, these studies confirm a 100 percent success rate for ensuring that only genuine, authorized signatures will be accepted and used within the CyberSIGN system. Industry efforts are underway to test biometric verification technologies associated with electronic signature acceptability rates. It is expected that formal standards will be adopted by the industry as early as mid-1999. Fujitsu is confident that CyberSIGN will maintain its 100 percent rate of authenticity within these industry standards.

(iii) Under the signer's sole control.

The integrity of the registered signature file is protected by the CyberSIGN system and only the authorized user is permitted to re-register her signature. Because exact matches to the registered signature file are not accepted by the CyberSIGN system, an unauthorized user would not be accepted if he was able to gain access to the registered signature file and attempt to use that file during the signature verification process.

(iv) Linked to the record in such a manner that it can be determined if any data contained in the record was changed subsequent to the electronic signature being affixed to the record.

Signed documents are stored in the system repository. Any change to a record is protected by the system through access rights and system control.

(v) Created by a method appropriately reliable for the purpose for which the electronic signature was used.

Signatures are created using a pen interface on either a small pressure pad or an actual pressure screen. The system then affixes the electronic signature to the document file.

C. REGIONAL CRIME ANALYSIS PROGRAM

On September 16, 1998, Drs. Donald Brown (professor and chair of the department of systems engineering) and Richard Jacques (director of corporate relations for the school of engineering), from the University of Virginia (UVA), demonstrated ReCAP, the Central Virginia Regional Crime Analysis Program. ReCAP consists of a data base management system, a geographic information system (GIS), and reporting and analytical tools. It has taken nearly five years to move from concept to testing and implementation and required extensive work on the part of three police departments, UVA faculty, and over 50 students from the departments of systems engineering, psychology, and law. Funding from the Virginia Department of Criminal Justice Services and the National Institute of Justice provided support for much of the project.

With ReCAP, a regional crime analyst can uncover crime patterns in a region and report the results in summary form. The geographic information system in ReCAP uses geocoding of crime address fields to place points where crimes occurred. These points are then plotted on a vector map of the region. The actual nature of the crimes plotted can be determined by the crime analyst or an individual investigator using the query tools in ReCAP. For example, out of the entire database of crime, the analyst might choose to generate a table which contains only armed robberies committed with a handgun. These crimes are then displayed in table format. From this, the analyst or investigator can perform time, space, or categorical analyses on the data.

ReCAP is being used successfully by the Albemarle County Police, the Charlottesville Police, and the UVA Police to overcome organizational and jurisdictional boundaries to solve, predict, and analyze crime in the central Virginia region. In early September, ReCAP software was installed on computers used by the two crime analysts employed by the City of Richmond Police Department. As ReCAP develops in Richmond, the system will collect records from police and crime victims, automatically perform a series of statistical procedures to determine if new information is significantly related to previous records, and predict the likelihood of additional crimes being perpetrated at specific times in specific locations.

According to its developers, costs for ReCAP will vary depending on the size of the jurisdiction and the information systems, database management, networking, and GIS used in that jurisdiction. For example, both Richmond and the Albemarle/Charlottesville/UVA areas use the same GIS but different database management systems. This requires changes to ReCAP to allow for Richmond's system to import data into ReCAP.

As the system grows, it is important to account for the number of crimes in an area. For example, about 30,000 violent crimes are reported each year in the City of Richmond; that is also the approximate annual total for all crimes reported in the County of Albemarle. With regional cooperation, however, ReCAP can be implemented on a statewide basis among contiguous jurisdictions. While the software is free, interested law-enforcement departments should have an organized records management system and permanent staff that includes high quality programmers and crime analysts. *Creating a Regional Crime Analysis Program: From Start to Finish*, a manual which summarizes all aspects of ReCAP's development, is currently under review for publication.

D. NUCLEAR RESEARCH REACTOR AT THE UNIVERSITY OF VIRGINIA

On September 16, 1998, Dr. Ralph Allen, professor of chemistry and director of environmental health and safety, discussed the nuclear research reactor at the University of Virginia (UVA). After a 38-year presence on UVA's campus, the reactor ceased operations on July 1, 1998. (See Appendix 4 for a JCOTS staff report on the UVAR.) Dr. Allen, who heads the decommissioning and decontamination process, explained that the first step in this process is the removal of the reactor's fuel (low-enriched uranium silicide), which belongs to the U.S. Department of Energy. The fuel will be shipped and stored in Barnwell, South Carolina, a licensed disposal site. Radioactive fuel must be shipped in a particular cask—the only one of its kind in the country—

certified by the U.S. Nuclear Regulatory Commission (NRC). The removal of fuel was anticipated to begin in November 1998 and conclude in January 1999.

After the fuel is removed, UVA must submit a decommissioning and decontamination plan to the NRC. Dr. Allen expected the plan to be submitted in the summer of 1999. The NRC will then undertake a six-to-twelve-month review of the plan. Complete implementation may take several years. Once the process is complete, the reactor building will be returned to UVA's School of Engineering and Applied Science (SEAS).

Possible commercial uses for the reactor include production of radioactive isotopes for medical use. Currently, these radio-pharmaceuticals are in high demand and are only produced in Canada. When questioned about such a commercial use, Dr. Allen reported that early interest in the reactor by private companies has all but disappeared, and he cited two reasons. First, the facility is licensed as a research reactor, which severely limits its commercial viability. By its licensing terms, the UVA reactor can make very little, if any, profit. Changing the licensing terms may be possible through an expensive, time-consuming process, but no company has expressed any active interest in pursuing that course. Second, it costs approximately $500,000 a year to operate the reactor (which is currently paid from the SEAS budget). In addition, every experiment conducted in the reactor generates radioactive waste which costs $1500 per cubic foot to dispose and store. These high costs have also helped to diminish initial commercial interest in the reactor.

E. MODERNIZING LAND RECORDS

In 1997, the Joint Legislative Audit and Review Commission published the results of a two-year study entitled, *The Feasibility of Modernizing Land Records in Virginia.* (See Senate Document No. 20 (1997).) The Task Force on Land Records Management developed as a result of the recommendations contained in that report. On January 1, 1998, the Council on Information Management (CIM) and the Task Force published the final report of the Task Force. (See *Modernizing Land Records in Virginia*, available from CIM.) House Bill 1141 (1998) extended the existence of the Task Force from July 1, 1998, to July 1, 1999, for the purpose of implementing strategic and tactical plans consistent with its final report.

On November 18, 1998, J. Jack Kennedy, Jr., clerk of the Circuit Court for Wise County and the City of Norton, and J. Curtis Fruit, clerk of the Circuit Court for the City of Virginia Beach, presented a report from the Task Force. The Task Force suggested that legislation be introduced in the 1999 Session which requires:

- Uniform statewide formatting standards for land records;
- A parcel identification number to be assigned to deeds and other instruments conveying or relating to an interest in real property; and
- Expanded use of cover sheets submitted with deeds and other instruments conveying or relating to an interest in real property.

F. ELECTRONIC CONTRACTING AND PROCUREMENT

On November 18, 1998, Murray Rosenberg and Dan Ziomek, CIM staff analysts, presented findings pursuant to Senate Joint Resolution 36, a JCOTS recommendation passed in the 1998 Session. The resolution requested CIM and other state agencies and interested persons to jointly study methods of electronic contracting and procurement under the Virginia Public Procurement Act. The study undertook to determine the next logical steps to make effective and efficient electronic contracting and procurement a widely implemented reality in the Commonwealth. CIM's final report, *A Joint Study of Methods of Electronic Contracting and Procurement Under the Virginia Public Procurement Act*, has since been published as Senate Document No. 13 (1999).

G. INTERNET TAX FREEDOM ACT

On October 21, 1998, the President signed the Internet Tax Freedom Act (the Act) as part of the federal appropriations bill for fiscal year 1999 (see Title XI of H.R. 4328, §§ 1100 et seq., P.L. 105-277). Versions of the measure, H.R. 4105 and S. 442, were sponsored by Representative Christopher Cox (R-California) and Senator Ron Wyden (D-Oregon), respectively. The Act imposes a three-year moratorium on state and local taxation of Internet access services and taxes that apply to the Internet but not to business in other media. However, state and local governments are permitted to tax Internet service providers that do not offer filtered access service to the Internet. The Act has no effect on taxes on Internet transactions that also apply off-line, such as sales, excise, and employment taxes, as long as such taxes are applied in a non-discriminatory manner. The Act contains a grandfathering provision for the states which currently tax Internet access (Connecticut, Iowa, New Mexico, North Dakota, Ohio, South Dakota, Tennessee, and Wisconsin) if their respective legislatures affirm such a desire within one year after the Act's passage. The Act also:

- Establishes the 19-member Advisory Commission on Electronic Commerce to conduct a study of Internet taxation and report to the Congress on whether the Internet should be taxed, and if so, how should such taxation avoid being special, discriminatory, or multiple in nature.
- Prohibits the Federal Communications Commission and state utility commissions from regulating fees or charges paid by consumers for Internet access or online services.
- Expresses the sense of the Congress that the President seek bilateral agreements with foreign governments to keep the Internet free from taxes and tariffs.

The impact of the Act in Virginia was greatly minimized by the passage of House Bill 278 (Chapter 481 of the 1998 Acts of Assembly). The legislation codified decisions by the Tax Commissioner exempting from Virginia's sales and use tax (i) charges for Internet access and related communications services and (ii) sales of software via the Internet. In addition, House Joint Resolution 36, which also passed, expressed the sense of the 1998 General Assembly that services which provide access to the Internet, related electronic communication services, and data transmitted via such services should remain free from fees, assessments, or taxes imposed

by the Commonwealth and its political subdivisions. Both measures were 1998 legislative recommendations of JCOTS.

Virginia Governor James S. Gilmore III announced his support for the Act in February 1998. He and California Governor Pete Wilson voted against a National Governors' Association resolution which called upon the Congress to pass federal legislation requiring the states to adopt a uniform national sales tax on all electronic commerce and mail order purchases. In December 1998, the Governor was appointed to the Advisory Commission on Electronic Commerce created under the Act.

IV. FIELD TRIPS AND SITE VISITS

A. VIRGINIA BIOTECHNOLOGY RSEARCH PARK

On September 16, 1998, members of JCOTS and the House Committee on Science and Technology toured the Virginia Biotechnology Research Park in downtown Richmond. The tour was led by Robert T. Skunda, the Park's president and chief executive officer, and William L. Dewey, vice president of research and graduate studies at Virginia Commonwealth University (VCU). The Park, which is Virginia's corporate research park for the life sciences, represents a cooperative civic venture between VCU, the City of Richmond, the Commonwealth of Virginia, and the Virginia business community. As the Park's 34 acres are developed over the next 10 to 15 years, it will offer 1.5 million square feet of space, represent a $500 million capital investment, and produce approximately 3,000 high-tech jobs. The Park currently manages and owns three research buildings which it leases to tenants and plans call for three more.

The Biotech Center is an incubator facility which caters to start-up companies by providing administrative offices, standard laboratories, fiber optic telecommunications, a library, conference rooms, and networking activities. Biotech One is designed to accommodate established biotech/biomedical research and development companies. Biotech Two, which opened in August 1998, houses the Office of the Chief Medical Examiner and the Virginia Division of Forensic Science. Biotech Three and Four will contain research offices without wet labs. Biotech Five, scheduled for completion in May 1999, will house a water and wastewater treatment facility. More information about the Park is available at http://www.vabiotech.com.

On February 15, 1999, members of the House Committee on Science and Technology returned to the Park for the first biennial Committee dinner, hosted by Delegates Kenneth R. Plum and Joe T. May, co-chairs of the Committee. Mr. Skunda discussed the findings of a recent study by the VCU Center for Public Policy on the economic impact of Virginia's biotechnology industry. The industry includes research and development of products and services in the healthcare (both diagnostic and therapeutic), agricultural, environmental, and chemical fields. The study found that Virginia has 373 biotechnology companies providing 16,750 jobs statewide. The average annual salary of a biotechnology worker in Virginia is $54,205, which is 183 percent of the average salary for all employees. The average annual economic impact of the biotechnology industry in Virginia is $1.9 billion. A recent Earnst and Young survey found that the total 1998 revenues in the biotechnology industry were about $13 billion. If Virginia were to increase its

commitment to the biotechnology industry 20-fold, Mr. Skunda suggested a growth projection of $36 billion in 2010.

B. VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

During the weekend of October 30-31, 1998, JCOTS members and staff toured Virginia Polytechnic Institute and State University (Virginia Tech) (http://www.vt.edu) in Blacksburg, Virginia. The two-day tour, hosted by Paul E. Torgersen, president, and led by Ralph M. Byers, director of government relations, included:

- The Corporate Research Center (http://www.vtcrc.com). The Center is an economic development initiative of the Virginia Tech Foundation in cooperation with Virginia Tech. The Center's mission is to build creative partnerships between Virginia Tech and private and public enterprises by providing top-quality business assistance from faculty, graduate students, and independent consultants to emerging technology-based companies. The group was treated to an experiential demonstration of the VT CAVE (Computer Automated Virtual Environment), which is housed in the Center. The VT CAVE (http://www.cave.vt.edu) is a multi-person, room-sized, high-resolution, three-dimensional video and audio environment used to create virtual reality. Scientific visualization is achieved by rear-projecting graphics in stereo onto three walls and the floor, which are viewed with stereo glasses. The VT CAVE is available for academic programs at Virginia Tech and industries interested in using virtual immersion environments. For example, students and researchers can see and understand how complex objects work by walking into a bacteria cell, a complex protein structure, a new architectural design, or an insect's beating heart.

- The Fralin Biotechnology Center (http://www.biotech.vt.edu). The Center is engaged in internationally recognized research, teaching, and outreach efforts in the fields of human and animal health and agricultural productivity. The group was briefed on transgenic plant and animal research. Examples of areas being investigated at the Center include the cloning of plants and bacteria, DNA sequencing, and engineering of proteins and carbohydrates. Projects are underway to understand and treat colitis and AIDS-related infections, to improve the disease resistance of plants, and to control pests by using fewer pesticides.

- The Math Emporium (http://www.emporium.vt.edu). This brand new facility houses 250 high-performance, dual-platform (IBM and MacIntosh) computers arranged in state-of-the-art workstations. Another 250 computers will soon be added, making the Math Emporium the first and largest facility of its kind in the nation. Because the Math Emporium is open 24 hours a day, seven days a week, students can proceed through course material at their own pace, on their own schedule. Professors and tutors are available 14 hours a day to assist with more difficult material. The Math Emporium is connected to the Internet, thus enabling students at other sites to link to the courses and resources.

- The New Engineering Building (http://ate.cc.vt.edu/eng/pue/welcome.html). The group was briefed on enhancing the Commonwealth's competitiveness through early access to advanced

communication and network services for all Virginians. These services, which require high bandwidth, must be digital, reliable, and affordable to be successful. Virginia Tech is working on three different levels to help ensure early access. National and regional access involves research and development of Internet 2 (also known as "the Next Generation Internet") and Integrated Internet Innovations (also known as the "I cubed MetaPOP"). For statewide access, Virginia Tech administers Net.Work.Virginia, the world's most advanced public network. For local community access, Virginia Tech is researching and developing the Local Multipoint Distribution Service, a regional broadband wireless network, which can be used for projects such as Blacksburg's Electronic Village 2 (http://www.bev.net).

The group also traveled along part of the construction route for the "Smart Road," which is a 5.7-mile limited access highway linking Blacksburg with I-81. All phases of the project are being used by the Center for Transportation Research (http://www.ctr.vt.edu/ctr_news.shtml) to develop and test transportation technology. Once completed, the Smart Road will become the nation's most advanced test-bed for Intelligent Transportation Systems (or "ITS"). Fiber optic sensors embedded in the Smart Road will be able, almost instantaneously, to relay information to computers about road conditions, traffic load, temperature and weather, vibration and strain on bridges, and a host of other subjects. The information gleaned can then be used, for example, to make driving safer by altering traffic patterns and road conditions.

The weekend's social functions included the College of Engineering's Committee of 100 reception and dinner at the Hotel Roanoke on Friday evening and the annual football game between the Virginia Tech Hokies and the West Virginia University Mountaineers at Lane Stadium on Saturday afternoon. The Hokies won, 27-13.

V. COMMISSION WEBSITE

A. PUBLIC COMMENT ON LEGISLATIVE DRAFTS

In mid-November 1997, JCOTS posted draft 1998 Session legislation on its website in an effort to obtain public comment. About a dozen comments were submitted via direct electronic mail message to JCOTS staff. During the 1998 interim, JCOTS and the Applied Knowledge Group (AKG) (http://www.akgroup.com/index.html) formed a public-private partnership to help advance JCOTS' goal of modeling new technologies which improve public access to its work. With a software program called "NetDocs," AKG developed an electronic discussion format (called a "forum") by which the public could comment on JCOTS's 1999 Session draft legislation and discuss with each other the issues involved. The legislative drafts were posted under the "Documents and Legislation" button on JCOTS's website and were accessed by clicking the link for "1999 Commission Legislation." The link took the user to the JCOTS welcome page at AKG, which provided definitions and procedures to help use the forum site. To comment on legislative drafts, users clicked the link for "Review Legislative Drafts" and selected the desired summary or legislative draft from the bills and resolutions listed. (The comment feature was available on legislative drafts only, not summaries.) To submit a comment, users clicked "New"; to review others' comments, users clicked "Review."

At its meeting on November 18, 1998, JCOTS approved an initial round of 11 bills to be posted on the forum site. Another 10 bills and resolutions were approved for posting at JCOTS meeting on December 18, 1998. All legislative drafts remained available for public comment through the first day of the 1999 Session on January 13. Eight comments were submitted. JCOTS expended no funds for the project; however, JCOTS was required to submit legislative drafts to AKG in hyper-text markup language (html) format via electronic mail to programmers in California. On its part, AKG provided all necessary web design and NetDocs programming services and space on its server for the JCOTS forum site.

B. ELECTRONIC MEETING NOTICE

By clicking the question, "Would you like to be added to the Commission's mailing list?" from the welcome page of the JCOTS website at http://legis.state.va.us/jcots/jcots.htm, any person interested in being on JCOTS's mailing list may fill out an on-line questionnaire and submit his contact information directly into a database. After the person's information is checked by JCOTS staff, it is posted under the "Mailing Lists" button. JCOTS's current mailing list is over 400 persons and growing.

In September 1998, JCOTS began using its database to send public meeting notices required by the Virginia Freedom of Information Act (FOIA) (§ 2.1-340 et seq.) to persons who provided electronic mail addresses as part of their contact information—about 350. Thus, only about 50 public meeting notices are routinely mailed via U.S. mail. The result has been a dramatic reduction in postage and copying costs and more timely delivery of public meeting notices. In addition, there has been a marked increase in the amount of information not required by FOIA that JCOTS transmits via electronic mail (e.g., meeting agendas, draft reports and legislation, etc.) Given the quantifiable benefits and the very positive response from persons on the JCOTS mailing list, interested persons have been repeatedly encouraged to provide electronic mail addresses to JCOTS.

C. MEETING HANDOUTS

To accommodate the need to provide the public with handouts distributed at JCOTS meetings, the Commission purchased a scanner in the summer of 1998. Beginning with its meeting on September 16, 1998, all meeting handouts were made available from JCOTS's website under the "Meeting Information" button. Summaries of each meeting, also available under the "Meeting Information" button, link the handouts to the text of the summary. Due to their quantity and length, most of the meeting handouts have not been included in this final report.

VI. CONCLUSION

The Joint Commission on Technology and Science extends sincere appreciation to everyone who participated in its work during the 1998-1999 interim and supported its legislative recommendations during the 1999 Session of the General Assembly. We look forward to continuing our work in 1999-2000.

Respectfully submitted,

Delegate Kenneth R. Plum, Chair
Senator Patricia S. Ticer, Vice Chair
Delegate William W. Bennett, Jr.
Delegate Alan A. Diamonstein
Delegate Joe T. May
Delegate Harry R. Purkey
Senator Janet D. Howell
Senator Stephen D. Newman
Senator Edward L. Schrock

Appendix 1.
1998-1999 Commission Workplan
(Adopted May 13, 1998)

I. Issues to Study through Advisory Committees

1. Internet Access (Delegate Ted Bennett and Senator Steve Newman, co-chairs)
   A. Schools/libraries--House Bills 348, 1043, 1317
   B. Library of Virginia's development of a strategic information technology plan for the Commonwealth's public library system--House Joint Resolution 444 (1997)

2. State Agency Applications (Delegate Bob Purkey and Senator Ed Schrock, co-chairs)
   A. Electronic filing of tax returns--House Joint Resolution 231
   B. Access by blind or visually impaired--House Bill 1115

3. Year 2000 (Delegate Joe May and Senator Janet Howell, co-chairs)
   Century Date Change Initiative Project Office

4. UCC Revised Article 2B--House Joint Resolution 38 (Delegate Alan Diamonstein and Senator Patsy Ticer, co-chairs)
   A. Computer Crimes--§§18.2-152.1 through 18.2-152.14
   B. Electronic Signatures--§§59.1-467 through 59.1-469

II. New Issues to Introduce at Full Commission Meetings

1. Localities in the telecommunications business

2. Geographic information systems--e.g., Land Records Management Task Force, Regional Crime Analysis Program (ReCAP)

3. Nuclear reactor facility at the University of Virginia

4. Center for Innovative Technology: Development of statewide strategies to attract and retain research and development assets--Senate Joint Resolution 37

5. Council on Information Management: Study of electronic contracting and procurement under Virginia Public Procurement Act--Senate Joint Resolution 36

6. Secretaries of Commerce and Trade and Education: Development of strategies to increase the number of computer scientists, engineers, etc.--Senate Joint Resolution 38

III. Field Trips and Site Visits

1. William and Mary's "Courtroom 2000" (Williamsburg)

2. Headquarters of Internet service providers, computer hardware manufacturers, and software developers (Northern Virginia and Hampton Roads)

3. Virginia's technology and science assets: Applied Research Center, Biotechnology Research Park, Bioinformatics Center, Free Electron Laser, Langley Full-Scale Wind Tunnel, Smart Roads Project, Virginia Institute for Microelectronics, Virginia Modeling, Analysis, and Simulation Center, Virtual Reality Center, and Wallops Island Space Flight Facility (statewide)

4. IBM Institute for Electronic Government (Washington, D.C.)

5. Blacksburg's Electronic Village and Bedford Online

IV. Update on Other Issues as Requested--Examples:

1. Universal Service Fund/Telecommunications Act

2. Executive branch organization re: information technology

3. *Building A CommonWealth of Technology: A Blueprint For Technology-Based Economic Growth in Virginia*--Center for Innovative Technology

4. Joint Legislative Audit and Review Commission's study of technology at the State Board of Elections and in the local registrars' offices--House Joint Resolution 51

5. Virginia Information Providers Network's response to House Bill 703 to create an electronic clearinghouse for employment and internships for college students

6. Cyber-legislature pilot projects--Net.work.Virginia, chamber automation, and the Virginia Senate on-line

Appendix 2.
Summaries of 1999 Commission Legislation by Subject Area (as introduced)

BILLS AND RESOLUTIONS

CIRCUIT COURT LAND RECORDS

- **House Bill 1664 (Delegate Bennett)**

Virginia Supreme Court; uniform statewide formatting standards for cover sheets on deeds and other instruments. Requires the Virginia Supreme Court to adopt uniform statewide formatting standards for cover sheets on deeds and other real property instruments by December 1, 1999, in consultation with the Virginia Circuit Court Clerks' Association. After the uniform standards are adopted, circuit court clerks may request, but not require, that cover sheets be submitted with deeds and other instruments for the purpose of properly indexing same.

The 1998 General Assembly passed House Bill 793 (Chapter 378 of the 1998 Acts of Assembly), a limited measure which permits only the circuit court clerk of Wise County and the City of Norton to request that a cover sheet be filled out on all real estate documents. With the success of that pilot project and in an effort to uniformly modernize Virginia's land records, House Bill 1664 requires the Supreme Court to adopt statewide standards for these cover sheets. Effective December 1, 1999, House Bill 1664 also repeals the authority for the pilot project in Wise County and the City of Norton provided in House Bill 793 because it would no longer be necessary or desirable after passage of House Bill 1664. The bill implements continuing recommendations made by the Task Force on Land Records Management.

No action taken by the House Committee on Courts of Justice.

- **House Bill 1665 (Delegate Bennett)**

Courts of record; indexing by tax map reference. Allows circuit court clerks in the Commonwealth to require deeds submitted for recordation to reference in the left margin the tax map reference number or parcel identification number (PIN) of the affected parcel. The current section specifically lists which clerks may require a PIN.

The 1998 General Assembly passed House Bill 208 (Chapter 75 of the 1998 Acts of Assembly), a measure which added Augusta and Rockingham Counties and the Cities of Richmond and Roanoke to the growing list of circuit court clerks which are authorized to require a PIN in the left margin of deeds and other land records. In a continuing effort to uniformly modernize Virginia's land records, House Bill 1665 provides this authority to all circuit court clerks. The bill implements continuing recommendations made by the Task Force on Land Records Management.

No action taken by the House Committee on Courts of Justice. Incorporated into House Bill 1441, passed, Chapter 163 of the 1999 Acts of Assembly.

House Bill 1666 (Delegate Bennett)

Virginia Supreme Court; uniform statewide formatting standards for land records indexing. In an effort to uniformly modernize Virginia's land records and eventually tie land records to geographic information systems, requires the Virginia Supreme Court to adopt uniform statewide formatting standards for land records indexing by December 1, 1999, in consultation with the Virginia Circuit Court Clerks' Association. Because the Task Force on Land Records Management has already spent considerable time and effort in developing formatting standards, House Bill 1666 also requires the Supreme Court to include and otherwise be consistent with the Task Force's work in its initial set of uniform standards. To allow what is hoped to be a sufficient period of time to review and implement the uniform standards, clerks are given a year, until December 1, 2000, to achieve full implementation. In setting the deadlines in this bill, JCOTS did not want to distract or detract in any way from attention and resources currently be expended by the Supreme Court and the circuit courts on fixing Year 2000 problems. Because JCOTS wants Year 2000 efforts to remain the priority information technology project, the deadlines established in House Bill 1666 are somewhat more extended than the proponents of House Bill 1666 have advocated. The bill implements continuing recommendations made by the Task Force on Land Records Management.

No action taken by the House Committee on Courts of Justice.

CIVIL ACTIONS

- **House Bill 1668 (Delegate Plum)**

Misleading and unsolicited commercial electronic mail. Creates two new statutory causes of action: (1) for persons who receive false or misleading "commercial electronic mail" and (2) for persons who receive unsolicited "commercial electronic mail." In the case of false or misleading electronic mail, recipients may sue to enjoin further violations and to recover the greater of (i) actual damages sustained, together with costs and reasonable attorneys' fees, or (ii) $500 "per occurrence" not to exceed one million dollars. Internet service providers can sue for injunctive relief and to recover the greater of (i) actual damages sustained, together with costs and reasonable attorneys' fees, or (ii) $1000 "per occurrence" not to exceed two million dollars. In the case of unsolicited electronic mail, recipients may sue to enjoin further violations and to recover the greater of (i) actual damages sustained, together with costs and reasonable attorneys' fees, or (ii) $500 per occurrence not to exceed one million dollars; if the unsolicited electronic mail is received after the recipient has declined to receive further electronic mail, he may recover $1000 per occurrence not to exceed two million dollars. Persons who "transmit or cause the transmission" of unsolicited electronic mail are not liable to the recipient if the recipient consented to the receipt of the electronic mail or the electronic mail is readily identifiable as promotional and follows other procedures outlined in the bill.

The purpose of House Bill 1668 is to curb a practice known as "spamming," which is broadly defined as sending false, misleading, or unsolicited electronic mail to unsuspecting recipients. Over the past few years, the frustration of consumers and electronic mail service providers has grown proportionately to the intensity and quantity of spam. In July 1998, the Federal Trade

Commission released the list of "Dirty Dozen Spam Scams." Culled from a sampling of 250,000 junk e-mail messages forwarded by consumers to the FTC, the list included business opportunity scams, making money by sending spam, chain letters, work-at-home schemes, health and diet scams, easy money, getting something free, investment opportunities, cable descrambler kits, guaranteed loans or credit on easy terms, credit repair scams, and vacation prize promotions. In an August 1998 press release, AmericaOnline reported that 30 percent of the estimated 30 million electronic mail messages that go through AOL daily are spam. House Bill 1668 is designed to relieve consumers and electronic mail service providers from bearing the burden of advertising costs which have been unfairly shifted to them by unscrupulous spammers.

Passed, as amended, Chapter 904 of the 1999 Acts of Assembly.

ECONOMIC DEVELOPMENT/TAX

- **House Bill 1667 (Delegate Purkey)**

Virginia Technology and Biotechnology Investment Act created. Creates a research and development tax credit, not to exceed 50 percent of the tax liability due, for "technology" and "biotechnology" companies in Virginia and permits the credit to be carried over for up to 15 years. The bill also creates a tax credit for individual taxpayers, estates, trusts, partnerships, and corporations that invest in technology or biotechnology companies. So long as the credit does not exceed 50 percent of the tax liability due, investors can take up to a maximum $500,000 credit, which can be carried over, in most circumstances, for up to 15 years. The bill permits technology or biotechnology companies to carry over net operating losses for up to 15 years. The bill creates a "corporation tax benefit certificate program" to be administered by the Virginia Economic Development Partnership in cooperation with the Tax Department. Under the program, technology or biotechnology companies may transfer their unused but otherwise allowable research and development tax credits or net operating loss carry-over for a minimum of 75 cents on the dollar to another corporation taxpayer. Proceeds from the transfer can be used for a broad range of "costs" associated with operating a technology or biotechnology company.

House Bill 1667 developed out of JCOTS field trips to the Virginia Biotechnology Research Park, affiliated with Virginia Commonwealth University, and the Corporate Research Center and the Fralin Biotechnology Center on the campus of Virginia Tech. Speaking with the scientists, researchers, and entrepreneurs associated with these Centers reaffirmed that small technology and biotechnology companies are a vital and growing source of high-wage, high-skilled jobs in Virginia. The technology and biotechnology sectors are key components in Virginia's overall effort to fuel continued expansion and diversification in our state's economy. House Bill 1667 attempts to address a huge difficulty facing small technology and biotechnology companies, i.e., the need to make a significant investment in research and product development long before a product can be brought to the marketplace and a profit earned. The purpose of the bill is to provide a package of tax incentives which stimulate investment in technology and biotechnology companies to provide them the necessary resources to turn ideas into products.

Passed, as amended, Chapter 450 of the 1999 Acts of Assembly.

FREEDOM OF INFORMATION ACT

- **Senate Bill 806 (Senator Schrock)**

Virginia Freedom of Information Act; notice of public meetings. Requires that notice of public meetings, except emergencies, be provided no less than seven days before the meeting "in a manner reasonably calculated under the circumstances to apprise the public of the meeting information." Current law requires meeting notices "to be furnished to any citizen of the Commonwealth who requests such information" and implies that such notice must be provided by U.S. mail. The purpose of the bill is to permit public bodies to employ methods of electronic meeting notice in lieu of, or in addition to, U.S. mail notification (e.g., posting on website, electronic mail notification, and list service).

The genesis of Senate Bill 806 is JCOTS's use of electronic meeting notification (discussed at p. 25) to save money, increase efficiency, and enhance public notice about JCOTS's work. The goal of Senate Bill 806 is to give all the Commonwealth's public bodies the opportunity to enjoy those benefits.

Passed, as amended, Chapter 696 of the 1999 Acts of Assembly.

- **Senate Bill 1026 (Senator Newman)**

Virginia Freedom of Information Act (FOIA); electronic communication meetings. Exempts from FOIA's restrictions on electronic communications meetings (i) any public body (a) in the legislative branch of state government or (b) responsible to or under the supervision, direction, or control of the Secretary of Commerce and Trade or the Secretary of Technology or (ii) the State Board for Community Colleges. The bill does not apply to any session of the General Assembly. The bill adopts the basic requirements of nonelectronic communication public meetings as the required procedure for holding electronic communication meetings. The bill (i) defines "electronic communication means," "emergency," and "meeting"; (ii) requires that, except in an emergency, notice of a meeting must be provided no less than seven days before the meeting in a manner reasonably calculated under the circumstances to apprise the public of the meeting information; (iii) requires that notice for emergency meetings be given contemporaneously with notice provided to members of the public body or Board in a manner reasonably calculated under the circumstances to apprise the public of the meeting information; (iv) for purposes of establishing the participation requirement, requires that every location where a member of the public body or Board is physically present must be in Virginia and open and accessible to the public; (v) after the presence of three members or a quorum is established, permits members of the public body or the Board who are not physically present in Virginia or at a location open and accessible to the public to participate in the meeting and vote; and (vi) requires public bodies and the Board, when they use these provisions, to file reports thereon by October 15, 2000. The bill contains an emergency clause and expires on July 1, 2000.

Although the subject of many amendments in the 1998 Session, Senate Bill 156 was passed by the General Assembly only to be vetoed by the Governor in May 1998. Senate Bill 1026 incorporates the numerous amendments made to Senate Bill 156 and is essentially the same bill

the Governor vetoed. Aside from minor grammatical changes, the only substantive difference between Senate Bill 156 and Senate Bill 1026 is the addition of the Secretary of Technology and agencies assigned thereto to the list of public bodies that may participate in the electronic communications meetings authorized by the bill.

Passed, as amended, Chapter 704 of the 1999 Acts of Assembly.

- **House Joint Resolution 595 (Delegate Plum)/Senate Joint Resolution 361 (Senator Newman)**

Net.Work.Virginia. Directs the Clerk of the Senate and the Clerk of the House of Delegates to explore the feasibility of connecting the General Assembly Building and the Capitol to the Net.Work.Virginia communications network and report their findings and recommendations to the Joint Rules Committee and the 2000 Session of the General Assembly.

These identical resolutions are an attempt to further the ability of the General Assembly and its staff to use advanced communications technology to facilitate its work. Connecting the General Assembly Building and the Capitol to New.Work.Virginia will provide an opportunity for the legislative branch to join an existing network of over 400 sites located throughout Virginia. These sites include all of Virginia's two- and four-year public colleges and universities; many elementary, middle, and high schools; and state agencies and local governments.

Agreed to by the General Assembly.

STATE GOVERNMENT

- **House Bill 1670 (Delegate May)/Senate Bill 1095 (Senator Ticer)**

Authority of department directors. Requires specified department directors in state government to appoint an agency information officer (AIO) from among the department's employees. The AIO would have two specific duties: (i) to ensure the coordinated planning, practical acquisition, effective development, and efficient use of information technology resources and communications services to meet the department's needs and (ii) to serve as the department's liaison to the Office of the Secretary of Technology.

When the Council on Information Management (CIM) first began to work on the Year 2000 problem a few years ago, CIM staff spent a great deal of time trying to identify a single point of contact in each state agency. As a result, one of the largest lessons that state government has learned by focusing tremendous time and effort on the Year 2000 problem is the need to make a single person responsible for information technology issues in Virginia's state agencies. This is particularly important to the development of a strong connection between our state agencies and the new Secretariat of Technology. These identical bills are meant to formalize for the future that which has occurred rather informally through the efforts to fix the Year 2000 problem.

Passed, Chapters 70 and 892 of the 1999 Acts of Assembly.

House Bill 1672 (Delegate Purkey)

State Council of Higher Education for Virginia (SCHEV); data collection on students with disabilities. Requires SCHEV, as part of its existing duty to develop a uniform comprehensive data information system on admissions, enrollments, etc., to collect data on self-identified students with documented disabilities.

The genesis for House Bill 1672 is the work of Advisory Committee Two, which studied House Bill 1115, a 1998 measure carried over in the House Committee on Science and Technology. House Bill 1115, which was eventually reported out of the Committee as an amendment in the nature of a substitute, creates the Information Technology Access Act to secure the benefits of access to information technology for individuals who are blind or visually impaired. The principal method by which House Bill 1115 achieves its goals is by requiring a technology access clause in all state computer procurements. The clause will set a baseline standard which all computers procured by the state must meet so that compliance with the Americans With Disability Act and state and federal rehabilitation acts is more easily and cheaply obtained at some later point if agencies and institutions are required to provide accommodation and access for a visually impaired person. In trying to determine any fiscal impact of House Bill 1115, the advisory committee requested information about the number of students enrolled in Virginia's two- and four-year institutions of higher education who have disabilities. The advisory committee learned that such data is not routinely collected or maintained, and for that reason, House Bill 1672 was introduced. The purpose of the bill is to collect aggregate, nonstudent-specific data that helps drive contract specifications and procurement decisions for information technology that assists disabled Virginia students.

Passed, Chapter 451 of the 1999 Acts of Assembly.

- **House Bill 2343 (Delegate C. Jones)**

Powers and duties of the Department of Personnel and Training (DPT); acceptable Internet use policy for state employees. On and after December 1, 1999, requires DPT to establish an acceptable Internet use policy (AIUP) for state employees as part of its existing statutory duty to develop state personnel policies. The AIUP is required to (i) prohibit use of the state's computers and communications services for sending, receiving, viewing, or downloading illegal material and (ii) establish strict disciplinary measures for violations thereof. Agency heads may supplement the Department's AIUP as they deem appropriate. In a second enactment clause, heads of state agencies whose officers and employees are exempt from the Virginia Personnel Act are required to adopt the Department's AIUP for their employees. Effective December 1, 1999, the bill also repeals the "Restrictions on State Employee Access to Information Infrastructure Act" passed in 1996. The constitutionality of the Act was challenged in 1997 by six professors from Virginia's public colleges and universities. In *Urofsky v. Allen*, 995 F. Supp. 634 (E.D. Va. 1998), Judge Leonie Brinkema held that the Act unconstitutionally burdens the right to free speech in violation of the First and Fourteenth Amendments to the U.S. Constitution. The Commonwealth appealed the decision to the U.S. Court of Appeals for the Fourth Circuit. On February 10, 1999, the Fourth Circuit reversed the district court and upheld the statute. An appeal to the United States Supreme Court is expected.

The purpose of House Bill 2343 is to promote the public policy of endorsing and enforcing responsible Internet usage without imposing unconstitutional restrictions on free speech. By requiring an AIUP in every state agency, state employees will be on notice as to what constitutes appropriate use of state computers and what the consequences are for inappropriate use. Use of state computers, like use of state cars, state telephones, and state time, is a management issue best handled in the employee-employer relationship through Virginia's state personnel rules. House Bill 2343 will permit the use of the Internet by state employees to be handled in that manner.

Regardless of its ultimate legal resolution, the 1996 statute has not had much effect on the behavior of state employees. Implementation of the 1996 statute (which House Bill 2343 would repeal) has proven problematic. Judge Brinkema found as a matter of fact that since the statute became effective in 1996, only three of Virginia's 39 institutions of higher education had received requests to view sexually explicit material on the Internet (Radford University, the University of Virginia (UVA), and the College of William and Mary). At UVA's Health Sciences Center, 8,3000 employees were given blanket, advance permission to view sexually explicit material. The court also found that only three state agencies—the Department of Education, the Virginia Museum of Fine Arts, and the Office of the Attorney General—had received requests to view sexually explicit material on the Internet. Excluded from the list are the Department of Corrections, the Department of Health, the Department of Juvenile Justice, the Department of Social Services, the Department of Mental Health, Mental Retardation and Substance Abuse Services, the Library of Virginia, and other state agencies whose employees presumably make frequent use of sexually explicit material.

The judge noted that these examples suggest that the 1996 statute is unworkable as written, is simply being ignored by state employees as superfluous and burdensome, or is deterring speech. In a constitutional analysis, any of these problems may be significant. House Bill 2343 is JCOTS's attempt to move the discussion away from the constitutionality of the 1996 statute towards setting a clear standard of conduct for state employees' use of the Internet in the workaday world.

Passed, as amended, Chapter 384 of the 1999 Acts of Assembly.

- **Senate Bill 807 (Senator Schrock)**

Absentee ballot applications. Requires the State Board of Elections to implement a system, beginning with the general election in November 2000, which enables persons to file absentee ballot applications electronically through the Internet. The bill also ensures that false statements made electronically are punishable the same as any other false statement made in connection with Virginia's election laws (as the crime of election fraud, a Class 5 felony).

In the 1998 Session, the Senate Committee on Privileges and Elections considered and killed Senate Bill 154, which would have required the State Board of Elections to implement a system, beginning with the general election in November 1999, which enables persons to request, receive, and file absentee ballot applications electronically through the Internet. In a second

enactment clause, Senate Bill 154 requested the Board to study the implementation of a system for registering voters and voting ballots (including absentee ballots) electronically through the Internet and report its findings and recommendations to the Governor and the 1999 Session of the General Assembly.

Most of Senate Bill 154 was ultimately passed by the 1998 General Assembly. The ability to request and receive absentee ballots via the Internet was incorporated into House Bill 591. The study was incorporated into House Joint Resolution 51, which directed the Joint Legislative Audit and Review Commission to study the Virginia voter registration system, its computer platform, and the relationship between the State Board of Elections office and local registrars' offices. (The final report, *Review of the State Board of Elections*, was published as House Document No. 18 (1999).)

The third and final part of Senate Bill 154 that did not pass in the 1998 Session became Senate Bill 807. Under the current voting process, voter participation is declining, especially among 18-to-25-year-olds (the age group with the most access to computers and the Internet); many people do not like to go to a polling place because it is inconvenient or inaccessible; and the current process, over 200 years old, is expensive. Senate Bill 807 attempts to address these issues by providing Virginia's citizens with the ability to file an absentee ballot application via the Internet.

Passed by for the day in the Senate Committee on Privileges and Elections.

- **Senate Bill 819 (Senator Ticer)**

Definitions of certain words in the Code of Virginia. Expands the definitions of "written," "writing," "writings," and "in writing" in Title 1 of the Code to include electronic representations of words, letters, symbols, numbers, or figures. The bill also permits the Commonwealth's public bodies to accept electronic filing of information. The bill stipulates that unless otherwise provided for in the Code, electronic filing in the courts remains subject to the Rules adopted by the Supreme Court of Virginia.

The first part of Senate Bill 819 is an initial attempt to remove the "paper bias" that currently exists throughout the Code of Virginia. The words "written," "writing," "writings," and "in writing" appear some 6,332 times in Virginia's Code. Amendments to each of the Code sections where these words appear is neither practical nor appropriate. Hence, Senate Bill 819 simply amends the general Code definitions found in Title 1. It is anticipated that the expansion of these definitions will facilitate electronic commerce in state government, including public procurement, pursuant to recommendations contained in the report, *A Joint Study of Methods of Electronic Contracting and Procurement Under the Virginia Public Procurement Act*, published as Senate Document No. 13 (1999).

The second part of Senate Bill 819 revisits Senate Bill 152, passed in the 1998 Session (Chapter 636 of the 1998 Acts of Assembly). In its introduced form and indeed, as it left the Senate, Senate Bill 152 looked much like the second part of Senate Bill 819. Ultimately, however,

Senate Bill 152 was ratcheted down in the House of Delegates to provide very narrow authority to select agencies to accept "electronic filing" of information. In contrast, Senate Bill 819 positions the Commonwealth to provide better, faster, and cheaper services to citizens by broadening the scope of public bodies that are authorized to accept electronic filing and removing the prohibition on electronic procurements. To address specific concerns about the courts raised in the House of Delegates in reference to Senate Bill 152, Senate Bill 819 stipulates that unless otherwise provided for in the Code, electronic filing in the courts remains subject to the Rules adopted by the Supreme Court of Virginia.

Passed, Chapter 145 of the 1999 Acts of Assembly.

YEAR 2000

- **House Bill 1662 (Delegate Landes)**

Virginia Public Procurement Act; emergency procurements. Deems procurements of goods and services to remediate computers, software programs, databases, networks, information systems, firmware, or any other devices which are not compliant with the "Year 2000" date change as "emergency procurements." The purpose of the bill is to assist the efforts of state agencies and localities to find and retain vendors to fix their Year 2000 problems forthwith. The bill contains several technical amendments and an emergency clause and expires January 1, 2001. JCOTS has been studying the Year 2000 problem for the past two years. During the 1998-1999 study year, testimony from representatives of Virginia's Century Date Change Initiative Project Office and local governments indicated that Year 2000 remediation services grow increasingly scarce as the fixed deadline for the new millenium approaches. Thus, as new needs for remediation services are identified in 1999, time—or rather, the lack thereof—becomes the biggest factor in whether or not that information system becomes Year 2000 compliant. The one or two weeks that this bill might save the state or a locality in procuring the necessary remediation services are critical.

This problem is particularly acute for localities. After a competitive procurement process in 1997, the Council on Information Management signed a multi-vendor contract with about a dozen vendors to provide Year 2000 remediation services to state government. Localities cannot buy services off that multi-vendor contract and thus, have no ready-access to remediation services. Because it is unknown whether the vendors on the 1997 contract will be able to supply all the necessary remediation services to state government agencies, the legislation is equally important to state agencies' ability to save critical time as the demand for Year 2000 remediation services begins to quickly outpace supply in 1999.

Passed, as amended, Chapter 178 of the 1999 Acts of Assembly.

- **House Bill 1663 (Delegate May)/Senate Bill 1013 (Senator Howell)**

Year 2000 assessment privilege. Creates a privilege for "documents" created during "Year 2000 assessments" conducted during the period January 1, 1996, to January 1, 2002, as those terms are defined in the bill. The purpose of these identical bills is to encourage people

and businesses to conduct assessments of their Year 2000 readiness and take timely and adequate measures to solve Year 2000 problems without fear that such documents will later be used against them in litigation. Documents prepared independently of a Year 2000 assessment are not covered by the privilege. This legislation was requested by Virginia Power.

House Bill 1663: Passed, as amended, Chapter 17 of the 1999 Acts of Assembly.
Senate Bill 1013: Passed by for the day in the Senate Committee for Courts of Justice at the request of the patron.

- **House Bill 1669 (Delegate Almand)**

Localities; immunity for certain computer failures. Provides that tort actions may not be brought against the Commonwealth's counties, cities, towns, or other political subdivisions, or employees or officers thereof based upon the failure of a computer, software program, database, network, information system, firmware, or other device to interpret, produce, calculate, generate, or account for a date which is compatible with the "Year 2000" date change. Acts or omissions constituting gross negligence or willful misconduct are excluded from the bill's coverage.

In the 1998 Session, the General Assembly passed House Bill 277 (Chapter 820 of the 1998 Acts of Assembly). The bill amended the Virginia Tort Claims Act (which only applies to the Commonwealth) and provided that civil actions may not be brought against the Commonwealth or its agencies based upon the failure of a computer, software program, database, network, information system, firmware, or other device to interpret, produce, calculate, generate or account for a date which is compatible with the "Year 2000" date change. House Bill 1669 is meant to extend similar immunity protections to Virginia's counties, cities, and towns.

Passed, as amended, Chapter 978 of the 1999 Acts of Assembly.

- **House Bill 1671 (Delegate Nixon)**

Voluntary disclosure and free exchange of "Year 2000" readiness information. Provides immunity from liability for tort damages to any person for injury resulting from disclosing information, in good faith, about "the Year 2000 problem," or "a Year 2000 failure," affecting computer systems and programs. The bill would not, however, limit liability for those persons who disclose Year 2000 information for profit or which is material and false, inaccurate, or misleading, as specified; nor would it affect any other remedy available. The bill contains an emergency clause.

This bill was requested by the Northern Virginia Technology Council (http://www.nvtc.org). The bill provides a "safe harbor" from lawsuits filed in Virginia's state courts for those persons who voluntarily disclose and freely exchange Year 2000 information. The bill applies only to tort actions; actions for breach of contract are not part of House Bill 1671 and would be covered under existing statutes or common law claims.

Passed, as amended, Chapter 859 of the 1999 Acts of Assembly.

House Bill 2153 (Delegate Scott)

New Year's Day 2000. Provides that state offices shall be closed on Monday, January 3, 2000, to commemorate Virginia's legal holiday of New Year's Day. Since January 1, 2000, falls on a Saturday, the current statute provides that state offices would be closed on Friday, December 31, 1999. By moving the legal holiday to Monday, January 3, 2000, this bill provides a three-day weekend almost completely within the year 2000 to permit state agencies to deal with any computer glitches which may arise as a result of the century date change, without disrupting services to the public.

The legislation helps to avoid the situation of state employees showing up for work on Monday, January 3, 2000, and not having the ability to immediately access the computers and computer systems that they rely upon to do their jobs and serve Virginia's citizens. This is particularly important for those employees who staff customer service windows, such as those found at statewide offices of the Department of Motor Vehicles. Closing state offices for public business on Monday, January 3, will give information systems employees an opportunity to check those computers and computer systems to insure that services to the public will continue on Tuesday, January 4, 2000.

Passed, Chapter 206 of the 1999 Acts of Assembly.

- **House Joint Resolution 505 (Delegate Baskerville)**

Year 2000 planning; sense of the General Assembly of Virginia. Expresses the sense of the General Assembly that communities across the Commonwealth be supported in their efforts to become "Year 2000 compliant" and be encouraged, as part of their contingency planning for the century date change, to prepare to provide emergency and public safety services in the time before, during, and after January 1, 2000.

The principal objective of House Joint Resolution 505 is encouraging communities across Virginia to continue their efforts to become Year 2000 compliant and to provide for emergency and public safety services as part of their contingency planning. The resolution also discusses the role of the Governor as Director of Emergency Services, and encourages the Governor to use those powers, as necessary, to assist communities' efforts. House Joint Resolution 505 is particularly important to the City of Richmond, the capital city and the seat of Virginia's state government, as the City prepares for the convening of the 2000 Session of the General Assembly on Wednesday, January 12, 2000, just 11 days after the new millenium begins.

Agreed to by the General Assembly.

- **House Joint Resolution 741 (Delegate Dudley)**

Year 2000; sense of the General Assembly of Virginia. Expresses the sense of the General Assembly that state agencies and institutions avoid certain dates for the implementation of new programs or procedures as they prepare for the Year 2000. Dates that may be affected by "the millenium bug" include April 1, 1999; April 9, 1999; July 1, 1999; September 9, 1999; October

1, 1999; December 31, 1999; January 1, 2000; February 29, 2000; March 1, 2000; December 31, 2000; and January 1, 2001.

House Joint Resolution 741 is an attempt to recognize that the "millenium bug" may affect computers on a number of different dates besides January 1, 2000. The purpose of resolution is to call attention to that fact and impress upon state agencies and institutions that while it is practically impossible to avoid every date listed in the resolution, caution should be exercised with regard to implementing new programs or procedures in the upcoming year on or around the dates listed in the resolution.

Agreed to, as amended, by the General Assembly.

NOT INTRODUCED

Authority to collect certain benefits erroneously received. Authorizes the Attorney General and local government attorneys to conduct investigations and institute civil proceedings against any person who receives and fails to immediately return a benefit, conferred by or on behalf of the Commonwealth or the locality, which the person is not legally entitled to as a result of a "Year 2000" computer problem or failure.

This bill would authorize the Attorney General and local government attorneys to conduct investigations and institute proceedings in cases where an overpayment is erroneously made because of a Year 2000 computer glitch. The measure requires neither investigation nor collection; decisions about whether to investigate and whether to pursue collection are left to the discretion of the Attorney General and local government attorneys. The purpose of the bill is to ensure that such authority does exist and that, where appropriate, such authority can be exercised.

BUDGET AMENDMENTS

CRIMINAL JUSTICE/GEOGRAPHIC INFORMATION SYSTEMS

- $310,000 to develop a two-year demonstration project in the Regional Crime Analysis Program (ReCAP), currently administered by the Department of Systems Engineering at the University of Virginia, that provides crime analysis services to at least one additional urban and one additional rural jurisdiction.

ECONOMIC DEVELOPMENT AND WORKFORCE TRAINING

- $10 million in additional funds for Regional Competitiveness Act Grants administered by the Department of Housing and Community Development. This amendment would double the current funding for the grant program.

- $5 million in additional funds and an increase in the maximum employment level for worker retraining programs administered by the Department of Business Assistance, with a language amendment which relaxes current eligibility requirements for

participation in DBA's training and retraining programs, which are set administratively by the Secretary of Commerce and Trade. (Current requirements are that a company must make a $1 million capital investment or create 25 new jobs within a one-year period.)

- $2.5 million to fund the three Institutes of Excellence, administered by the Virginia Community College System, that were designated in the 1998 Session but not funded.

- $750,000 to fund positions to staff the four Workforce Development Centers, administered by the Virginia Community College System, that were established and funded in the 1998 Session.

- $1 million in additional funding for the Virginia Technology Growth Fund administered by the Center for Innovative Technology.

- $1 million to fund the three Technology Innovation Centers, administered by the Center for Innovative Technology, initiated in 1997-1998. One Center is fully funded; one is partially funded; and one is not funded.

ELECTRONIC CONTRACTING AND PROCUREMENT

- $300,000 to develop a demonstration project within the Department of General Services, in consultation with the Secretary of Technology, to implement the recommendations made by the Council on Information Management in the report, *A Joint Study of Methods of Electronic Contracting and Procurement Under the Virginia Public Procurement Act*, published as Senate Document No. 13 (1999) pursuant to Senate Joint Resolution No. 36 (1998).

PUBLIC LIBRARIES AND SCHOOLS

- $5.3 million and an increase in MELs to The Library of Virginia to implement the first phase of recommendations in The Library's report, *InfoPowering the Commonwealth: A Strategic Technology Plan for Public Libraries.*

- Language amendment to permit K-12 public schools to use some technology funds for the purchase, installation, and maintenance of filtering software if they so choose.

YEAR 2000

- $150,000 to fund an in-state, toll-free telephone number for the Century Date Change Initiative Project Office to assist local governments.

TOTAL OF ALL JCOTS BUDGET REQUESTS: $26,310,000

Appendix 3.
Staff Report on Internet Access
(adapted from the original report submitted on September 4, 1998)

I. Introduction

The purpose of this research memorandum is to assist Advisory Committee One's study of: 1) Internet access in Virginia's public schools and libraries; 2) whether minors' access to inappropriate materials and information on the Internet should be restricted; and 3) if restrictions should be placed on minors' access, who should do it and how.

During the 1998 Regular Session, the Virginia General Assembly considered two bills restricting access to the Internet. House Bill 348 would have restricted Internet access in public libraries and House Bill 1317 would have restricted access in public schools. A third bill, House Bill 1043 would have created the Virginia Information Access Intranet for use in public schools and libraries. House Bills 1043 and 1317 were carried over in the House Committee on Science and Technology; House Bill 348 was carried over in the House Committee on Courts of Justice. JCOTS was asked to study the bills during the 1998 interim. At its meeting on May 13, 1998, JCOTS adopted its 1998-1999 workplan, which created Advisory Committee One and the charge thereto.

This research memorandum will consider three questions that arise in any consideration of restricting Internet access in Virginia's public schools and libraries:

1. Would the proposed restriction violate the U.S. Constitution?
2. How would pending federal legislation affect state action on restricting Internet access to minors?
3. Who should make software filtering decisions—the state, acting through the General Assembly or the Governor; local governments, acting through local school and library boards; or some combination thereof?

Recently, the Library Development and Networking Division of The Library of Virginia surveyed Virginia's public libraries regarding access to the Internet. (See Attachment 1.) As of July 24, 1998, 58 of Virginia's public libraries offer public Internet access. Of the 58 libraries that offer Internet access, 42 libraries offer unrestricted access only; 8 libraries offer both unrestricted and restricted access; and 8 libraries offer restricted access only. Of those offering restricted access, seven libraries use filtering software. Of the 58 libraries that offer public Internet access, 53 libraries use Acceptable Use Policies (AUP).[1]

In November 1997, the Virginia Department of Education (VDOE) sent a questionnaire to the technology directors of 132 public school divisions. Of the 47 divisions that responded, 40

[1] An AUP is a policy that a prospective computer user must agree to abide by before using a computer. Typically, AUPs are used in schools, libraries, government agencies, and private companies.

divisions had AUP's and 28 divisions filtered access to the Internet. VDOE conducted a follow-up survey in November 1998. (See attachment 2.)

II. Filtering Software

Filtering, or blocking, software, usually works in conjunction with a web browser. When a user requests a webpage by entering its universal resource locator (URL),[2] a web browser, such as Netscape Navigator or Microsoft Internet Explorer, locates the webpage. Then, the filtering software checks the content on the basis of word, site, or rating. If a preset condition is met, the filtering software prevents the browser from loading the webpage. Thus, the access to the webpage is blocked. These blocked webpages and sites are often called Cyber-Nots.[3]

Filtering software can determine which webpages should be blocked by any of three methods: word lists, site lists, and content ratings. A particular program can incorporate one, two, or all three of these methods.

A. Methods of Filtering

1. Word List

The word list, perhaps the oldest method, itemizes objectionable words. When this filtering software was first created, the programs blocked webpages that contained the words on the list. A popular example is the word "sex." If the word list contains the word "sex," then the filtering software will prevent the web browser from loading any webpage that contains that word. These blocked pages could include sex-related materials that are protected under the First Amendment, such as webpages that contain the words "sexually transmitted disease," "sexual abuse," "sex discrimination," and "safe sex."

Most programs are not this simplistic anymore. Instead of using single words, the newer programs, such as Cyber Sitter[4], use phrases that often appear in pornographic materials. Thus, a webpage that contains the word "sex" may not be blocked, but the filtering software may block a webpage that contains the phrase "sex with a dog."

A word list also functions with the search engines. Search engines are websites that are maintained by private companies, such as Alta Vista, Infoseek, Lycos, Magellan, Webcrawler and Yahoo. A search engine allows a user to search the Internet. A user types in words or phrases to request a search. Then, a search engine will search the Internet and give the user a list of webpages that contain the words the user has submitted. If filtering software is being used, it

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[2] A URL is sometimes referred to as a "website" or an "Internet address." Every webpage on the Internet has a URL. A URL usually takes the form of http://www.website.com.

[3] The words "CyberNOT" and "CyberYES" have been coined by Cyber Patrol. However, the words "Cyber-Not" and "Cyber-Yes" have become popular to indicate an inappropriate website and an appropriate website, respectively.

[4] Cyber Sitter at http://www.solidoak.com/cysitter.htm.

will check the words that the user is attempting to search. If the search word is on the word list, the program will prevent the user from running the search. Thus, if the word "sex" is on the list, a user cannot run a search on "sex."

2. Site List

A newer method uses site lists. Instead of a word list, the filtering software contains a list of URLs that the program will block. The software developers hire people to check the Internet to find Internet sites that the program will block. Then, the URLs of these sites are added to the list. Usually, companies have preset categories of websites that their programs will block. For example, Surf Watch blocks access to webpages that contain sexually explicit materials; materials on drugs, alcohol, and gambling; violence; and hate speech. Each category has several subcategories. For example, under sexually explicit materials, Surf Watch blocks out materials that have (i) sexually oriented or erotic full or partial nudity; (ii) depictions or images of sexual acts; (iii) erotic stories; (iv) sexually exploitive or sexually violent text or graphics; (v) bondage, fetishes, or genital piercing; (vi) adult products; and (vii) adult services.[5] These Cyber-Not site lists are constantly updated, some as frequently as daily.

The primary difference between the site list and the word list is the software developer's degree of involvement in determining which sites will be blocked. With a word list, a software developer creates a list of the words to be blocked; thus, the software developer does not necessarily decide whether a specific website will be blocked or not. The software developer's involvement ends at the creation of the list of words that he or she determines to be objectionable. On the other hand, with a site list, a software developer actually visits the websites that are potentially inappropriate. After reviewing the potentially inappropriate site, the software developer decides whether the site should be blocked or not. For example, filtering software that only functions with a word list may block out the Women's Health Institute's website[6] because it contains descriptions and diagrams of sexual organs. However, a software developer reviewing this website may recognize that the descriptions and diagrams are medical and educational in nature and decide that the site should not be blocked.

This high level of human involvement may be a disadvantage for two reasons. First, thousands of new adult webpages appear every day. Even though the software developers hire people to seek out these sites, identifying all of the pornographic pages may not be possible. Second, because a software developer decides whether a specific website will be blocked or not, the software developer is more personally involved than if he were simply creating a word list.

Without human involvement, however, "legitimate" businesses may be subjected to Cyber-Not lists. For example, filtering software often blocks access to websites of women's clothing businesses which contain online catalogs of their products and services. Online catalogs of women's clothing, such as swimsuits and lingerie, are often filtered because these catalogs

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[5] *Surf Watch Core Category Criteria, May 1, 1998*, Surf Watch at http://www1.surfwatch.com/filteringcriteria/core.

[6] Women's Health Institute at http://www.womens-health.com.

contain pictures of fashion models wearing swimsuits and lingerie. Thus, these online catalogs are often categorized as sexually explicit although some of them are not much different from the printed catalogs delivered to homes in the U.S. mail.[7]

One way filtering software has confronted these problems is through lists created and maintained by the user. If an arguably objectionable site is not on the Cyber-Not list, a user can create his or her own Cyber-Not list and block that site. Conversely, if a site is blocked but should not be, a user can delete that site from the Cyber-Not list or create a Cyber-Yes or Cyber-Do list. There are two ways a Cyber-Yes list can work. First, if a URL is on both the Cyber-Not list and the Cyber-Yes list, the filtering software will override what is on the Cyber-Not list and grant access. Alternatively, a user can configure the filtering software so that only the sites that are on the Cyber-Yes list will be accessible.

3. Rating System

Websites can also be filtered by using a rating system. In August 1995, "leading members of the Internet community came together" at the Massachusetts Institute of Technology to develop a cross-industry content rating system for the Internet.[8] The system they created is the Platform for Internet Content Selection (PICS).[9]

PICS can be thought of as a fourth Internet programming language. The other three programming languages currently being used on the World Wide Web are hypertext mark-up language (HTML), Java, and Central Gateway Interface (CGI). It is possible for all four Internet programming languages to be used on a single website. For example, a web browser reads a document created in HTML and displays the basic contents of the webpage, which may include text, pictures, video images, and sound clips. As the browser is loading these materials, a message predesignated by the programmer in Java may scroll across the status bar. By using Java, the webpage may also contain menu items where the text or color changes when the user places the mouse pointer over them. Functions typically performed using CGI include searching within the website or verifying credit card information for an electronic purchase. A webpage may also contain a coded label written in PICS to indicate that the webpage is rated as inappropriate for minors. If the web browser or filtering software was configured to block out any websites that contained such labels, the web browser will not load the webpage.

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[7] Blocking out clothing catalogs on the Internet may be analogous to refusing to deliver mail. Under *Lamont v. Postmaster General*, 381 U.S. 301 (1943), the post office is prohibited from refusing to deliver mail based on its subject matter.

[8] *Statement on the Intent and Use of PICS: Using PICS Well*, Platform for Internet Content Selection at http://www.w3.org/TR/NOTE-PICS-Statement.

[9] Platform for Internet Content Selection at http://www.w3c.org/PICS.

The PICS label works in conjunction with a rating service and its rating system.[10] "A rating service is an individual, group, organization, or company that provides content labels for information on the Internet."[11] Some examples of rating services are Safe Surf,[12] Recreational Software Advisory Committee (RSAC),[13] Internet Voluntary Self-Rating (IVSR),[14] Voluntary Content Rating System (VCR),[15] and Kid Code.[16] These rating services create their own rating systems. Typically, the rating systems rate webpages by the age groups of the potential audience, similar to movie ratings, or by content subject matter categories similar to those used by the Cyber-Not site lists.

A webpage content provider can obtain a PICS rating label by registering with a rating service. When a content provider registers with a rating service, the content provider answers a questionnaire about the website. The rating service determines the proper rating according to the service's rating system. The rating service issues a label in PICS format and copies the label to the webpage. Before a web browser loads the webpage, filtering software, such as Library Safe[17] or Cyber Patrol, reads the PICS label. For example, if the filtering software was preconfigured to block out any websites that contained a PICS label indicating a rating of "nudity," the filtering software will prevent the web browser from loading the webpages that contain such a PICS label.[18]

This method of filtering is gaining popularity. Creators of web browsers, such as Netscape and Microsoft, have agreed to incorporate PICS technology; computer manufacturers, such as IBM, Compaq, and Packard Bell, have agreed to bundle filtering software with the new computers; and Internet content providers led by Internet Content Coalition[19] have agreed to voluntarily rate their contents.[20] Nonetheless, content rating is still the least used method of filtering, principally

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[10] *Rating Services and Rating Systems (and Their Machine Readable Descriptions): W3C Recommendation 31-October-96*, Platform for Internet Content Selection at http://www.w3c.org/TR/REC-PICS-services-961031.html.

[11] *Id.*

[12] Safe Surf at http://www.safesurf.com.

[13] Recreational Software Advisory Committee at http://www.rsac.org/homepage.asp.

[14] Internet Voluntary Self Rating at http://www.crl.com/~riche/IVSR/proposal.html.

[15] Voluntary Content Rating System at http://www.solidoak.com/vcr.htm.

[16] Kid Code at http://www.solidoak.com/vcr.htm.

[17] Library Safe at http://www.librarysafe.com.

[18] For examples of PICS label, see Appendices A through C of *Rating Services and Rating Systems (and Their Machine Readable Descriptions): W3C Recommendation 31-October-96*, Platform for Internet Content Selection at http://www.w3c.org/TR/REC-PICS-services-961031.html.

[19] The Internet Content Coalition is an association of original content providers. Its membership includes Time-Warner, Adobe, Sony, CBS, MSNBC, and Playboy. The annual membership fees range from $1500 to $10,000 depending on the size of the company. See http://www.netcontent.org.

[20] *Id.*

because content rating is done voluntarily. An Internet content provider does not have to rate his website if he does not desire to do so. Indeed, most websites are not rated.

B. Client versus Server

Filtering software can function at the client side or the server side. A client is the personal computer that a person uses to get on the Internet. A server, or a network server, is the shared computer to which the individual clients connect to access to the Internet. For example, an America Online (AOL) member may have a personal computer at home that he uses to access the Internet. The member's personal computer is the client. To access the Internet, the client dials an AOL phone number. A server answers the call and connects the client to the Internet. Filtering software can function either on the member's home computer or AOL's server.

A client-side software functions individually without affecting the server or any other clients that are attached to the server. Parents using filtering software at home would ideally use a client-side software. Also, a client-side software may be more preferable than the server-side software in an office or a library where only a few computers have access to the Internet or only a few computers need to be filtered. In these cases, filtering software is loaded onto each computer and each computer functions separately. Thus, if there is an update to the filtering software, such as an updated site list, an administrator has to update all of the individual computers.

A server-side software is loaded on the server. When a home user dials up to an Internet service provider (ISP), such as AOL, Prodigy, Microsoft Network, or an independent local ISP, the home user connects to a server. Some ISPs offer filtered access for their customers. For example, a customer can have a user name "adult" which has unrestricted access and also a user name "child" for restricted access.

Another server-side application is on a local area network (LAN). In a LAN setting, which is commonly found in schools, companies, and libraries, individual personal computers, or clients, are physically connected to a server with network cables. Whenever a URL is requested from any of the individual computers that are connected to the server, the filtering software loaded on the server checks whether the site should be blocked or not. Thus, all of the client computers share one filtering software and an administrator need only monitor and maintain the filtering software that resides on the server.

III. Constitutional Framework

As the Internet becomes more and more popular, the number of legal disputes that arise from the Internet is also growing. The subject matter of these cases is vast. For example, *CompuServe, Inc. v. Patterson*[21] dealt with federal jurisdiction, *Playboy Enterprises, Inc. v. Russ Hardenburgh, Inc.*[22] dealt with copyrights, and *United States v. Alkhabaz*[23] dealt with threats.

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[21] 89 F.3d 1257 (6th Cir. 1996), available at http://laws.findlaw.com/6th/960228p.html.
[22] 982 F. Supp. 503 (N.D. Ohio 1997).

Three recent cases are pertinent to the issue of restricting access to the Internet. In *Reno v. American Civil Liberties Union*,[24] the United States Supreme Court held that sections 223(a)(1)(B)(ii) and 223(d) of the Communications Decency Act of 1996 (CDA),[25] which prohibited the transmission of sexually explicit and patently offensive materials over the Internet, were unconstitutional. In *Mainstream Loudoun v. Board of Trustees of the Loudoun County Library*, [26] the United States District Court for the Eastern District of Virginia held that the library board's policy to filter all of its Internet-accessible computers was unconstitutional. In *Urofsky v. Allen*,[27] the same district court held that the state law that prohibited state employees from accessing sexually explicit materials was unconstitutional. On February 10, 1999, the United States Court of Appeals for the Fourth Circuit reversed the district court and upheld the statute.[28]

A. Constitutional Standards

Whenever a government acts to regulate a constitutionally protected right, the government must show that (i) it has a certain level of interest in regulating the right and (ii) that there is a certain level of relationship between the regulation and the interest. This "constitutional scrutiny" has three levels: strict, intermediate, and minimum. Strict scrutiny requires a compelling government interest and a narrowly tailored regulation to achieve only that interest. Intermediate scrutiny requires a legitimate government interest and a reasonable regulation to achieve that interest. Minimum scrutiny requires some government interest and some relationship between the regulation and the interest. First Amendment cases usually call for strict scrutiny. Accordingly, the *Reno* Court held that the Internet will be afforded the customary First Amendment protection of strict scrutiny.[29] Thus, in *Mainstream Loudoun*, where the local library board installed filtering software on all of its Internet-accessible computers, the court held the government, the library board, to strict scrutiny.[30] Accordingly, if House Bill 348 was challenged on constitutional grounds, it would likely be held to strict scrutiny.

It is not certain to what level of scrutiny House Bill 1317 would be held. In *Mainstream Loudoun*, the court held that blocking certain Internet sites is analogous to removing books;

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[23] 104 F.3d 1492 (6th Cir. 1997), available at http://laws.findlaw.com/6th/970036p.html.
[24] 117 S. Ct. 2329 (1997) (hereinafter cited as *Reno*), available at http://laws.findlaw.com/US/000/96-511.html.
[25] Communications Decency Act of 1996, Pub. L. No. 104-104, 110 Stat. 133 (1996) (codified as amended throughout Title 47 of the United States Code) (1998).
[26] 2 F.Supp.2d 783 (E.D. Va. 1998) (hereinafter cited as *Mainstream Loudoun*), available at http://lw.bna.com/lw/19980421/972049.htm or http://www.techlawjournal.com/courts/loudoun/80407mem.htm.
[27] 995 F. Supp. 634 (E.D. Va. 1998).
[28] CA-97-701-A, U.S. District Court for the Eastern District Court of Virginia, February 10, 1999, available at http://laws.findlaw.com/4th/981481P.htm.
[29] *Reno* at 2343-44.
[30] *Mainstream Loudoun* at 796.

therefore, *Board of Education v. Pico*[31] was a governing authority.[32] In *Pico*, which was decided by the United States Supreme Court in 1982, the Board of Education ordered removal of certain objectionable books from the school library. The Court was sharply divided over this matter. Whereas the plurality[33] seemed to be advocating intermediate scrutiny[34] or strict scrutiny,[35] the dissent[36] advocated that a school board's removal of objectionable books shall not be subjected to any constitutional scrutiny at all.[37] From the *Pico* Court, only three Justices remain on the bench today: Justice Stevens of the plurality and Chief Justice Rehnquist and Justice O'Connor of the dissent. Thus, should *Pico* be revisited by the Supreme Court, it is not clear how the Court would decide. Nonetheless, all of the Justices from *Pico* seem to agree that the government, in its role as an educator (the school board), should be afforded some discretion in removing books if the books were removed for an educational purpose.

The purpose of House Bill 1317 is "to ensure that the Commonwealth's public elementary and secondary schools furnish educational and research environments conducive to the health, safety and welfare of the children they serve"[38] Therefore, House Bill 1317 seems to pass *Pico*'s requirement of educational purpose. However, there is a potential problem under the *Pico* analysis. House Bill 1317 came from the General Assembly, not from a local school board. Thus, the courts may decline to afford to the General Assembly the same kind of educational discretion that they may afford to a local school board. In such case, House Bill 1317 may be analyzed under strict scrutiny.

Superficially, House Bill 348 and House Bill 1317 seem to pass the strict scrutiny test. Both bills are intended to protect minors, and a government has "a compelling interest in protecting the physical and psychological well-being of minors which extend[s] to shielding them from indecent messages that are not obscene by adult standards."[39] Furthermore, applications of the bills mainly focus on minors. Under House Bill 1317, students in elementary and secondary schools are required to obtain permission from their parents before using the school computers to access the Internet; and before allowing the students to access the Internet by using school

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[31] 457 U.S. 853, 102 S. Ct. 2799 (1982) (hereinafter cited as *Pico*).

[32] *Mainstream Loudoun* at 794.

[33] The plurality was comprised of Justices Brennan, Marshall, and Stevens. Justice Blackmun joined in part of the opinion and concurred in the judgment; Justice White concurred in the judgment only. See *Pico*.

[34] The plurality held that removing books was permissible if the decision was based on "educational suitability," a legitimate reason, but not permissible if the decision was based on the Board's dislike for the ideas contained in the book, an illegitimate reason. See *id.* 457 U.S. at 871-72, 102 S. Ct. at 2810.

[35] "As I view it, this is a narrow principle." *Id.*, 457 U.S. at 880, 102 S. Ct. at 2815 (Blackmun, J., concurring in part and concurring in the judgment).

[36] Chief Justice Burger and Justices Powell, Rehnquist, and O'Connor dissented.

[37] *Pico*, 457 U.S. at 885-86, 102 S. Ct. at 2817 (Burger, C.J., dissenting) (stating that the plurality's holding creates a new right under the First Amendment to receive information).

[38] House Bill 1317, § 22.1-212.5.

[39] *Reno* at 2343, 2346.

computers, the schools are required to take measures so that the access to the Internet from the school computers will be restricted. Under House Bill 348, juveniles can only use computers that have restricted access to the Internet, unless they have permission from their parents to use computers with unrestricted access. Thus, only minors' access to the Internet will be restricted, while adults would still enjoy unrestricted access to the Internet. Therefore, the provisions seem narrowly tailored to achieve the compelling government interest of protecting minors. However, a closer examination of the bills raises additional constitutional concerns for both minors and adults.

B. Minors

Recent court holdings suggest that as long as restriction of Internet access is limited to minors, the policies will pass constitutional scrutiny. In *Reno*, the Court held that even though the government had a compelling interest to protect minors, the government was not allowed to reduce adult speech to only what was fit for minors.[40] This holding suggests that as long as adult speech is not affected, the government can restrict minors' rights to free speech to what is fit for minors. Accordingly, the *Mainstream Loudoun* court's holding that the library's policy to restrict Internet access from all of the library's computers, regardless of whether the computers were used by adults or minors, violated the First Amendment[41] left the possibility that if only the minor's access to the Internet was restricted, the policy would not violate the Constitution. If this is a correct interpretation of *Reno* and *Mainstream Loudoun*, House Bill 348 and House Bill 1317 would likely pass constitutional challenges. However, this interpretation is not impeccable because in both cases, the plaintiffs were adults. Adults claimed that their constitutional rights were violated; the rights of minors were never considered. The courts have not yet encountered a case where a minor claimed that the restriction of Internet access violates the minor's constitutional rights.

C. Adults

As it applies to adults, the criminal provision is the main concern in determining the constitutionality of House Bill 348. Section 42.1-45.4 of House Bill 348 criminalizes accessing, displaying, and reproducing obscenity, child pornography, and materials harmful to minors. The criminalization may be an added unnecessary burden on the First Amendment, especially due to § 42.1-45.6's indemnification of library staff.

In striking down the CDA, the United States Supreme Court held that "[t]he severity of criminal sanctions may well cause speakers to remain silent rather than communicate even arguably unlawful words, ideas, and images."[42] The Court was concerned that the mere threat of criminal prosecution would deter people from engaging in speech that may be mistaken for unlawful speech. Under House Bill 348, this concern is multiplied by the blanket indemnification of the library staff. Section 42.1-45.6 indemnifies the library staff for reporting suspected violations if

[40] *Reno* at 2346.

[41] See *Mainstream Loudoun.*

[42] *Reno* at 2345.

the library staff member had a "good faith" and a "reasonable" belief that a violation occurred. This section enables the library staff to enforce the law without any liabilities. Accordingly, this section may give the library staff the unquestionable power to prevent a library patron from accessing any sexually explicit materials, lawful or unlawful, because a library staff member can easily have a reasonable, good faith belief that sexually explicit material is an obscenity or is child pornography.

Under *Miller v. California*, obscenity is material that (i) an average person, applying contemporary community standards, would find appealing to prurient interest; (ii) depicts or describes, in a patently offensive way, sexual conduct specifically defined by the applicable state law; and (iii) lacks serious literary, artistic, political, or scientific value.[43] Virginia's statutory definition is similar to the *Miller* test. Virginia law omits the provision about community standards but adds a provision to define prurient interest. Under Virginia law, prurient interest in sex is something that is "a shameful or morbid interest" in sexual activities and that "goes substantially beyond customary limits of candor in description or representation of such matters."[44] The difficulties in applying this provision are identifying what depictions appeal to a shameful or morbid interest in sex, and what depictions go substantially beyond customary limits of candor. If sexually explicit material does not appeal to a shameful or morbid interest in sex and does not go substantially beyond customary limits of candor, it is not an obscenity; it is not illegal; and it is protected by the First Amendment. However, a librarian that happens to walk by and sees a picture of a couple engaging in sex may, in good faith and under a reasonable belief that the picture is obscene, subject the library patron to a police investigation. This threat of police investigation may be an undue burden on the exercise of the First Amendment.

The same is true for child pornography. Simply put, child pornography is a depiction of a minor engaging in sexually explicit conduct. Receiving child pornography in interstate or foreign commerce by use of computers is illegal under federal law,[45] and mere possession of child pornography is illegal under Virginia law.[46] The problem a librarian might encounter when enforcing § 42.1-45.4 of House Bill 348 is that, often, determining whether the subject of the pornographic material is an adult or a minor is not possible.

Nonetheless, the law does provide some additional guidance. Section 18.2-374.1 of the Code of Virginia states that "a person who is depicted as or presents the appearance of being less than eighteen years of age in sexually explicit visual material is prima facie presumed to be less than eighteen years of age." Thus, if a person distributes sexually explicit material as a depiction of a minor engaging in a sexual activity, then it does not matter whether the subject of the such material was actually under 18 years of age or not. Under Virginia law, the subject will be presumed to have been a minor. The problem arises because, to presume that a sexually explicit material that depicts a young subject is child pornography, a question of intent must be answered. Unless the depiction clearly indicates that the material was intended to be child pornography, a

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[43] *Miller v. California*, 413 U.S. 15, 24, 93 S. Ct. 2607, 2615 (1973) (hereinafter cited as *Miller*).
[44] § 18.2-372 of the Code of Virginia.
[45] 18 U.S.C.S. § 2252(a)(2) (Law Co-op. 1991 & Cum. Supp. 1998).
[46] § 18.2-374.1:1 of the Code of Virginia.

library staff member walking by a computer terminal would not know whether the sexually explicit material that has a young-looking subject who may or may not be 18 years of age was meant to depict child pornography or adult pornography.

Under federal law, the Child Pornography Prevention Act of 1996[47] changed the definition of child pornography to include visual depiction that "appears to be of a minor engaging in sexually explicit conduct."[48] Under this provision, if a library staff, in good faith and reasonable belief, thought that a sexually explicit display was that of a minor, then the depiction would be child pornography per se. However, the fate of this provision is yet to be determined.

Two separate challenges to this provision have been filed in the two opposite ends of the country. In *The Free Speech Coalition v. Reno*, the United States District Court for the Northern District of California has upheld the statute.[49] However, in *United States v. Hilton*, the United States District Court for the District of Maine held that the provision was unconstitutionally vague.[50] Each case has been appealed to its respective circuit court of appeals, the Ninth Circuit and the First Circuit.

Notwithstanding the status of the relevant law, House Bill 348's provision regarding a library staff's enforcement may be of concern for another reason. Section 42.1-45.6 provides that the local library boards shall develop and implement guidelines for enforcing § 42.1-45.4. Under *Miller*, "contemporary community standards" should be used in determining whether material is obscene or not.[51] Used in this context, what would constitute a "community" is not clear. The Court merely held that the lower court did not err in charging the jury to consider state standards instead of national standards.[52] However, when the Virginia Supreme Court examined whether Virginia's definition of obscenity is valid under *Miller*, the court observed that in Virginia, "juries have traditionally relied on local rather than statewide community standards," and concluded that "local community standards may be applied."[53] Thus, in Virginia, creating local guidelines for identifying obscenity seem proper. Nevertheless, this application of local community standards does not extend to child pornography. For child pornography, there is a federal standard[54] and a state standard,[55] but no allowance for a local standard.

Furthermore, § 42.1-45.4 of House Bill 348 is a criminal statute creating a felony. By requiring the local library boards to develop guidelines for enforcing this section, the General Assembly is

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[47] Pub. L. 104-208, 110 Stat. 3009-26.
[48] 18 U.S.C.S. § 2256 (Law Co-op. 1991 & Cum. Supp. 1998).
[49] 25 Media L. Rep. 2305, 1997 WL 487758 (N.D. Cal. 1997).
[50] 999 F.Supp. 131 (D. Me. 1998).
[51] *Miller*, 413 U.S. 15, 24, 93 S. Ct. 2607, 2615 (1973).
[52] *Miller*, 413 U.S. at 31-32, 93 S. Ct. at 2619.
[53] *Price v. Commonwealth of Virginia*, 214 Va. 490, 492 (1974). In 1974, Virginia's definition of obscenity appeared at § 18.1-227. The section was recodified as § 18.2-372 by the 1975 Virginia General Assembly.
[54] 18 U.S.C.S. § 2252 (Law Co-op. 1991 & Cum. Supp. 1998).
[55] § 18.2-374.1 of the Code of Virginia.

requiring the local library boards to enforce a criminal law. If the various library boards develop their own guidelines for enforcing this section, then what may be acceptable in one library may be a felony in another library. Hence, this provision may be a vague, discriminatorily enforced criminal statute. Because the United States Supreme Court has held that "this increased deterrent effect [of a criminal statute limiting the First Amendment], coupled with the risk of discriminatory enforcement of vague regulations, poses greater First Amendment concerns,"[56] a reviewing court may find this provision unconstitutional.

Thus, because of its criminal and indemnification provisions, House Bill 348 may raise additional constitutional concerns.

IV. Federal Legislation

The U.S. Constitution and the laws made pursuant to the Constitution are the "supreme law of the land."[57] State laws that contradict the federal law are generally preempted by this "Supremacy Clause." Likewise, in Virginia, the state government is superior to the local governments in that the General Assembly can grant powers to the local governments,[58] and that a local government "has only such powers as are expressly conferred upon it [by the General Assembly], or necessarily implied in furtherance of the object of its creation."[59] Nevertheless, federal, state, and local laws are not always antagonistic to each other. Instead, they can complement and supplement each other.

Several federal legislative proposals are directly related to Virginia's House Bill 348 and House Bill 1317. They can be divided into two categories, (i) regulation of content providers and (ii) regulation of access providers.

A. Regulation of Content Providers: CDA 2

In the United States Senate, Senator John McCain (R-AZ) introduced S. 1482, a revision of the Communications Decency Act (CDA) of 1996. This bill is commonly referred to as the CDA 2 or the Harmful to Minors Act. Tailored to accommodate the U.S. Supreme Court's objections in *Reno*, the CDA 2 provides that "[w]hoever in interstate or foreign commerce in or through the World Wide Web is engaged in the business of the commercial distribution of material that is harmful to minors shall restrict access to such materials by persons under 17 years of age."[60]

The CDA 2 was passed by the Senate Committee on Commerce, reported to the Senate, and incorporated into the Departments of Commerce, Justice, and State, the Judiciary, and Related

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[56] *Reno* at 2345.
[57] U.S. Constitution, Article VI, clause 2.
[58] Virginia Constitution, Article VII, § 3.
[59] *Roper and als. v. McWhorter and als.*, 77 Va. 214, 223 (1883). This doctrine is commonly referred to as the "Dillon Rule."
[60] S. 1482, 105th Cong. § 1(e)(1) (1998).

Agencies Appropriations Act, 1999.[61] The measure, which became law on October 21, 1998, is a narrower version of the CDA in that it (i) only applies to those engaged in interstate or foreign commerce and (ii) regulates commercial communication of materials that are "harmful to minors." Under the CDA 2, commercial websites that provide materials that are harmful to minors would be required to prevent minors from accessing their websites. Interactive service providers that are exempted from publisher liability under § 230 of the Telecommunications Act of 1996, telecommunications carriers, Internet service providers, and Internet information locators (i.e. search engines) are exempted from the CDA 2.

The CDA 2 provides affirmative defenses to persons who can demonstrate their good faith attempt to restrict minors' access by (i) requiring the use of a credit card, debit card, adult access code, or adult personal identification number; (ii) accepting a digital certificate that verifies age; or (iii) using any other reasonable measures that are feasible under available technology.

On October 22, 1998, the American Civil Liberties Union (ACLU) filed suit against Janet Reno in her capacity as the Attorney General of the United States in the U.S. District Court for the Eastern District of Pennsylvania, the same district that tried *Reno* in 1996. The ACLU asked the court to declare the CDA 2 unconstitutional. On November 19, 1998, the court issued a temporary restraining order (TRO) which stopped enforcement of the CDA 2 by federal prosecutors. On February 1, 1999, the day the CDA 2 was to have taken effect at midnight, U.S. District Court Judge Lowell Reed, Jr., replaced the TRO with a preliminary injunction that continues to block federal enforcement of the CDA 2 until the constitutionality of the CDA 2 is ultimately resolved.[62] The judge expressly followed *Reno* and applied the highest level of scrutiny to online speech. In granting the injunction, the court wrote that the CDA 2 unduly burdens constitutionally protected speech that is afforded the strictest scrutiny under the First Amendment.

B. Regulation of Access Providers

More directly related to House Bills 348 and 1317 was federal legislation introduced in the 105th Congress that would have required public schools and libraries to restrict access to the Internet as a condition of receiving federal aid.

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[61] S. 2260, 105th Cong. Amendment 3227 (1998), which passed the Senate on July 23, 1998. S. 2260 was then incorporated into the House version of the appropriations bill, H.R. 4276, 105th Cong. (1998), as a Senate amendment. The Conference Report on the omnibus appropriations bill, H. Rpt. 105-825, was ordered on August 31, 1998. On October 21, 1998, the President signed H.R. 4328, the omnibus appropriations bill for fiscal year 1999, P.L. 105-277. The CDA 2 was incorporated into the appropriations bill as Title XIV of H.R. 4328, §§ 1401 et seq.

[62] Memorandum No. 98-5591, U.S. District Court for the Eastern District Court of Pennsylvania, February 1, 1999.

1. The E-Rate and Restrictions on Internet Access

In 1996, the Congress amended § 254 of the Telecommunications Act[63] to declare that schools and libraries should have access to advanced telecommunications services, including Internet access. Section 254 requires telecommunications companies to provide such services to schools and libraries at a discounted rate (the Educational Rate or E-Rate). E-Rate discounts are then reimbursed to the companies through the Universal Service Fund (USF), the money for which is collected from telecommunications companies.[64] The USF is administered by the Schools and Libraries Corporation (SLC), which was created by the Federal Communications Commission (FCC).

In the House of Representatives, Representative Markey (D-Massachusetts) introduced H.R. 3442, the E-Rate Policy and Child Protection Act of 1998 (the E-Rate Policy Act). The bill would have required schools and libraries to "establish a policy with respect to access to material that is inappropriate for children."[65] The bill was assigned to the House Subcommittee on Telecommunications, Trade, and Consumer Protection.

More similar to House Bills 348 and 1317 was the Safe Schools Internet Act of 1998 (SSIA).[66] The SSIA was jointly introduced in the House and the Senate by Representative Franks (R-New Jersey) and Senator McCain (R-Arizona). While the House version of the bill was under consideration by the House Subcommittee on Telecommunications, Trade, and Consumer Protection, the Senate version of the bill was passed by the full Committee on Commerce and reported to the Senate. Along with the CDA 2, the Senate version of the SSIA was incorporated into the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 1999,[67] which passed on July 23, 1998.

The primary difference between the E-Rate Policy Act and the SSIA was that the E-Rate Policy Act required schools and libraries that receive E-Rate discounts to establish an Internet policy; the SSIA required schools and libraries that receive E-Rate discounts to actually install filtering

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[63] 47 U.S.C.S. §§ 151-614 (Law Co-op. 1991 & Cum. Supp. 1998).

[64] Long distance companies can pass the cost of the E-Rate on to their customers. On January 1, 1998, MCI of Virginia started collecting E-Rate charges as a percentage of its customers' total phone bills, which include interstate and intrastate phone calls. On May 8, 1998, the Virginia State Corporation Commission (SCC) ordered MCI to stop collecting E-Rate charges on intrastate calls. MCI appealed the order to the federal district court in Richmond. On June 16, 1998, the court enjoined the SCC's order, ruling that the SCC is preempted by the Telecommunications Act from ordering MCI to stop collecting E-Rate charges. On July 10, 1998, the SCC appealed the decision. Since then, MCI has eliminated E-Rate charges on intrastate calls, but the case is still pending on appeal. In the 105th Congress, S. 1618, sponsored by Senator Rockefeller (D-WV), would have required telephone service carriers to disclose all charges.

[65] H.R. 3442, 105th Cong. § 2 (1998).

[66] S. 1619 and H.R. 3177, 105th Cong. (1998).

[67] S. 2260, 105th Cong. Amendment 3228 (1998).

software to restrict access to the Internet by minors. Specifically, the SSIA provided that before a school or a library could receive any E-Rate assistance under 47 U.S.C. § 254, the school or the library must produce a certificate. For schools, the certificate must state that the school has "(A) selected a system for computers with Internet access to filter or block matter deemed to be inappropriate for minors and (B) installed, or will install as soon as it obtains computers with Internet access, a system to filter or block such matter."[68] Libraries must certify that "on one or more of its computers that has Internet access, it employs a system to filter or block matters deemed to be inappropriate for minors."[69]

Under the SSIA, however, schools and libraries which do not receive E-Rate discounts would not be required to filter their Internet access. In Virginia, not all schools and libraries have applied for and will be receiving E-Rate discounts. As of September 4, 1998, approximately 63 Virginia school districts, 167 Virginia schools and 54 Virginia libraries had applied for E-Rate discounts.[70]

It is not entirely clear whether the SSIA would have preempted House Bills 348 and 1317. Section (a)(4) of the SSIA provides that local school and library boards shall determine what is inappropriate for minors and thus shall be filtered. This section goes on to expressly forbid any "agency or instrumentality of the United States Government" from setting criteria for what should be filtered. The congressional intent is clear. The Congress wants the local school boards and library boards to determine what should or should not be filtered. In contrast, House Bills 348 and 1317 define what "inappropriate material" would be in Virginia. If passed, the General Assembly would adopt statewide filtering criteria for Virginia's public schools and libraries and require filtering of inappropriate materials as defined in those bills.

The very existence of the E-Rate and the USF were lightning rods for heated debate during the 105th Congress. Several congressmen argued that E-Rate charges were a tax in disguise and criticized the FCC for creating a new tax when it lacked authority to do so. Others challenged the FCC's creation of the SLC as an unconstitutional act. The E-Rate Tax Moratorium Act of 1998,[71] introduced by Representative Scarborough (R-Florida) on June 16, 1998, would have left the universal service provision, 47 U.S.C. § 254, intact. However, the bill directed the FCC to stop collecting funds from telecommunications companies and the companies to stop billing their customers for the E-Rate. The bill allowed the FCC to distribute funds that have already been collected and allowed for the possibility of collecting funds from other sources. The bill was referred to the House Subcommittee on Telecommunications, Trade, and Consumer Protection.

On July 23, 1998, Senator Burns (R-Montana) and Representative Tauzin (R-Louisiana) jointly introduced the Schools and Libraries Internet Access Act (Internet Access Act).[72] The Internet

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[68] S. 1619 and H.R. 3177, 105th Cong. § 2(a) (1998).

[69] S. 1619 and H.R. 3177, 105th Cong. § 2(a)(1)(3) (1998).

[70] The numbers are approximate counts provided by the SLC. The report is available on the SLC's website at http://www.slcfund.org/forms/downloadstate.asp.

[71] H.R. 4065, 105th Congress (1998).

[72] S. 2348 and H.R. 4324, 105th Congress (1998).

Access Act would have struck the universal service provisions of 47 U.S.C. § 254 completely, thus repealing the E-Rate. In lieu of the E-Rate under § 254, the Internet Access Act would have created the Telecommunications Technology Trust Fund under the Internal Revenue Code.[73] Furthermore, the Internet Access Act would have created new provisions under the National Telecommunications and Information Administration Organization Act[74] to make the Secretary of Commerce[75] responsible for administering and distributing the funds.

Passage of the Internet Access Act might have rendered the E-Rate Policy Act and the SSIA moot. Both bills were applicable only to the schools and libraries that received E-Rate discounts under 47 U.S.C. § 254. Since the Internet Access Act would have repealed the E-Rate under 47 U.S.C. § 254 and created funds under the tax code, no school or library would have been receiving assistance under 47 U.S.C. § 254, and thus schools and libraries would not have been required to restrict access to the Internet under the E-Rate Policy or the SSIA.

Ultimately, all of the legislation introduced in the 105th Congress to change or eliminate the E-Rate or the Universal Service Fund died. In late November 1998, the SLC began notifying schools and libraries whether their applications were approved and how much of an E-Rate discount they could expect to receive on their proposed projects. For the 1998-1999 funding cycle, about 40,000 schools and 7,000 libraries nationwide will receive nearly $2 billion in discounts on telecommunications and Internet-access related services. Information about the E-Rate in Virginia's schools is available from the Virginia Department of Education at http://www.pen.k12.va.us.

2. Child Protection Act of 1998

Representative Istook (R-Oklahoma) introduced the Child Protection Act of 1998 (CPA)[76] to the House Subcommittee on Appropriation for Departments Labor, Health and Human Services, and Education. The CPA was an amendment to the Appropriation Bill for the Departments Labor, Health and Human Services, and Education for the Fiscal Year 1999.[77] The subcommittee unanimously approved the amendment, the bill was passed by full House Committee on Appropriations, and reported to the House. The bill ultimately died in the 105th Congress.

The CPA requires schools and libraries to restrict minors' access to the Internet by installing filtering software. Whereas the SSIA would only apply to schools and libraries that are receiving E-Rate discounts, the CPA would apply to "[a]ny elementary or secondary school or public library that has received under any program or activity of any Federal agency any funds for the

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[73] Title 26 of the U.S. Code.

[74] 47 U.S.C. 901 et. seq. (Law Co-op. 1991).

[75] The executive agency responsible for administering the National Telecommunications and Information Administration Organization Act under the Secretary of Commerce is the National Telecommunications and Information Administration (NTIA). The NTIA is within the Department of Commerce; the Federal Communications Commission is an independent agency.

[76] H.R. 4274, 105th Cong. Title VI (1998).

[77] H.R. 4274, 105th Cong. (1998).

acquisition or operation of any computer that is accessible to minors and that has access to the Internet."[78] The CPA requires that these schools and libraries install software to restrict a minor's access to obscene materials.[79]

Subsection (b) of § 602 of the CPA provides that "an agency or official designated by the chief executive officer" of the state shall make the determinations of what would be filtered. Thus, the CPA appears to require the Governor or his designee to decide what should be filtered.

V. State versus Local Control

In striking a workable balance between state and local control over the issue of restricting minors' access to the Internet from public schools and libraries, the State of Ohio may be illustrative. In 1997, the Ohio legislature created the Ohio Public Library Information Network (OPLIN) to provide and maintain direct cable connections to 249 main library buildings throughout Ohio. From those buildings, local libraries are responsible for providing and maintaining individual computer terminals for library patrons. Library patrons are provided with such network services as access to the Internet, materials for minors, general encyclopedias, and health information. OPLIN has plans to add small business information to its services and to share its services with schools. In addition to establishing an "extranet" of electronic materials and information, the enabling legislation provides that

> [i]n order to limit access to obscene and illegal materials through Internet use at Ohio Public Library Information Network (OPLIN) terminals, local libraries with OPLIN computer terminals shall adopt policies that control access to obscene and illegal materials. These policies may include use of technological systems to select or block certain Internet access.[80]

Thus, the Ohio legislature did not require public libraries to install filtering software. Instead, it required local libraries that use OPLIN to develop some type of broad policy to control access to "obscene and illegal" materials. Whether to install filtering software or not is up to Ohio's local library boards.

OPLIN seems similar to what was envisioned in House Bill 1043, the Virginia Information Access Act of 1998. The bill would have created an "intranet" called the Virginia Information Access Intranet (VIAI) to connect Virginia's public schools and libraries. Under House Bill 1043, the VIAI would offer "information and material which furthers purposes, pursuits, or endeavors related to education; instruction; research; world, national, state, or local government events and affairs; and public service and civic duties."

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[78] CPA, § 602(a).
[79] CPA, § 602(a)(1).
[80] H.B. 215, Oh. Gen. Assembly, § 77 (1997 Session) at http://www.oplin.lib.oh.us/ABOUT/hb215.html.

If the General Assembly created the VIAI (or something similar), public schools and libraries would not have to obtain Internet access on their own through commercial Internet service providers. Furthermore, as a condition of utilizing the VIAI, the General Assembly could justifiably require public schools and libraries to develop some type of policy to restrict access to inappropriate materials. Like OPLIN, whether to implement such a policy by installing filtering software could be up to Virginia's local school and library boards.

VI. Conclusion

Whether to restrict minors' access to the Internet has become an important national issue. State legislatures in Arizona[81], California[82], Kansas[83], Missouri[84], and Tennessee[85] have all considered bills that required use of filtering software. Proposals in Arizona and Tennessee have failed; others are still pending.

In studying this issue, JCOTS Advisory Committee One may wish to consider:

- the present technological development of filtering software;
- constitutional issues and current litigation pending in Virginia;
- the impact of proposed federal legislation on state action in this area;
- who should decide whether or not to restrict minors' access to the Internet;
- the costs and who should pay them; and
- whether Virginia's public schools and libraries should be treated differently or the same on this issue.

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[81] H.B. 2455, Az. Gen. Assembly (2nd Reg. Sess. 1998).
[82] A.B. 2350, Cal. (Reg. Sess. 1997-98).
[83] S.B. 670, Kan. (1998 Sess.).
[84] S.B. 850, Mo. Gen. Assembly (2nd Reg. Sess. 1998).
[85] H.B. 3353 and S.B. 3329, Tenn. (1998 Sess.).

Internet Policy Responses

	Policy Received	Does Your Library Offer Internet Access to the Public?	If Yes, Is Access Restricted or Full?	If You Use Filtering Software, What Do You Use?	Do You Have Internet Access Policies?
ALPHABETICAL LISTING OF PUBLIC LIBRARY SYSTEMS IN VIRGINIA					
Alexandria Library System	YES	YES	FULL	N/A	YES
Amherst County Public Library	N/A	NO	N/A	N/A	N/A
Appomattox Regional Library	YES	YES	FULL	N/A	YES
Arlington County Department of Libraries	YES	YES	FULL	N/A	YES
Augusta County Library	YES	YES	FULL	N/A	YES
Bedford Public Library System	YES	YES	FULL	N/A	YES
Blue Ridge Regional Library	YES	YES	FULL AND RESTRICTED	N/A	YES
Botetourt County Library					
Bristol Public Library	YES	YES	RESTRICTED	N/A	YES
Buchanan County Public Library	YES	YES	FULL	N/A	YES
Campbell County Public Library	N/A	NO	N/A	N/A	N/A
Caroline Library, Inc.		YES	FULL	N/A	NO
Central Rappahannock Regional Library	YES	YES	FULL	N/A	YES
Central Virginia Regional Library					
Charles P. Jones Memorial Library	N/A	NO	N/A	N/A	N/A
Charlotte County Library	N/A	NO	N/A	N/A	N/A
Chesapeake Public Library System	YES	YES	FULL AND RESTRICTED	CYBERPATROL	YES
Chesterfield County Public Library	N/A	NO	N/A	N/A	N/A
Clifton Forge Public Library	N/A	NO	N/A	N/A	N/A
Colonial Heights Public Library	YES	YES	FULL	N/A	YES
Culpeper Town & County Library	YES	YES	FULL	N/A	YES
Cumberland County Public Library	N/A	NO	N/A	N/A	N/A
Danville Public Library					
Eastern Shore Public Library		YES	RESTRICTED	N/A	NO
Essex Public Library		YES	RESTRICTED	N/A	YES
Fairfax County Public Library	YES	YES	FULL	N/A	YES
Fauquier County Public Library	YES	YES	RESTRICTED	N/A	YES
Fluvanna County Library	N/A	NO	N/A	N/A	N/A
Franklin County Public Library		YES	FULL	N/A	?
Galax-Carroll Regional Library	YES	YES	FULL	N/A	YES
Gloucester Library	YES	YES	RESTRICTED	CYBER PATROL	YES
Halifax County-South Boston Regional Library	YES	YES	FULL AND RESTRICTED	N/A	YES
Hampton Public Library					
The Handley Regional Library	YES	YES	FULL	N/A	YES
County of Henrico Public Library	N/A	NO	N/A	N/A	PENDING
Heritage Public Library					
Highland County Public Library	YES	YES	FULL	N/A	YES

Internet Policy Responses

	Policy Received	Does Your Library Offer Internet Access to the Public?	If Yes, Is Access Restricted or Full?	If You Use Filtering Software, What Do You Use?	Do You Have Internet Access Policies?
ALPHABETICAL LISTING OF PUBLIC LIBRARY SYSTEMS IN VIRGINIA					
Iris Brammer Public Library	N/A	NO	N/A	N/A	N/A
J. Robert Jamerson Memorial Library	N/A	NO	N/A	N/A	N/A
James L. Hamner Public Library					
Jefferson-Madison Regional Library	YES	YES	FULL	N/A	YES
Lancaster Community Library	YES	YES	FULL	N/A	YES
L. E. Smoot Memorial Library	YES	YES	FULL	N/A	YES
Lonesome Pine Regional Library					
Loudoun County Public Library	YES	YES	RESTRICTED	X-STOP, LIBRARY LIBRARY EDITION	YES
Lynchburg Public Library					
Madison County Library, Inc.	N/A	NO	N/A	N/A	N/A
Mary Riley Styles Public Library	N/A	NO	N/A	N/A	N/A
Mathews Memorial Library	YES	YES	FULL	N/A	YES
Meherrin Regional Library	YES	YES	FULL	N/A	YES
Middlesex County Public Library, Inc.	YES	YES	FULL	N/A	YES
Montgomery-Floyd Regional Library	YES	YES	FULL	N/A	YES
Newport News Public Library System	YES	YES	FULL	N/A	YES
Norfolk Public Library	YES	YES	FULL	N/A	YES
Northumberland Public Library, Inc.	N/A	NO	N/A	N/A	N/A
Nottoway County Library					
Orange County Public Library	YES				
Pamunkey Regional Library					
Pearisburg Public Library	YES	YES	RESTRICTED	N/A	YES
Petersburg Public Library	YES	YES	FULL	N/A	YES
Pittsylvania County Public Library	YES	YES	FULL	N/A	YES
Poquoson Public Library	YES	YES	FULL	N/A	YES
Portsmouth Public Library	YES	YES	FULL	N/A	YES
Powhatan County Public Library	N/A	NO	N/A	N/A	N/A
Prince William Public Lib. System	YES	YES	FULL AND RESTRICTED	N/A	YES
Pulaski County Library	YES	YES	FULL AND RESTRICTED	ECLIPSE	YES
Radford Public Library		YES	FULL	N/A	NO
Rappahannock County Library					
Richmond County Public Library	YES	YES	FULL	N/A	YES
Richmond Public Library	YES	YES	FULL	N/A	YES
Roanoke City Public Library	N/A	NO	N/A	N/A	N/A
Roanoke County Public Library	YES	YES	FULL AND RESTRICTED	CYBERPATROL & SURF WATCH	YES

Internet Policy Responses

	Policy Received	Does Your Library Offer Internet Access to the Public?	If Yes, Is Access Restricted or Full?	If You Use Filtering Software, What Do You Use?	Do You Have Internet Access Policies?
ALPHABETICAL LISTING OF PUBLIC LIBRARY SYSTEMS IN VIRGINIA					
Rockbridge Regional Library	YES	YES	FULL	N/A	YES
Rockingham Public Library	YES	YES	FULL	N/A	YES
Russell County Public Library	YES	YES	FULL	N/A	YES
Salem Public Library	YES	YES	FULL	N/A	YES
Samuels Public Library	YES	YES	FULL FOR ADULTS RESTRICTED FOR YOUTH	SURF WATCH	YES
Shenandoah County Library	YES	YES	FULL	N/A	YES
Smyth-Bland Regional Library	YES	YES	FULL AND RESTRICTED	SURF WATCH ON FILTERED STATIONS	YES
Southside Regional Library	YES	YES	FULL	N/A	YES
Staunton Public Library	YES	YES	FULL	N/A	YES
Suffolk Public Library System					
Tazewell County Public Library	YES	YES	RESTRICTED	N/A	YES
Virginia Beach Department of Public Libraries					
W. C. Rawls Library & Museum					
Washington County Public Library					
Waynesboro Public Library	YES	YES	FULL	N/A	YES
Williamsburg Regional Library	YES	YES	FULL	N/A	YES
Wythe-Grayson Regional Library	YES	YES	FULL	N/A	YES
York County Public Library		YES	FULL	N/A	YES

Number of Policies Received = 53

Number of Libraries Offering Public Internet Access = 58
Number of Libraries Not Offering Public Internet Access = 16
Number of Libraries Offering Both Full and Restricted Access = 8
Number of Libraries Having Full Access Only = 42
Number of Libraries Having Restricted Access Only = 8
Number of Libraries Using Filtering Software = 7

Number of Libraries Reporting Overall = 74

As of 7/24/98

Use of Filtering Software in Virginia School Divisions

Presentation to the

Joint Commission on Technology and Science

December 4, 1998

Virginia Department of Education

APPENDIX 3, ATTACHMENT 2

Extent of Use

- 68% of Virginia's public school divisions report use of filtering software in some or all of their schools
- 28 separate products are currently in use to accomplish filtering
- 33% of Virginia's public school divisions have designated "security administrators"

Cost of Filtering Products

- Costs of obtaining filtering products range from $0.03 to $25.19 per student
- Average cost is $3.68 per student
- Installation, training, maintenance, product support, and product upgrades must also be considered in the total cost of deploying filters.

Additional Cost Factors

- Filtering solutions in a division may vary from school to school
- Filtering configurations vary depending on the complexity of the system
- The size of a division/school and the number of authorized users varies
- Vendors may offer incentive packages to certain divisions
- The sophistication of a filtering system impacts costs
- Local policies impact filtering decisions made in school divisions
- The design and architecture of a system impact costs

Sample Features

- Downloads to a single computer for use by one user (free or low cost)
- Full featured packages for use on networks
- Customer assistance from vendor
- Updates and upgrades available or automatic

Acceptable Use Policies

- 93% of Virginia's school divisions have acceptable use policies (AUPs) in place
- AUPs are written descriptions of the "rules" which guide use of computers in using the Internet and may include
  - » general expectations for conduct
  - » highly specific guidelines for use
  - » consequences of policy violation

USE OF FILTERING SOFTWARE IN VIRGINIA SCHOOL DIVISIONS

(128 of 132 responding)

School Division	% of Schools using filtering software	Product
Accomack County Public Schools	100%	I-Gear from URLabs
Albemarle County Public Schools	0%	At Ease Apple*
Alexandria City Public Schools	100%	Raptor Firewall
Alleghany Highlands Public Schools	100%	Cybercontrol
Amelia County Public Schools	100%	I-Gear from UR Labs
Amherst County Public Schools	100%	Border Manager
Appomattox County Public Schools	NA	C
Arlington County Public Schools	5%	Check Point Firewall
Augusta County Public Schools	100%	Novix
Bath County Public Schools	100%	Web Sense
Bedford County Public Schools	0%	na
Bland County Public Schools	100%	I-Gear from URLabs
Bristol City Public Schools	100%	I-Gear from URLabs
Brunswick County Public Schools	100%	Intergate
Buchanan County Public Schools	0%	NA
Buckingham County Public Schools	100%	I-Gear from URLabs
Buena Vista City Public Schools	100%	Web Sense
Campbell County Public Schools	100%	I-Gear from URLabs
Caroline County Public Schools	0%	I-Gear from URLabs*
Carroll County Public Schools	100%	
Charles City County Public Schools	0%	MS Proxy Server*
Charlotte County Public Schools	14%	I-Gear from URLabs
Charlottesville City Public Schools	0%	na
Chesapeake City Public Schools	100%	Eclipse I-Gear
Chesterfield County Public Schools	100%	I-Gear from URLabs
Colonial Beach (town of) Public Schools	33%	NA
Colonial Heights City Public Schools	100%	Firewall - 1
Covington City Public Schools	100%	Fire Fox
Craig County Public Schools	NA	NA
Culpeper County Public Schools	0%	Internet Firewall w/att.*
Cumberland County Public Schools	100%	MS Proxy Server
Danville City Public Schools	100%	Eclipse
Dickenson County Public Schools	0%	NA
Dinwiddie County Public Schools	100%	I-Guard
Essex County Public Schools	0%	NA
Fairfax County Public Schools	100%	Raptor
Falls Church City Public Schools	100%	Cisco
Fauquier County Public Schools	0%	Secure access manager*
Floyd County Public Schools	0%	NA
Fluvanna County Public Schools	100%	Cyber Patrol
Franklin City Public Schools	100%	Novell Border Manager
Franklin County Public Schools	100%	I-Gear from URLabs
Frederick County Public Schools	100%	Network Assoc
Fredericksburg City Public Schools	0%	NA
Galax City Public Schools	100%	I-Gear from URLabs
Giles County Public Schools	100%	UR Labs
Gloucester County Public Schools	100%	Eclipse by Urlabs

*in progress

USE OF FILTERING SOFTWARE IN VIRGINIA SCHOOL DIVISIONS
(128 of 132 responding)

Goochland County Public Schools	100%	Surfwatch
Grayson County Public Schools	100%	I-Gear from URLabs
Greene County Public Schools	NA	NA
Greensville County Public Schools	50%	NA
Halifax County Public Schools	10%	Net Nanny
Hampton City Public Schools	100%	Web Sense
Hanover County Public Schools	100%	Cisco
Harrisonburg City Public Schools	100%	Novell Border Manager
Henrico County Public Schools	100%	
Henry County Public Schools	100%	I-Gear from URLabs
Highland County Public Schools	100%	NA
Hopewell City Public Schools	0%	I-Gear from URLabs*
Isle of Wight County Public Schools	100%	Eclipse Software by UR Labs
King George County Public Schools	0%	NA
King William County Public Schools	100%	I-Gear from URLabs
Lancaster County Public Schools	0%	NA
Lee County Public Schools	100%	I-Gear from URLabs
Lexington City Public Schools	0%	Websense*
Loudoun County Public Schools	100%	I-Gear from URLabs
Louisa County Public Schools	100%	Microsoft Proxy Server
Lunenburg County Public Schools	100%	Chamelion
Lynchburg City Public Schools	100%	Raptor
Madison County Public Schools	0%	na
Manassas City Public Schools	100%	Firewall 1
Manassas Park City Public Schools	100%	NA
Martinsville City Public Schools	0%	na
Mathews County Public Schools	100%	I-Gear from URLabs
Mecklenburg County Public Schools	0%	na
Middlesex County Public Schools	25%	I-Gear from URLabs
Montgomery County Public Schools	0%	I-Gear from URLabs*
Nelson County Public Schools	0%	NA
New Kent County Schools	50%	Surfwatch
Newport News Public Schools	100%	Eclipse I-Gear
Norfolk City Public Schools	100%	I-Gear from URLabs
Northampton County Public Schools	0%	I-Gear from URLabs*
Northumberland County Public Schools	0%	NA
Norton City Public Schools	100%	MS Proxy Server
Nottoway County Public Schools	100%	I-Gear from URLabs
Orange County Public Schools	15%	Novell Bordermanager
Page County Public Schools	100%	na
Patrick County Public Schools	0%	NA
Petersburg City Public Schools	0%	None
Pittsylvania County Public Schools	0%	I-Gear from URLabs*
Poquoson City Public Schools	100%	UR Labs
Portsmouth City Public Schools	100%	I-Gear from URLabs
Prince Edward County Public Schools	0%	
Prince George County Public Schools	100%	CSM Proxy Server
Prince William County Public Schools	100%	WebTRAK
Pulaski County Public Schools	100%	Novell Border Manager
Radford City Public Schools	100%	Bordermanager
Richmond City Public Schools	0%	URI Labs Proxy Server*

*in progress

USE OF FILTERING SOFTWARE IN VIRGINIA SCHOOL DIVISIONS
(128 of 132 responding)

Richmond County Public Schools	100%	NT-Proxy
Roanoke City Public Schools	90%	NA
Roanoke County Public Schools	100%	Raptor
Rockbridge County Public Schools	100%	NAT 3Comm
Rockingham County Public Schools	100%	I-Gear from URLabs
Russel County Public Schools	0%	NA
Salem City Public Schools	100%	I-Gear from URLabs
Scott County Public Schools	0%	
Shenandoah County Public Schools	0%	NA
Smyth County Public Schools	100%	Microsoft Proxy Server 2.0
Southampton County Public Schools	100%	I-Gear from URLabs
Stafford County Public Schools	100%	I-Gear from URLabs
Staunton City Public Schools	100%	I-Gear from URLabs
Suffolk City Public Schools	100%	I-Gear from URLabs
Surry County Public Schools	100%	I-Gear from URLabs
Sussex County Public Schools	100%	NA
Tazewell County Public Schools	40%	
Virginia Beach City Public Schools	0%	I-Gear from URLabs*
Virginia School f/t Deaf and Blind - Hampton	0%	NA
Virginia School f/t Deaf and Blind - Staunton	0%	NA
Warren County Public Schools	100%	Cyber Patrol
Washington County Public Schools	100%	I-Gear from URLabs
Waynesboro City Public Schools	0%	UR Labs*
West Point (town of) Public Schools	0%	I-Gear from URLabs*
Westmoreland County Public Schools	0%	NA
Williamsburg James City County Public Schools	100%	I-Gear from URLabs
Winchester City Public Schools	100%	Cyber Patrol
Wise County Public Schools	100%	Chaperon Filtering Software
Wythe County Public Schools	95%	I-Gear from URLabs
York County Public Schools	100%	I-Gear from URLabs

*in progress

Informal Survey of Approximate Internet Filtering/Security Costs in Certain Virginia School Divisions

(28 total)

Division	Product	Purchase $	Installation $	Maintenance $	Upgrade $
Accomack	I-Gear	$ 21,000		inc. in purch.	$1,300
Appomattox	X-Stop	$ 19,630	$5,000	$1,200	
Arlington	Checkpoint Firewall	$ 13,000	$3,000	$3,000	
Brunswick	I-Gear	$ 13,000	remote		
Caroll County	Cisco Pix Firewall	$ 18,000			
Charlotte	I-Gear	$ 2,000	LEA		
Chesterfield	I-Gear	$ 36,000		$1,500	
Colonial Beach	CyberPatrol	$ 995			
Essex	BorderManager	$ 5,000			
Galax City	I-Gear	$ 28,805		$3,190	
Giles	Eclipse			$4,975	
Gloucester	Eclipse			$8,700	$200
Grayson	I-Gear & Surfwatch	$ 16,880			$1,395
Hampton	Web Sense	$ 5,596	LEA		
Lee	MSProxy & I-Gear	$ 3,500			minimal
Lynchburg	Raptor	$ 25,000		$4,065	
Manassas City	Netscape Proxy	$0	LEA	$5,300	
Mathews	Eclipse	$ 26,000	LEA	inc. in purch.	inc. in purch.
Norton City	Chaperon & MS	$ 1,600		$1,200	
Nottoway	I-Gear Proxy	$ 850	LEA	$1,000	
Prince Wm Co	WebTrack	$ 5,000			$866
Richmond Co.	CyberPatrol			n/a	$1,500
Shenandoah	BorderManager	$ 3,000	LEA	LEA	
Smyth	MS Proxy	$ 4,090	LEA	$1,395	
Stafford	I-Gear	$ 8,085			
Va Beach	I-Gear	$ 69,600	LEA	$34,800	
Washington	SunSpark & I-Gear	$ 12,000	LEA	$1,395	
Wise	Chaperon		$ 300		$0

Factors Impacting Costs of Filtering,

I. Filtering solutions in a division may vary from school to school

- Schools have various filtering solutions within different schools in the division depending on the age of the hardware at a given school. Some division filtering solutions may be managed individually by each school depending on the organizational structure of a division (for example: a division that uses site-based management may be handling their own filtering problems).

II. Filtering configurations vary depending on the complexity of the system

- Some school divisions have filters on their area network within a single school building, while some schools in a division have filters on their wide-area networks or on a router leading into the school for Internet access.
- Some divisions/schools receive their Internet access from a local Internet service provider using a dial-up configuration. In such cases the filtering may be done at the service provider's location (on their server). The local provider may charge a fee or offer free service for filtering, depending on the system purchased and the number of users.

III. The size of a division/school and the number of authorized users varies

- A larger division may gain greater financial benefits for filtering compared to a smaller division or school
- A division that has a large number of concurrent users, may have higher filtering costs

IV. Vendors may offer incentive packages to certain divisions

- A division that purchases large quantities of hardware or software may receive additional benefits such as free maintenance services, free installation or updates to filtered sites, while other divisions may have to pay for updates, installation, and maintenance (the vendors' options and services agreement influences the costs)
- Some divisions may receive filtering software as part of a bundled package
- Some filtering services offer unlimited use, while others limit the number of users or searches
- Some divisions have employees with expertise to install and maintain filtering systems, while others have to contract for such services
- Some vendors offer free yearly upgrades to their software, while other vendors charge for upgrades

V. The sophistication of a filtering system impacts costs

- Some systems require manual updates of filtered sites, while others automatically update from a central location managed by an outside filtering company
- Some software may be run on hardware systems that are not up to date, while others require more advanced hardware
- Divisions may need overrides for certain student projects which would have an impact on staffing (for example: a student project may require web searches for information on breast cancer that would be excluded under normal filtering circumstances requiring over-rides for access to this information)
- Some services filter e-mail and websites while others may filter one and not the other
- Staffing can be impacted depending on the sophistication of the configuration of the system and the need for manual labor to manage it
- Free filtering software is available under certain conditions. These conditions may include the purchase and utilization of a particular operating system or Internet service. Using such software requires staff expertise to evaluate the effectiveness of such software. Many technology directors are not trained in the evaluation of security software.

VI. Local policies impact filtering decisions made in school divisions

- Local boards may differ in defining inappropriate materials for children
- Future infrastructure plans in a school impact costs from month to month
- Some divisions may offer services that extend beyond the schools and offer Internet to teachers, students, and parents at home, thus making the divisions' filtering needs more complex
- Many divisions have purchased filtering systems for schools, and their needs are not as great as those in other divisions

VII. The design and architecture of a system impact costs

- Virginia schools currently have the flexibility to design their own Internet structure. Since the designs vary considerably, a single solution to the filtering problem would be difficult and would be more costly than if all schools in Virginia had the same architecture for receiving Internet access.

Appendix 4.
Staff Report on the Nuclear Research Reactor
(adapted from the original report submitted on July 1, 1998)

I. Recent History and How the UVAR Came to JCOTS Attention

JCOTS was contacted in January 1998 by Paul Benneche, the supervisor at the nuclear reactor at the University of Virginia (the UVAR). In early January 1998, the Board of Visitors of the University of Virginia (UVA) received a detailed plan from the Provost of the University, Peter Low, outlining the tentative decommissioning process of the UVAR. The framework for decommissioning followed updates to the Board on internal studies conducted by the Provost and Deans on the future of the reactor. The administration's decision to decommission the reactor received no resistance from the Board.

However, Reed Johnson, an emeritus faculty member of the nuclear engineering program, requested an appeal of the decision to close the reactor. The Board established a special committee to consider the appeal concerning the UVAR. The special committee recommended that the decision to close the reactor be upheld, and the Board of Visitors affirmed its earlier decision to close the reactor. On July 1, 1998, the reactor will cease operation. The earliest estimate for fuel shipment from the site is September 1998. Due to the high cost to the federal government, shipment of fuel from the site is considered by some as the point from which the UVAR could never reopen.

II. Background of the UVAR

Operational since 1960, the UVAR is located in the side of Mount Jefferson to the west of the Central Grounds.[86] Today, this area is developed with dormitories, residences, and service facilities adjacent on the lower levels of the hill.[87]

The real estate and funding for the UVAR facility came from a combination of state and federal sources. While the land dates back to a purchase for UVA by Thomas Jefferson in 1817, the money to build the reactor came primarily from the state and federal governments. Funding for the reactor came from a $350,000 appropriation from the state legislature, $191,000 in grants from the National Science foundation, $19,000 from the Atomic Energy Commission in the form of fuel, and $40,000 in University funds.[88]

The UVAR is operated by the Department of Mechanical, Aerospace, and Nuclear Engineering (MANE). Before discussions about closure began, the staff consisted of about six licensed reactor operators, several reactor operations support personnel, and the nuclear engineering

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[86] See Item 12 of the map of UVA, found at http://minerva.acc.Virginia.EDU/Map/IObservatoryHill.html.

[87] *Report of the Review Committee for the University of Virginia Nuclear Reactor Facility,* January 6, 1997, p. 7 (hereinafter cited as *Gross Report*). See Attachment 1.

[88] Interview with Paul Benneche, UVAR supervisor (June 23, 1998).

faculty. Also located within the reactor facility are electronic and machine workshops, radiation laboratories, student offices, a library, a conference room, and a large classroom.

The UVAR is a light-water-cooled and moderated research pool-type reactor. In 1971, the reactor's power was doubled to two million watts of thermal energy. Currently, only two university research reactors in the United States operate at or above the power of the UVAR; University of Missouri-Columbia operates one at 10 megawatts and Massachusetts Institute of Technology at 4.9 megawatts. Both Georgia Tech and the University of New York-Buffalo have decommissioned their research reactors within the last five years. Georgia Tech operated at 5 megawatts and the University of New York-Buffalo operated at 2 megawatts.[89] In 1994, the fuel elements were redesigned and the UVAR converted to use of low-enriched uranium silicide. The conversion's cost of $1 million was funded by the federal government.

As a nuclear research reactor, the UVAR is a "unique tool for use in interdisciplinary research."[90] A nuclear research reactor can benefit research in physics, chemistry, biology, geology, health care, environmental protection, materials research, nuclear proliferation control, reactor safety, process technology, and general technology.[91] While the UVAR has predominately supported programs at the University in nuclear science, nuclear engineering, education and medicine, the reactor has also been used for industry-sponsored research and service work. The reactor facility provides numerous research and irradiation service capabilities to students, faculty, and industry. Such research and irradiation service capabilities include neutron activation analysis, static and live-time neutron radiography, radiation damage studies, reactor operator training, radioactive tracer isotope production, medical isotope production, neutron transmutation doping, gamma ray radiation sterilization or polymerization, radiation dosimetry, artificial and natural radioactivity measurement lab, neutron capture therapy research, and critical safety software research.[92]

The reactor is currently used for a variety of industry purposes. Among these procedures are the sterilization of test tubes for a company outside of Charlottesville specializing in in vitro fertilization. Another potential use for the reactor include boron neutron capture therapy, research important to brain tumor treatment. Discussion has focused on the reactor's lack of utilization. One factor explaining the under utilization is the small numbers of staff and faculty available to promote the potential uses of the reactor.

The nuclear engineering program has declined in the last decade in both the number of students and the number of faculty involved with the program. In 1994, the undergraduate degree in

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[89] Haydn N.G. Wadley, *Review of the Issues Underlying the Future of the University of Virginia Nuclear Reactor,* April 22, 1998.

[90] See the website for UVA's School of Engineering and Applied Science at http://www.cs.virginia.edu/SEAS/centers/NRF.html.

[91] *Id.*

[92] *Id.*

nuclear engineering was terminated.[93] Also, the number of full-time faculty has dropped. In 1981, there were eleven members of the faculty, half of whom were experimentalists. Currently, there are three tenured professors. A fourth member of the faculty is in phased retirement and limits his work to teaching. A non-tenure track UVAR director is also at the facility. Of the three tenured professors, only one is a well-funded experimentalist who works with the reactor. The others are theorists and computational specialists who do not use the reactor for their work. Since the initial announcement to shutdown the reactor, of the eight full-time employees, two have transferred to other positions within the UVA, one has resigned to accept a job outside UVA, one anticipates retiring soon, one is trying to find another position at UVA in anticipation of being laid off on February 1, 1999, and three have received verbal offers to assist with the decommissioning.[94]

As the number of faculty members has declined, graduate-student enrollment has dropped simultaneously. Following the initial announcement to close the reactor, the graduate students have taken a variety of paths to complete their research. Three Ph.D. students whose research does not involve the reactor are continuing their research; one master's student changed from a thesis project requiring the reactor to one that does not; one master's student intending to do research using the reactor is still undecided; one part-time Ph.D. student who is using the reactor cannot transfer his work; one part-time Ph.D. student who is not using the reactor, is a full time staff member seeking other employment at UVA; and one master's student about to begin his nuclear program was encouraged to transfer to another department and has done so. The faculty of the nuclear engineering program chose not to admit any new graduate students for the 1998-1999 academic year because of the reactor's uncertain future.[95] Graduate students currently enrolled have been assured by UVA that the University will assist them in finishing their research at other facilities. UVA has also indicated that the decommissioning of the reactor will not mean the end of the nuclear engineering curriculum. As the number of students enrolled in the program has declined, so has the program's ranking and reputation.

In 1995, the UVA program was ranked 24th out of 33 in *U.S. News and World Report.*[96] The cost to operate the UVAR versus the cost to decommission is uncertain. The estimated costs of decommissioning the reactor range from $1 to $10 million. Definitive figures for the cost cannot be determined until the process is underway. The estimated cost of operating the UVAR have ranged from $554,520 in fiscal year 1995-1996 to $616,427 in fiscal year 1996-1997. The reactor has generated an average of $190,000 in revenue per year from 1991 to 1997.[97]

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[93] *Gross Report* at p. 14. The *Gross Report* indicated that the number of nuclear engineering majors has declined since 1975. The report also stated that as the number of undergraduate majors declines, the prospects for graduate enrollment also diminish. *Gross Report* at pp. 11-12.

[94] Interview with Paul Benneche, UVAR supervisor (June 23, 1998).

[95] *Id.*

[96] *Gross Report* at p. 14.

[97] Haydn N.G. Wadley, *Review of the Issues Underlying the Future of the University of Virginia Nuclear Reactor.* Appendix C: Letter from Dean Wadley to Provost Low, February 26, 1998.

III. Other Nuclear Technology in Virginia

A. Virginia Power[98]

Other than the nuclear research reactor at UVA, there are four other nuclear reactors in the Commonwealth. All four are power reactors owned by Virginia Power. Two are located at the North Anna Power Station in Mineral, Virginia, about 40 miles from Richmond in Louisa County. Virginia Power's other two nuclear reactors in Virginia are located at the Surry Power Station in Gravel Neck, Virginia, 17 miles from Newport News.[99]

Virginia Power's nuclear reactors differ significantly from the research reactor at UVA. Nuclear power reactors operate at a higher power than research reactors. The North Anna reactors operate at 1,790 megawatts of power in contrast with the UVAR at 2 megawatts. The Surry reactors operate at 1,602 megawatts of power. The purposes of the two types of reactors are also different. Nuclear power plants generate heat which is converted to electricity, while nuclear research reactors are used for research and training. Nationally, nuclear power plants, like those operated by Virginia Power, generate one-fifth of the nation's electricity.[100]

B. Newport News Shipbuilding[101]

A commercial facility in Virginia that is heavily dependent on nuclear power is Newport News Shipbuilding (NNS). In the 1950s, NNS agreed to participate in the Atomic Energy Commission's program to harness nuclear power for ship-propulsion systems. Over the next 40 years, NNS has built almost 70 nuclear-powered ships and has fueled, refueled, overhauled, or deactivated more than 150 reactor plants in ships.[102]

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[98] Virginia Power estimates that one-third of its nuclear engineers received either a bachelors degree or post-baccalaureate degree through the nuclear engineering curriculum at UVA. Interview with David Heacock, P.E., Manager, Station Operations and Maintenance, North Anna Nuclear Power Station (June 22, 1998).

[99] Surry Unit 1 was recently commended by the Union of Concerned Scientists for its safety practices. In a study of ten nuclear power reactors, the Surry reactor had "the best performance." Significantly, the plant did not wait for the Nuclear Regulatory Commission to identify potential problems. The workers at Surry 1 identified potential problems before they occurred and were less likely to contribute to problems through staff errors. David Lochbaum, Union of Concerned Scientists, *The Good, the Bad and the Ugly: A Report on Safety in America's Nuclear Power Industry,* June 1998, p. 17.

[100] Website of the Nuclear Regulatory Commission at http://www.nrc.gov/NRC/reactors.html.

[101] The majority of nuclear engineers employed by NNS were trained in Navy programs. Interview with Ronald Williams, Manager of Corporate Staffing and Employment, Newport News Shipbuilding (June 24, 1998).

[102] Website of Newport News Shipbuilding at http://www.nns.com/products_services/nuclear.htm.

IV. Actions Taken by the University of Virginia

A. The Gross Report

In December 1995, the Provost of the University of Virginia, Peter Low, requested that the School of Engineering and Applied Science (SEAS) conduct a study to determine whether the UVAR should be enhanced and made suitable for continued use as a nationally ranked academic research facility for the next 20 to 30 years or be prepared for decommissioning. The SEAS study was led by Paul Gross, former Provost of UVA, and a committee of experts. The committee began meeting in the spring of 1996 and was charged to assess the long-term viability of the UVAR in the context of the nation's current and future need for academic nuclear engineering facilities, and the ability of the School of Engineering and Applied Science (SEAS) to provide the resources necessary to develop a nationally-ranked program.

The committee members made visits to UVA and the UVAR and were impressed with the condition and remaining faculty at the UVAR. However, the committee stated that the only way the nuclear engineering program would rise to the top ranks was to have SEAS divert most of its budget away from other programs. The additional funds would be directed towards the nuclear engineering program by providing two or three new tenured faculty positions and the UVAR facility. If SEAS could not fund the needed faculty and maintenance of the reactor, the committee recommended that decommissioning begin. The committee was also asked the following questions:

1. Is the UVAR appropriate technology for now and the future (30 years from now)?
2. Can the nuclear engineering program, that part of it associated with and dependent upon the UVAR, achieve high national ranking?
3. Should the UVAR be where it is—on UVA's grounds?
4. If the UVAR is not decommissioned now, can it be decommissioned 20 or 30 years from now?
5. Since the UVAR is both an asset and a liability, can advice be given on which aspect dominates regarding the facility but not the entire nuclear engineering program?[103]

In its final report, known as the "Gross Report," the committee found that:

1. The design of the UVAR was as good as any other university reactor. Decisions to convert to low emission uranium and other technical improvements have modernized the technology.
2. The program can achieve high national ranking with significant funding. Funding would be needed for faculty positions, faculty start-up grants, and expenses for rehabilitating and upgrading the building. Estimates of the cost of funding ran into millions of dollars.
3. Ideally, the reactor would not be located on the grounds. That was not where it was intended to be located when it was first built. Although inconvenient for the faculty and staff, it would be better if the reactor was located elsewhere.

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[103] *Gross Report* at pp. 15-16.

4. As long as there is a serious commitment to rehabilitate and maintain the reactor structures over the next 20 to 30 years, the reactor can be decommissioned in 20 to 30 years. The same problems that exist now in decommissioning will exist at that time, too.
5. No advice can be given on whether the UVAR is an asset or a liability. The greatest determining factors are the resources that UVA may want to invest in the UVAR and its expectations for yield.[104]

B. The Report of the Dean of the School of Engineering and Applied Science[105]

After the Provost received the Gross Report recommendations, he then asked the Dean of SEAS to review the Report and to study its recommendations to determine whether he was in agreement. If the Dean of SEAS disagreed with the Gross Report's findings, i.e., to decommission the reactor, he was required to provide the Provost with the amount of funding that SEAS could contribute towards the maintenance of the UVAR facility.

After extensive investigation within SEAS,[106] the Dean reported to Provost Low in November 1997 that he agreed with the findings of the Gross Report. Furthermore, SEAS did not have money to divert to the nuclear engineering program for faculty or maintenance of the UVAR facility. Due to the funding requirements necessary to maintain the UVAR, the Dean concluded:

> In short, there is no feasible way that SEAS can afford to enhance the UVAR or rebuild the nuclear engineering program to national stature unless it chooses, as a matter of policy, to make this its highest priority for the allocation of faculty and other resources. There is a general consensus within and outside SEAS that such a policy would hurt the School's strategic effort to develop programs of currently higher priority and greater potential for success.[107]

Subsequent to the Dean's Report, the Board of Visitors voted on January 23, 1998, to affirm the SEAS decision to close the UVAR. The Board's decision was appealed by Reed Johnson, emeritus faculty member of nuclear engineering. As a result of the appeal, the Board appointed a special committee to revisit the question of whether the reactor should be decommissioned.

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[104] *Id.*

[105] See Attachment 2.

[106] The dean conducted over 130 individual meetings with faculty members, held two faculty meetings, and received comments and advice from an advisory committee of corporate leaders and a research advisory committee of senior faculty members. On October 21, 1997, the engineering faculty voted on whether the reactor should remain in continued operation. The motion failed by a vote of 42-44. A committee established to appeal the decision to decommission the reactor learned that two faculty members opposed to shutting down the reactor were not present at the vote.

[107] *Report of the Dean of the School of Engineering and Applied Science,* pp. 4-5.

C. The Report of the Special Committee on the Research Reactor[108]

In reviewing the decision, the special committee received written materials, held a public hearing, and toured the reactor. During the hearing, the special committee heard from both proponents and opponents of decommissioning the reactor. In its recommendation to deactivate the reactor, the special committee relied heavily on the Gross Report's determination that continued operation of the UVAR would require a reallocation of funds by SEAS. Since SEAS did not have the necessary funds within its budget, there were no financial resources to continue the operation of the UVAR. However, the special committee indicated that its preferred outcome was for a private company to operate and ultimately decommission the reactor. The report concludes:

> Your committee wishes that arrangements could be made with private industry to assume responsibility for the current operation and ultimate decommissioning of the reactor. Absent such a development the committee is unanimously of the opinion that the decision which has been taken by the School of Engineering and Applied Science (SEAS) was carefully and properly made, and that the Board of Visitors should affirm and approve that decision.[109]

After hearing the recommendation of the special committee on May 29, 1998, the Board of Visitors affirmed its earlier decision to close the reactor. The UVAR will cease operation on July 1, 1998, and the decommissioning process will begin. The fuel for the reactor is scheduled to be shipped off-site by the federal government as early as September 1998.

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[108] See Attachment 3.

[109] *Report of Special Committee on Research Reactor*, p. 6.

APPENDIX 4, ATTACHMENT 1

REPORT OF THE REVIEW COMMITTEE FOR THE UNIVERSITY OF VIRGINIA NUCLEAR REACTOR FACILITY (UVAR)

January 6, 1997

R. O. Allen
R. T. Balzheizer
P. R. Gross
R. C. Minehart
J. B. Richard
H. G. Stever
H. H. Woodson

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1. Executive Summary

Preparations for the committee's work in Charlottesville included study of documents (most of them from nuclear engineering) on the nuclear engineering faculty and students; on the history, personnel, and operations of the UVAR facility; and on the decommissioning of research reactors. At the meeting, Dean Miksad spoke and responded to questions, as did the Vice President and Provost. Professors Brenizer and Flack spoke for nuclear engineering and the reactor facility. A tour of UVAR rounded out the picture of activities at the site. The external members of this committee, experts in research reactors, nuclear power, engineering education, and science policy, brought to the discussions additional facts and sympathetic interest in the issues and in the University of Virginia.

The charge was to focus on the reactor and its future in light of the university's plans and resources; thence to recommend action on UVAR, taking into account effects on engineering education at the university and in the Commonwealth of Virginia. The problem of nuclear engineering in the nation as a whole arose early. Among background issues affecting a decision on the future of UVAR, the most important is the current and future health of nuclear power. This is the profession for which most nuclear engineers are trained. Most support for nuclear engineering and for research at UVAR is, directly or indirectly, nuclear power-related.

While the major use of nuclear technology is for generation of primary electric energy, naval ship propulsion is also important, especially for Virginia. The Commonwealth has a strong nuclear power industry and it builds nuclear-powered ships at Newport News. UVAR is Virginia's only university research reactor and one of the few remaining in the country that can operate at two or more megawatts.

Construction of nuclear power reactors for electricity has come to a halt in the U.S.A.; in many respects the industry is marking time. Many believe, however, that resumption of growth is inevitable. Burning of fossil fuels is the major anthropogenic source of atmospheric CO_2; and the cost of fossil fuels, pollution aside, will continue to rise. There are at present no realistic alternatives to fossil-fuel burning and nuclear power. Hence a price will eventually be paid for neglect of research and training in the latter. That the neglect, or at least the decline, is real is not in question: the evidence is overwhelming.

UVAR plays a key role in nuclear engineering education at this university—it could hardly be otherwise. Other programs operate without an on-site reactor, some with distinction[1]; but this program has evolved with the reactor on the Grounds. Its history of university-industry-government collaborations is laudable. Given the paucity of research reactors of this size, and the decades-long retreat of other universities, a real shortage of training opportunity for nuclear engineers is in prospect. If so, then in principle facilities like UVAR should be strengthened, rather than closed.

But the committee was quick to recognize that the realities of declining student interest in nuclear engineering, uncertain research financing, deregulation (and downsizing) in the nuclear power industry, and the politics of energy point elsewhere: toward the conversion of university reactor facilities to regional centers, with cooperative support and shared responsibility. This may be the only way to stem the tide of decommissionings. Unfortunately there is at present no such initiative.

UVAR, 36 years old, is of satisfactory design: it is in principle current technology, adequate for the functions to which it is dedicated. Flexibility of the beam ports, access areas, and blockhouse design would permit a wider range of experiments than is now undertaken. The building and reactor structures, and some of the equipment, are certainly dated; some aging is visible. But mainte-

nance seems on the whole to have been conscientious. Still, there have been structural problems and leaks from the pool. The likelihood of such problems increases with time and will do so here unless serious rehabilitation and upgrading are undertaken.

UVAR's location is a major worry. The potential political problems of a nuclear reactor in a dormitory and university residential area, whether or not there are real dangers, are enough to give any administration pause.

Action, in short, would be needed to put the facility into first-class condition and to keep it that way if it were to continue to operate. This would require very substantial funds. And, if the facility is kept in operation, such action must be taken soon, independently of the issues of program and faculty strength.

Professor Brenizer, responsible for much of the currently-funded experimental work at UVAR, argued that appropriate new funding could, under certain conditions, be obtained from the sources that support it now. While the Committee has great respect for him and his energetic activities, it believes that to place upon him, or upon a very small faculty, the burden of funding necessary plant upgrading would be unconscionable and ineffective. A few correspondents outside the university and the nuclear engineering group have praised, or argued for strengthening, the *program*; but there are no reported offers of new, large-scale support for the reactor *facility* or for the faculty hires that everyone agrees are urgently necessary.

Does the School of Engineering and Applied Science have the resources, or prospects of such, to bring the nuclear engineering program into the front rank—a goal now enjoined upon all the university's scientific programs? The answer appears to be "No; not unless the engineering school shifts resources from other programs into nuclear engineering and UVAR, and is thus willing to change its academic plans." In fact the School will have to commit important resources to nuclear engineering even if it decides to maintain the program while phasing out reactor operations.

Attrition has so reduced the nuclear engineering faculty that it has little chance, without reinforcement, of high national ranking; this despite Prof. Brenizer's well-regarded experimental work. It is probably not by any common measure a highly-ranked program. Two, or better three new faculty appointments, preferably at tenure rank and with appropriate start-up funding, so as to attract the most able candidates, would be necessary for a start. Were such appointments made, were the appointees experimentalists, and were the necessary funds committed to their startup and to modernization of UVAR, Virginia could in due course regain high ranking in nuclear engineering. Lesser programs across the nation are closing: this one has a basis for improvement.

Assuming that the UVAR were kept in operation and upgraded, would it be possible to decommission it at some future time—say, thirty years from now? Yes. It would probably be no more or less disruptive and expensive—in constant

dollars—than now. This loose statement is required, however, by the uncertainty of future costs and politics of radioactive waste disposal.[2] Of *certainties* there are two: first, the dollar-costs will rise over time, and second, for everybody's good, decisions on the facility and program should not to be put off.

As an immediate step toward a firm decision, inquiries should be made by the university leadership, at the highest levels of State government and of nuclear power[3] and Commonwealth shipbuilding interests, about prospects for long-term cooperative programs with UVAR and for *support of faculty positions* and plant in nuclear engineering. *If the inquiries do not yield early promise, then the decision should be to decommission the reactor.*

Whether in that case to sustain a nuclear engineering degree program, sans reactor, is a secondary but important decision. It can be done; but there will be costs. Appropriate new faculty mean somebody's long-term commitment of millions of dollars. Decommissioning, to the extent that experience at comparable facilities is a guide, also costs millions, and it will take years—perhaps five. But doing nothing will cost the most. In the end, decision-making depends on priority-setting for research in the School of Engineering and in the university. On that score the committee cannot and should not give advice. What it can advise is not to let the situation stagnate.

To repeat, the committee's conclusion—not a happy one—is that:

If the prospects for new, dedicated, support—in advance of and beyond the ordinary budget process—for two or more tenure-track, experimentalist-faculty hires, and for a major upgrade of the reactor facility, are not unequivocally bright, and if other engineering departments are likely, in budget seasons immediately ahead, to have signally higher priorities, then the best course is to start now on a decommissioning plan, using existing staff for as much of the work as possible, and to organize the funding needed for that large and delicate project.

2. Introduction

2.1 Preamble

The University of Virginia is a public institution and member of the Association of American Universities, that is, one of fifty-eight national universities with programs of advanced research integrated with and important for teaching. Like its peers, the university reviews academic plans continuously; and like most of them, it is examining research commitments and facilities with increased concern as: (1) the flow of government funding for research diminishes, (2) indications multiply that this decline will not soon be reversed, (3) social, legal, and bureaucratic demands on universities require new spending without new resources, and (4) the year 2000 approaches—with the expected calls for public discussion of university plans for 2000 and beyond.

Thus the University of Virginia is studying, among others, the UVAR facility, a research reactor cooled, moderated, and shielded by a large pool of light water, housed in its own building with associated laboratories, shops, and classrooms. The President and Provost have requested a review of its status and future. This has been carried out internally, over the past few years, by the nuclear engineering program (a division of the Department of Mechanical, Aerospace, and Nuclear Engineering—MANE—within the School of Engineering and Applied Science—henceforth SEAS). The Nuclear Regulatory Commission (NRC), which licenses all reactors, monitors compliance with its rules of operation. Thus there has been no lack of agency oversight. The Commission will consider re-licencing UVAR in the year 2002.

2.2 Charge to the committee

UVAR studies having been completed within the School, the administration, including the Provost and the Dean of Engineering, empaneled in 1996 a review committee including external specialists as well as non-SEAS university faculty. The visitors were experienced in nuclear engineering, nuclear power, public policy in science and engineering, and academic administration. The committee was charged as follows:

> "To assess the long-term viability of the University of Virginia Nuclear Reactor facility in the context of the nation's current and future need for academic nuclear engineering facilities, and of the ability of the School of Engineering and Applied Science to provide the resources necessary to develop a nationally-ranked program."

Established during the early summer of 1996, the committee received documents from the internal studies and other information on the facility's status, operations, finances, and relationships with other scientific programs. It met in Charlottesville on October 28, 1996 for a day of discussions, most of them with members of MANE and reactor staff present, but some in executive session. The day's schedule included a tour of UVAR.

2.3 Committee composition (with affiliations at the time of appointment)

2.3.1 External members:

Richard T. Balzheizer, President and CEO, Electric Power Research Institute, Palo Alto, CA

Jackson B. Richard, Director, Office of Laboratory Nuclear Operations, Oak Ridge National Laboratory

H. Guyford Stever, National Academy of Sciences, National Academy of Engineering, member, University of Virginia Center for Advanced Studies Advisory Board

Herbert H. Woodson, Dean of Engineering, University of Texas, Austin

(Two others had accepted appointment: Norman Rasmussen, Nuclear Engineering, MIT, and Sam Werner, Physics, University of Missouri. Both were prevented by last-minute health emergencies from attending the meeting. They have received drafts of this report and have been invited to comment if so inclined.)

2.3.2 Internal members

Ralph O. Allen, Professor of Chemistry; Director, Environmental Health and Safety

Gene D. Block, Professor of Biology; Vice Provost for Research

Ralph C. Minehart, Professor of Physics

Stephen E. Schnatterly, Professor of Physics; Vice Provost for Graduate Studies and Development

Paul R. Gross (Chair), University Professor of Life Sciences, emeritus, member of the Center for Advanced Studies Advisory Board.

(Professors Block and Schnatterly were helpful observers; but since they are members of the central administration and might be called upon in relevant decision-making, they are not signers of this report. The Vice President and Provost, Professor Peter W. Low, was present to respond to questions from the committee. Also participating, throughout the day, was the Dean of SEAS, Professor Richard W. Miksad. Ms. Lisa Everett, of the dean's office, kept minutes of the October 28 meeting. They were employed in preparing this account.)

3. Background

3.1 The reactor:

UVAR is a non-power, research reactor operating at two megawatts. It is of "pool" design,[4] light-water moderated, graphite reflected, with fuel of low-enriched uranium (LEU) in uranium-silicon-aluminum elements. The original power level was one megawatt; this was upgraded to 2 MW in 1971. Conversion to low-enriched uranium was done in 1994. The large pool (78,000 gallons, approximately) is built into the side of Mount Jefferson, to the west of the Central Grounds. This area is today entirely built up, with dormitories, residences, and service facilities adjacent on lower levels of the hill.

Two megawatts of power make UVAR one of the half-dozen largest (in power output) university research reactors in the country. It occupies a building that contains supporting facilities for radiation detection, neutron activation analysis, computing, radiochemistry, neutron radiography, and dosimetry. UVAR is used for research and service work requiring, *inter alia*, neutron radiation, and for the training of nuclear engineering graduate students in reactor operations. It has been in compliance with NRC regulations. The utilization factor has been a laudable 1,260 hours per year during the six years past. The access- and neutron beam-port designs make this a versatile research and service tool.[5]

3.2 Decommissioning costs

The current license must be renewed in 2002. Under NRC rules, operators of research reactors provide, as part of the licensure process, plans and certain assurances concerning decommissioning, whether or not that is contemplated in the near term. The first local study of decommissioning was issued in 1990.[6] At that time, a rough estimate of the cost was made—$2 million—based upon the accumulated experience of other universities. The decommissioning of aged (or otherwise inconvenient) university reactors was already in full career. Indications were given in that study, and in others to follow, that decommissioning costs rise faster than the general cost/price index, largely because of exponentially-rising costs for disposal of radioactive material (radwaste). More recent estimates from the nuclear engineering group have been more remarkable: In an account of decommisioning requirements dated November 9, 1955, they give the range as $5 to $10 million.[7] Estimates from the NRC are less extreme: staff of the NRC research reactor division think that under the present regulatory and price (for radwaste disposal) regimes, decommissioning UVAR might cost $3 to $4 million.[8] This seems more reasonable, since the full decommissioning[9] of Berkeley's 1.5 MW TRIGA Mk. III reactor, also located on-campus in a densely-populated area, was competed in 1991 at a cost of $2.3 million. It is nevertheless true that decommissioning is a one-off job, the real costs of which emerge only in detailed planning and site surveys.

3.3 Questions to the committee

A final mailing to committee members dated October 10, 1996[10] included, along with practicalities, a set of questions for consideration at the meeting. These had emerged from discussions within the administration, and between Dean Miksad and the committee chairman, in an effort to refine the charge and to plan the work of the meeting day. The questions and their prefatory comments are reproduced here in full:

> Although the advice sought by the university from its distinguished visitors needs to be focused upon the reactor and its future, it will be understood by them, I hope, that the issues are hardly local or limited. Decisions made in the wake of these discussions and our report will have wide and long-term effects on engineering at the University of Virginia and on engineering education in the Commonwealth as a whole. Whatever decisions are made will have implications for resource commitments and programs for decades to come. The reactor facility and its programs are, relative to others in science and engineering, unique as to the scope of such commitments. Independently, moreover, of the physical state of and prospects for the reactor itself, the program is now in a state that demands change. Nevertheless, program decisions need not be coupled to reactor decisions. Nuclear engineering education can proceed, if necessary, without an operating reactor immediately on the Grounds. The important point—and it is a point we all grow tired of hearing repeated, but is nevertheless not trivial—is that resources for faculty and capital facilities are limited and will remain so in the forseeable future. No university can afford to build or rebuild every program and capital facility at the same time. In this context then, we ask our visitors for answers to the following questions:
>
> 1. Is the UVAR the right technology, and can it be put in first-class condition, not only for today, but for thirty years ahead?
> 2. Based upon what you will learn from the dean and from members of the central administration, do you judge that we haveappropriate resources, or prospects of resources, for this reactor for the next thirty years?
> 3. Assuming (for the moment) that the answers are "yes," and taking into account your knowledge of the program and resources associated with the reactor, can the resulting operations constitute aprogram of the highest quality, that is, one giving this university a national leadership role in nuclear reactor education, technology, and applications?
> 4. Assuming, again, that the answers to (1) and(2) are "yes," will we be able to decommission the reactor 30 years from now (when it will be more than 60 years old)?

4. **Observations**

4.1 Revenues and costs of UVAR

The reactor facility is part of a larger program that has made important contributions to nuclear engineering science, technology, education, and research. Experimental work at the reactor is only a part of that program, some of whose members have been (respected) theorists, *i.e.*, not experimenters. Undergraduate education in nuclear engineering was a transient at this university, as in many others (see below); but the graduate program, while of modest size, has a steady output of master's and doctoral degrees. Many recipients have found employment in Virginia's large and diverse nuclear power industry.

External support for the reactor and its associated research and training has come from government and private sources. State funds provide the bulk of reactor-professional salaries; government funds continue to support, directly and via research grants, graduate students. Industry, too, in part via research and service contracts and in part through the DOE Industry-Nuclear Power Engineering Education Matching Grant Program, has contributed to the upkeep of UVAR and to work at the site. Data are available for the past several years. Over that interval, external funding associated with UVAR, for all purposes, has been about $500,000 per year.

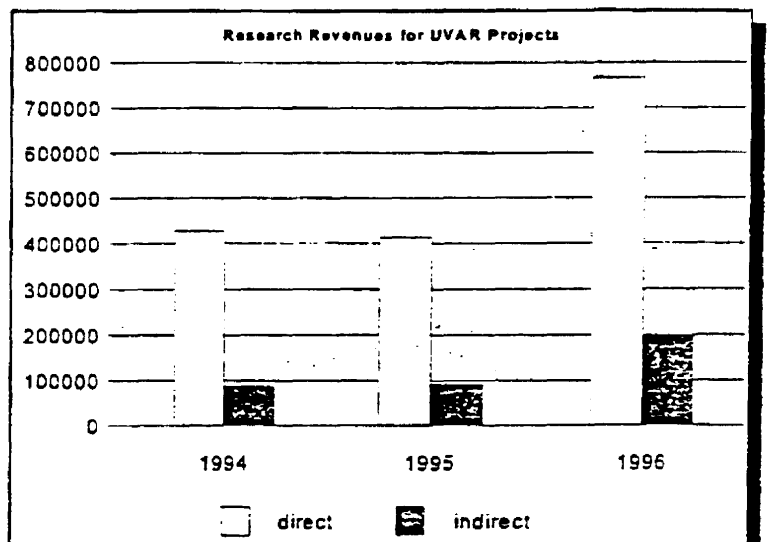

Figure 1. Sponsored research revenue generated by UVAR projects, fiscal 1994—1996. Data from the Office of Sponsored Research and shown in Myers, 1996.

Figure 1 shows direct- and indirect-cost revenues for the last three fiscal years: 1994-96. These figures must not be taken literally as yearly totals: grants, contracts, and awards are often for more than one year. Nevertheless the data provide a fair sense of revenues in a particular year. Fiscal 1996 appears to have been a banner one; but the caution on multi-year grants should be observed. In any case we do not stray far from the truth in considering that for the facility, in its current condition and with the faculty now *or recently* associated with it, aggregate revenues have been as shown. These data were assembled in the office of the provost and are plotted in the Myers document.[11]

Just as ordinary records of sponsored research do not reveal exactly what a research tool earns, bald records of expenditures do not show exactly what it costs to keep a capital facility in operation. There are always hidden or unaccounted costs (some of them opportunity costs); hence the efforts of faculty—and

visitors—to obtain complete financial data can be frustrated by expressed cautions on the part of financial officers. Nevertheless, what the books show can be taken to represent the university's average minimum commitment to UVAR (but not to the nuclear engineering program as a whole). The fiscal year 1995-96 serves well enough for the purpose.[12] Such data make it clear that expenses of the university, associated with UVAR, are in rough balance with combined revenues from research and external support for training. Table I summarizes university (including directly appropriated State) contributions to UVAR and its activities. Note again that it does not represent the costs of the nuclear engineering *program*. UVAR costs in fiscal 1995-96 were $554,520.

Table I

Cost Category	Source			
	State Funds	Local Funds	Other Dep't.	Total
Faculty Salaries	$34,979	$57,387		$92,366
Classified Salaries	$214,885	$6,654		$221,539
Wages		$28,055		$28,055
Fringe Benefits		$15,518	$67,863	$83,381
General Services	$13			$13
Travel	$4,079	$4,888		$8,967
Health Services	$120			$120
Contract Services	$8,134	$3,757		$11,891
Supplies	$16,701	$3,916		$20,617
Equipment	$2,988	$1,525		$4,513
Insurance, Safety	$9,058		$74,000	$83,058
			Total	**$554,520**

4.2 Nuclear Engineering program and UVAR operations

At the October 28th meeting, Professors Brenizer and Flack presented an enthusiastic account of UVAR as a national resource and of the nuclear engineering program as a whole. This echoed a key internal document entitled "The University of Virginia Nuclear Engineering Program and Research Reactor Facility."[13] Their points, in general, were (1) that the program has had a history of high national regard, (2) that the research done by nuclear engineering faculty has been recognized and honored, (3) that UVAR is unique in Virginia and is needed here, and (4) that the future is bright. On all these points except the last the committee agrees. It is likely nevertheless that the program is no longer highly ranked (as much is admitted between the lines of the April, 1996 document, which

refers to support needed to begin to move Virginia nuclear engineering into the top ranks).

As to ranking, a decline from former high standing is no surprise. The full-time nuclear engineering faculty has fallen by attrition from its peak strength; it now has three tenured and tenure-track Professors, a fourth member in phased retirement, and one non-tenure track UVAR Director. Collaborations with other university research programs, within and outside SEAS, are at best potential, rather than active. Among tenured faculty, a single energetic member, Professor J. S. Brenizer, seems to be responsible for much of the research and service activity at the reactor. As is well known, small faculties are unlikely to rank highly. This is unfortunate and in some cases unfair; but it is so. At this point, the impression at Virginia is of an originally vigorous *program* reduced by attrition to the point of languishing—a program in possession, however, of a dated but functional research facility—UVAR.

A "bright" future for nuclear engineering programs, whether in Virginia or elsewhere, is debatable. In 1990, the National Academy of Sciences published a report on nuclear engineering education, following a study undertaken to understand and to counter a national downward trend.[14] The concerns of that report are widely felt by those who understand the nation's electrical power needs and the contributions of nuclear power thereto. But not much has been done about it: the public (and politics) remain largely indifferent, or even hostile. The hyperbolic claim of the 1970s that development of nuclear energy is a "Faustian bargain"[15] has been taken as a statement of fact.

In late 1996 a high-level committee assembled by the Department of Energy reported on the DOE-Industry Matching Grant Program for education and training, of which nuclear engineering and UVAR at Virginia have been beneficiaries. This report[16] (henceforth "Emmert") is an argument for continuation of the Grant Program, which was due for reauthorization. It recounts in convincing detail the good done by this university-industry-government collaboration. Nevertheless it echoes the bad news of the earlier NAS report. At one point it even chides engineers in the nuclear power industry for negative thinking and talk. It calculates that the current, reduced production of nuclear engineers will in a few years become insufficient to meet industry needs.

So, the report's argument goes, although the job situation in nuclear power is tight and troubled, it will inevitably improve. The future, that is to say, is indeed bright as Emmert, *et al.* see it; but *when* brightening is to occur is not seriously predicted. In fact, the data offer a picture of an industry and discipline in trouble. The specifics of U.S. nuclear engineering education, and of university research reactors, are dispiriting.

Data from Emmert (Table E.1 of that document) are plotted in Figure 2, which displays graphically what is generally understood about conditions in nuclear engineering education and research reactors. Nuclear engineering education has

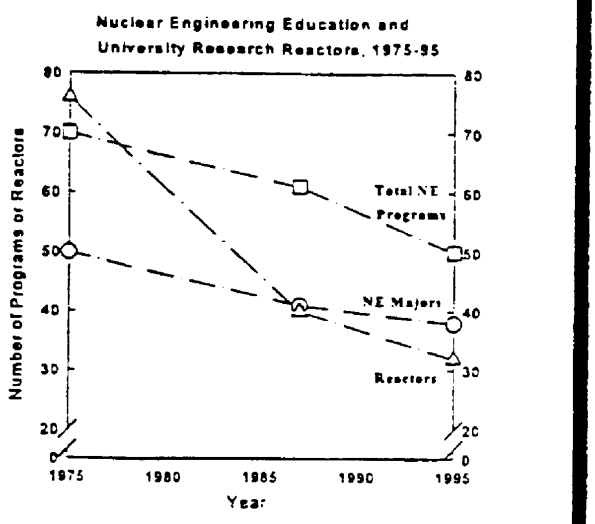

Figure 2. Data plotted from Table E.1 in Emmert, et al., 1966.

been in decline since 1975; the number of research reactors, in all power categories, has fallen even faster than instructional programs as these installations have aged, costs and worries associated with radiation safety and radwaste disposal have risen, university budgets have been squeezed, and universities have hastened to decommission their reactors.

An indicator of prospects for graduate programs is the interest shown by undergraduates in a discipline. This is so because in general post-baccalaureate engineering degree programs draw students from the same, or closely-related undergraduate majors. Emmert's data, from a survey of institutions with undergraduate enrollments in nuclear engineering, may be an indication of what will happen in the near term to graduate education and university research in the field. The steepest decline has been in undergraduate enrollments. There is no sign of reversal of the trend in the few years ahead. Data for total undergraduate enrollments in nuclear engineering programs, wherever situated in universities, are plotted in Figure 3, taken from tabular material in Emmert. They refer to the last five years—1990 through 1995—for which full data were available at the time the report was written. It does not mince words: "Almost without exception, departments are concerned about the decrease in undergraduate enrollment. Since the undergraduate progam is key to many departments, sharp decreases could threaten the existence of many departments. In

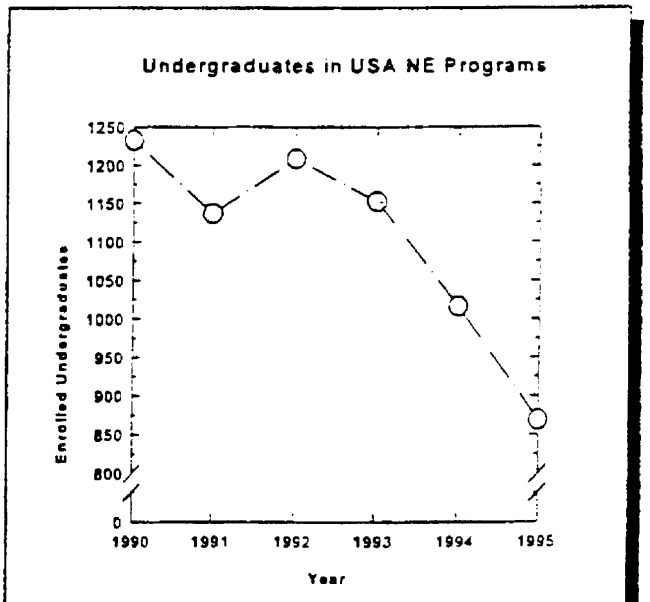

Figure 3. Data from Emmert Table 3.1.

fact, the situation may be worse than portrayed in the data since the undergraduate enrollment numbers reflect a 4 year aggregate and may underestimate the sharpness in the decrease of entering freshmen and sophomores." (p. 11). On the other hand, it is not true that graduate programs in nuclear engineering *must* be affected. It is possible for the arrow to be reversed: that a flourishing graduate program can lead to the establishment (or re-establishment) of a strong undergraduate major.[17]

So the future of nuclear engineering in universities is not "bright." Nor is it necessarily dim. It is simply, to sustain the visual metaphor, *clouded*; and university apprehension is justified by the concerns of such national bodies as assembled by the NAS and DOE. However easy it may have been in the past for the national universities to maintain research programs with small or absent undergraduate teaching functions, it has become strikingly more difficult in the past decade, especially in public institutions that must justify their budgets on the basis of degree-production.

As if there were not already enough to worry about, the national drive to deregulate the public utilities now contributes its own mud to the waters. There is little doubt that as the new arrangements are made, nuclear power—and therefore the job market for nuclear engineers—will feel the downsizing that accompanies deregulation. As this report is being assembled, for example, a public argument waxes in Massachusetts, where the utilities, the State Attorney General, and various taxpayer groups are engaged in a three-way tug-of-war. The implications are glossed in this quote from one of many local newspapers carrying the story:

> A key issue in deregulation for consumers is the issue of 'stranded costs.' *Most of these stranded costs include debts on nuclear power plants and other power resources that are considered lost investments* because more efficient suppliers allowed in by competition will drive those generating suppliers out of business.[18] [Emphasis added]

Nuclear engineering education will revive in the future, if for no other reason than the need to decommission the reactors that today supply 20% of the nation's electrical power. Thoughtful people hope that it will not come to that, for to allow the nuclear power industry to wither would be a tragedy. There are no reasonable alternatives, at present, to nuclear fission power and fossil fuel burning. The dangers of the latter to the environment and to human health are well known. What is not well known, or not admitted, is that the dangers of fossil fuel burning, and those of other "alternatives," outweigh the dangers of nuclear power generation.[19] But when the inevitable revival of nuclear power in the United States will begin is anybody's guess. Nuclear engineering education remains, meantime, a problem for universities with such programs. The question is to what extent

research universities can and should have to undo a larger social irresponsibility. Doing so requires a combination of financial and moral fortitude that few academic institutions possess.

4.3 Needs and resources

All internal commentators agree that the most urgent need for UVAR and its future is for new faculty appointments. Faculty size has fallen from eleven members in 1981, of whom half were experimentalists, to three.[20] (The undergraduate program was terminated in 1994). Among the three, only one, as noted, is a well-funded experimentalist. The others are theorists and computational specialists. A fourth member in phased retirement limits his work to teaching. The UVAR director (Dr. Mulder) conerns himself mainly with facility operations and is a General Faculty member (i.e., not on the tenure track).

All agree that this is too small a basis for program maintenance, let alone for upward mobility. In 1995, the Virginia program was ranked 24th of 33 in the annual program listing of *U. S. News and World Report*. Recognizing the flaws in that and like systems of ranking, one nevertheless sees in it evidence that improvement is possible only through faculty expansion. Even so, a climb to parity with top programs, such as MIT, Illinois, Michigan, Berkeley, and Wisconsin, could not be meteoric.

In the April, 1996 document, the nuclear engineering group called for two appointments, one to replace just-retired Professor Albert B. Reynolds, the other one to replace a junior member who was not granted tenure. Both new faculty should be experimentalists, who would use UVAR. The group's facilities requests were modest: replacement of the UVAR heat exchanger, for example, and continued replacement-upgrading of computer facilities in nuclear engineering. Some committee members judged them *too* modest.

It is possible that facilities needs could be met, in time, by a small faculty's ever more vigorous pursuit of research and service contracts, and through even greater generosity than now on the part of DOE. But it does not seem *likely* that a small, already hard-working faculty can do much more than it does now, or that federal support will change greatly in form and amount. Current work (neutron radiography, radiation detection, neutron activation analysis, preliminary design work on boron neutron-capture therapy, Cobalt-60 irradiations, cable-aging tests; gemstone irradiation services) probably yields as much as can be expected; and a good deal of it is service to industry, rather than research.

The addition of faculty, as we learned, at such rank and with such qualifications as to add lustre, can *begin* only with the availability of state-funded faculty lines.[21] Program-building initiatives usually mean, nowadays, internal transfers of positions (among schools and among departments within schools), not addition of faculty lines *ad hoc*, from outside the university. Accepting the judgment of the nuclear engineering group that the first needs *are* for faculty, the committee

explored with the Provost and the Dean the chances for prompt addition of experimentalist-faculty positions to the program—at least two, perhaps more. The responses were not very encouraging.

Central administration leaves mainly to the deans the allocation of positions within schools. There is no large, central pool of funded positions out of which it could, even if determined to rebuild nuclear engineering and UVAR, provide those lines as an independent action. As to the School, it is free in principle (although contrained in other ways by the university-wide academic planning process) to redistribute faculty; but since there is no large, standing pool of funded but unused lines *within* the School, positions could come only from other engineering programs or from outside the university.

The committee's impression was that this is unlikely to happen unless administration (and the SEAS faculty leadership in general) judge UVAR a promising, high-priority investment. This does not seem to be the case. And the promise of nuclear engineering, coupled as it is with nuclear power, colored as it is by data on student interest and job prospects, dogged as it is by worries over the UVAR location, will not likely be seen as justification for building *it* while rejecting demands of other disciplines for relief or investment.

Beyond the question of faculty enlargement—by how much and by what kinds—there remains that of UVAR condition. Some committee members were concerned that the needs are understated. UVAR works; but rehabilitation, preventive maintenance, and systems (including security) upgrading seemed to them rather more important and more costly than suggested, assuming that sooner or later UVAR will come under greater public scrutiny than in the past.

5. **Conclusions**

The committee revisited the questions, to some extent rephrased, put to it in earlier communcations and again at the start of the October 28th meeting. Its agreements on those questions are as follows:

1. *Is UVAR appropriate technology, for now and for the future (say, for 30 years ahead)?* Yes. So far as design is concerned, UVAR is as good an instrument as any other university reactor. Its conversion to LEU (itself a result of original design work done at Virginia), and other technical improvements, have kept the technology current. The physical object is dated; but the design is not. Nobody can say with confidence that fission reactors will *not* change in the future; but for now UVAR is a research and service tool that works.

2. *Can the nuclear engineering program, that part of it associated with and dependent upon UVAR, achieve high national ranking?* Yes; but only with a significant commitment of funds. This means several faculty positions at high rank, faculty start-up grants (which such appointments usually require and that

can be run well into six figures), and unanticipated expenditures for rehabilitation and upgrading of the building and reactor as insulation, not only against real troubles, but against the perception of the possibility of trouble. No practical estimate of the dollar cost can be given: there are too many uncertainties. But the commitment would be millions of dollars.

3. *Should UVAR be where it is—on the university Grounds?* Ideally, *of course not.* It was not, evidently, meant to be *on* the Grounds when it was built. The university has expanded around it. However inconvenient it might be for experimentalist faculty, it would be much better if the reactor were elsewhere.

4. *If UVAR is not decommissioned now (meaning, practically, over the next five years), can it be decommissioned twenty or thirty years from now?* Yes. Whatever problems exist now as regards decommissioning—and they will not really be known until detail planning and testing (e.g., of the pool concrete) is done—will exist then too. There will doubtless be more care required later in the demolition of radioactive structures. But no principle predicts that things will grow catastrophically worse, *provided that* there is serious commitment to rehabilitate and maintain reactor structures between now and then.

5. *Since UVAR is both an asset and a liability, can advice be given on which aspect dominates, considering the facility but not the entire nuclear engineering program?* No. The extent to which "asset" or "liability" dominates depends upon what resources the university has that *could* be invested in UVAR, *and* its expectations for yield. If the expectation is that UVAR will soon bring the university new and decisive recognitions, that it will soon attract the ablest faculty and most talented students, then the investment of large sums is not self-evidently astute. Decommissioning is also an investment, but with a predictable outcome. Once it is completed, a conveniently-placed research tool is lost; but the problems resulting from operating a powerful but aging nuclear reactor on the Grounds cease to exist. It would be better for the nation if there were some way to discourage such decommissionings and to encourage the rebuilding of university research reactors. But universities cannot be expected to ignore, as an act of public service, large immediate liabilities in the hope of distant assets. In the case of nuclear reactors, specifically, the larger public they do and must serve would hardly applaud such service.

NOTES

1. Some of these use accelerator-based neutron sources for instruction and experimental work.

2. See—an example immediately at hand—the story headlined "U.S. Can't Meet Pact For Removal in 1998 of Nuclear Wastes" (*Wall Street Journal*, December 18, 1996, A16), the burden of which is that, despite payments by the nuclear utilities of $12 billion into a federal fund for the purpose, the Energy Department has announced that it *cannot* move spent nuclear fuel to a permanent storage site by the originally-agreed date of January, 1998.

3. These inquiries need not, and should not, be limited to the local utilities. A 2-MW research reactor is of potential use and interest to utilities throughout the northeastern USA; moreover the need to keep such facilities available for a time, just in case sensible arrangements can eventually be made for their support via *regionalization*, is understood by responsible agencies, such as the Electric Power Research Institute.

4. At one time these were known as "swimming pool" reactors; but the usage has declined with recognition that swimming in such a pool is not a good idea.

5. A well-written, non-technical description of the reactor facility and its capabilities is the *Tour Information Booklet*, revision 1, issued at UVAR in June, 1995.

6. "Decommissioning Report for the UVAR Reactor," prepared for the Nuclear Regulatory Commission, identified as NRC Docket 50-62, License No. R-66, July, 1990.

7. Memorandum from J. S. Brenizer and R. D. Flack to Dean Miksad, dated 9 November 1995, p.5.

8. Reported by Richard S. Myers, Office of the Provost, in a letter to P. R. Gross (with attachments) dated 15 October 1996.

9. That is, making the former reactor area and buildings available for free reassignment to other uses.

10. From P. R. Gross to all committee members.

11. *loc. cit.* These data have been available to faculty and administration of SEAS.

12. Note, however, as illustration of the uncertainty of such booked outlays, that these can refer to more than one fiscal year because they may represent accumulated liabilities. The tabulated *safety* charges have in part to do with disposal of radwastes stored on-site for more than one year.

13. From the nuclear engineering program to the SEAS administration, dated April 1966.

14. "U.S. Nuclear Engineering Education: Status and Prospects," Energy Engineering Board of the National Research Council, National Academy of Sciences, 1990.

15. For a fascinating glimpse of the kinds of arguments (including the "Faustian bargain") that led to the dynamics represented in Figures 2 and 3, see the report published by the Ford Foundation at a time when expansion of nuclear power was still a possibility worthy of wide public discussion: *Exploring Energy Choices: A Preliminary report of the Ford Foundation's Energy Policy Project* (Washington, D.C.: The Ford Foundation, 1974). This document recommended, in effect, a hold on nuclear power and, as an urgent national goal, "Zero Energy Growth." The presence in this volume of an appendix of strong dissent from distinguished members of the Project's Advisory Board apparently made no difference. Chernobyl closed the books.

16. G. A. Emmert, *et al.*, "Department of Energy - Industry Nuclear Power Engineering Education Matching Grant Program: Status report 1992-1996." (D.O.E.) September, 1996.

17. A member of the committe observes: "...a healthy graduate education and research program in nuclear engineering can be maintained with students coming from undergraduate programs in chemical engineering and mechanical engineering...the nuclear engineering program at MIT operated for a number of years as a graduate program and started an undergraduate program only after the graduate program was flourishing. It seems possible that a program could return to that mode of operation with the nuclear engineering faculty offering undergraduate electives in nuclear engineering for chemical and mechanical engineering departments as appropriate."

18. Front page (C-1), business section, story by Mike Karath, *Cape Cod Times*, Tuesday, 10 December 1996.

19. In support of this point, and in contrast to the vague hopes and speculations of the old Ford Foundation report cited above, are two new and troubling results, both featured in a current issue of *Science* magazine (6 December, 1996). (1) Nitrogen-enrichment of the atmosphere, caused by the

burning of fossil fuels, becomes in biogeochemical cycling a powerful catalyst of weed overgrowth in cultivated fields, undoing thereby whatever good the nitrogen does as it enhances sequestration of atmospheric CO_2 in crop-biomass (Jocelyn Kaiser, 1610-11). (2) New calculations indicate that current optimism about *fusion* power, exemplified by the $10 billion ITER (International Thermonuclear Experimental Reactor) project, is probably not justified (James Glanz, 1600-1602).

20. In a sense, a decision on nuclear engineering, hence on UVAR, at this university was made long ago, when the attrition of faculty was not halted over a period of years. Of course, that kind of decision-making, *i.e.*, by default, is not in the least unusual in research universities, especially the public ones, where academic planning is strongly affected by budget and administrative processes outside the university.

21. But please see endnote No. 3.

Report of the Dean of Engineering & Applied Science Nov. 1997

APPENDIX 4, ATTACHMENT 2

ANALYSIS OF THE GROSS REPORT RECOMMENDATIONS FOR THE UNIVERSITY OF VIRGINIA NUCLEAR REACTOR (UVAR)

The history of the UVAR is a long and productive one. It has, at times, been a strength of SEAS and of science and technology generally at this university. This nuclear reactor is, however, nearly forty years old. The Nuclear Engineering faculty is now at the lowest strength of its history. Owing to retirements, resignations, and other forms of attrition, the Nuclear Engineering program has today only three full-time faculty and one half-time - who is in phased retirement. Only one of the current faculty is an experimentalist whose research program is centered on the UVAR.

In December of 1995, the Provost requested that the School of Engineering and Applied Science conduct a study to determine whether the UVAR should be enhanced and made suitable for continued use as a nationally-ranked academic research facility for the next twenty to thirty years or be prepared for decommissioning. A high-level committee of international experts on nuclear reactor technology was subsequently appointed by the Provost. Under the leadership of Paul Gross, a former Provost of the University, the committee was convened in the Spring of 1996 to address this question. The charge to the committee was:

> "To assess the long-term viability of the University of Virginia Nuclear Reactor facility in the context of the nation's current and future need for academic nuclear engineering facilities, and of the ability of the School of Engineering and Applied Science to provide the resources necessary to develop a nationally-ranked program."

After due deliberation, including visits to the University and to the UVAR facility, the committee presented its report to the Provost in January 1997. The key recommendation of the Gross Report is given below:

> "To repeat, the committee's conclusion—not a happy one—is that: If the prospects for new, dedicated, support—in advance of and beyond ordinary budget process—for two or more tenure-track, experimentalist-faculty hires, and for a major upgrade of the reactor facility, are not unequivocally bright, and if other engineering departments are likely, in the budget seasons immediately ahead, to have signally higher priorities, then the best course is to start now on a decommissioning plan, using existing staff for as much of the work as possible, and to organize the funding needed for that large and delicate project."

On March 11, 1997, the Provost forwarded the Gross Report to SEAS with the following charge:

> "If you do not agree with the analysis in the Report, I need to know the specifics of your disagreement and the course you would recommend based upon your analysis. On the other hand, if you think the analysis in the report is sound, then I need to know the position you would recommend that we take. If continued operation of the reactor is your recommendation, I will need to know the extent to which you are prepared to reallocate existing SEAS resources or obtain new resources from government or industry in order to accomplish that objective. If you think decommissioning the proper course, then we will need to work together to secure the resources to accomplish that objective."

SEAS administration then embarked upon an extensive review of the committee's report.. As this review progressed, it became clear that however complicated the pros and cons of the issue of the reactor's technical viability were, when all was said and done, one pivotal and paramount strategic question arose, namely:

> **"Is the UVAR a signally high enough strategic priority of SEAS to warrant the commitment of the faculty and financial resources required to bring the UVAR and the Nuclear Engineering Program to national stature?"**

In addressing this question, the following points became evident:

- The future of the UVAR and the Nuclear Engineering program are intertwined. Any decision to decommission the reactor will impact the nature of the Nuclear Engineering program.

- Adding one or two new experimentalist positions to the Nuclear Engineering faculty would not, by itself, soon bring the UVAR or the program to a high national ranking. Significant additional faculty and financial resources would be needed in order to develop a program reasonably likely to rise to such stature.

- SEAS is caught in a zero-sum resource position. The resources necessary to sustain the reactor and bring the Nuclear Engineering program to a position of national stature are beyond SEAS capabilities unless an explicit decision is made to make the enhancement of the UVAR facility and the rebuilding of the Nuclear Engineering program the top priority for allocation of SEAS resources over a period of years. Although numerous testimonials and expressions of support for the continued operation of the UVAR have been received from academic, industrial and governmental persons, no material offers of sustained or substantial support have been forthcoming.

- The Strategic Plan developed by SEAS last year identified the Nuclear Engineering program as one whose future viability is in some doubt and that should be reviewed by the school. It did not identify the UVAR, or the Nuclear Engineering program, as a key priority area of the school.

The recommendations of the Gross Report were analyzed and discussed with many groups, including: the Nuclear Engineering faculty as a whole in two meetings; each Nuclear Engineering faculty member individually; the SEAS Departmental Chairs; the SEAS Faculty Council, the SEAS Faculty as a whole in three separate all-faculty meetings; over 130 SEAS faculty in individual one-on-one meetings in their offices; the Dean's Research Advisory Committee of senior faculty; the Dean's Advisory Council of corporate leaders; the Associate Dean for Research; other faculty leaders on an individual basis; and deans of several universities with nuclear engineering programs. These discussions produced no overwhelming expressions of support for preferential allocation of resources to the UVAR—or to rebuild the Nuclear Engineering program to national stature—at the expense of other areas of greater relevance and promise. The results of these discussions can be summarized as follows:

- An analysis of the resource capabilities of SEAS which compared the resources required for the operation of the UVAR, and the three faculty associated with the UVAR, to that provided to the academic departments showed that the operating budget for UVAR is greater than that provided to all but two SEAS departments. The number of state paid staff per UVAR faculty is seven times greater than the ratio of staff per faculty for the academic departments. The state provided operating budget per UVAR faculty is seven times greater than that provided to the academic departments. The research productivity per UVAR faculty is $35,000 below the SEAS's average, and the research dollar productivity per UVAR staff is one-tenth of the SEAS's average.

- The SEAS Faculty at their October 21, 1997 Faculty meeting considered the following motion: "Whereas: 1) The UVAR is among the top four university research reactors in the United States, based upon its size, power, location, accessibility and operating schedule; 2) As a unique asset, the UVAR adds to the reputation of the University; 3) The UVAR has an active and expanding research and service program, resulting in a significant level of funding which greatly offsets its total cost of operation; 4) The UVAR has considerable upside potential for doing more research once the cloud of doubt about its continued existence is removed (e.g., animal irradiation's, brain tumor therapy, semiconductor doping, nuclear proliferation measurements, electrical cable integrity studies, neutron radiography, etc.); and, 5) The decommissioning of the UVAR could take 5 years or more, require nearly full staffing to maintain licensing commitments, and cost somewhere in the neighborhood of $5-10 million, while producing no redeeming research activity. Be it resolved that the Faculty of SEAS support the continued operation of the UVAR." **The motion failed.**

- The Dean in individual visits with over 130 SEAS faculty in their offices found only scattered support for the continued operation of the UVAR and virtually no support for making the enhancement of the UVAR or the Nuclear Engineering Program a key priority of the School for the allocation of resources.

- The SEAS Dean's Research Advisory Committee (DRAC) after a careful study of the research and resource priorities of the school came to the following conclusion:

  > "DRAC therefore unanimously concludes that the UVAR is not an important enough asset for SEAS to invest the required resources into it. Based on these observations, DRAC infers from the Report of the Review Committee that steps should be taken immediately to decommission the UVAR."

- The Dean's Advisory Council of corporate leaders discussed the Review Committee Report at its May 1997 meeting and made the following recommendation:

  > "Our conclusion and strong recommendation to you is to decommission the reactor. We believe this action to be the best least-cost solution in the long run and imperative to the refocused strategic direction that has been set for the School of Engineering and Applied Science."

- The UVAR and Nuclear Engineering are *not* identified by the Mechanical, Aerospace, and Nuclear Engineering Department (MANE) as its top priority; it is listed as one among several priorities. The department does not designate the UVAR or the Nuclear Engineering program as the most important recipient of future departmental resources, including faculty positions.

Analysis of the School's resources shows that unless the University Administration can secure new resources for the reactor and its associated programs, SEAS cannot develop its higher priority programs and at the same time rebuild to nationally-recognized excellence the reactor facility and the Nuclear Engineering program.

- Discussions with central administration make it clear that the University will not divert funds from what it perceives as other critical needs in order to allow SEAS to enhance UVAR and rebuild the Nuclear Engineering.

To reallocate these resources*within* SEAS would debilitate the planned enrichment of other programs of the School and prevent it from competing effectively for major research centers under the aegis of NSF, other federal agencies, and some private foundations

In short, there is no feasible way that SEAS can afford to enhance the UVAR or rebuild the Nuclear Engineering program to national stature unless it chooses, as a matter of policy, to make this its highest priority for the allocation of faculty and other resources. There is

general consensus within and outside SEAS that such a policy would hurt the School's strategic effort to develop programs of currently higher priority and greater potential for success. The Gross Report recognized this reality and advised that:

> "As an immediate step toward a firm decision, inquiries should be made by the University leadership, at the highest levels of State government and of nuclear power and Commonwealth shipbuilding interests, about prospects for long-term cooperative programs with the UVAR and for support of faculty positions and plans in nuclear engineering. If the inquiries do not yield early promise, then the decision should be to decommission the reactor."

Discussions to date with University administrators indicate that the University has not been able to find substantive state or private commitments to provide these needed new resources.

SUMMARY

It is beyond the capability of the School to enhance the UVAR and rebuild Nuclear Engineering to high national ranking while at the same time allocating necessary resources to its highest priority programs, as called for in the Strategic Plan. If the University can provide no new resources for the UVAR and Nuclear Engineering programs centered on the reactor, then the prospects for rebuilding a top-ranking program *based upon an on-site reactor* are very dim. Given its current and likely near-term budgets and faculty lines, the School would have to commit the lion's share of those to return the program to its former faculty size, and to supporting them and UVAR operations properly over the next twenty or thirty years. To do so would preclude significant development of other higher-priority programs of the School. It is not, furthermore, a course of action that the faculty accepts as appropriate or just. There is a clear consensus within SEAS that if decommissioning of the UVAR is undertaken, such resources, as may be freed up as a result, should be available in a timely manner for the use of SEAS in developing the School's priority areas. If decommissioning is to occur it should be carried out as a University responsibility under a basic understandings that the impact on SEAS will be minimized.

REPORT OF SPECIAL COMMITTEE ON RESEARCH REACTOR

The special committee appointed by the Rector to consider the appeal concerning the research reactor (UVAR) received voluminous written materials. Following a review of the documentary background, the committee decided to hold a hearing. The notice of that hearing, which was held at the Law School on May 14, is Attachment 1 to this report.

At 8:15 a.m. on the morning of May 14 the committee was picked up at the Boar's Head and taken to the Reactor structure. We were given a tour of that facility. It is impressive. The Provost, Peter Low, Ralph Allen, and W. Reed Johnson, the retired professor who is chiefly responsible for bringing this issue before the Board of Visitors, participated in this tour.

The morning session, which began at 10:00 a.m., was largely devoted to proponents of decommissioning the reactor. Dean Richard Miksad of the School of Engineering and Applied Science (SEAS) spoke first, followed by Associate Dean Haydn N. G. Wadley, and then by Ralph O. Allen, Professor of Chemistry and Chairman of the Radiation Safety Committee, who is in charge of Environmental Health and Safety at the University.

Retired Professor of Nuclear Engineering W. Reed Johnson coordinated the presentations of the persons opposed to decommissioning of the reactor, and the committee heard David Heacock, Manager of Nuclear Safety for VEPCO at the latter's North Anna Facility, David Firth of Lynchburg, John Redick, John Kotek of the United States Department of Energy, Russell Ball, Jack S. Brenizer, Professor of Nuclear Engineering, Professor James L. Kelly, Professor Roger A. Rydin, and Professor John Dorning.

The committee was impressed with the high quality of the discussion, both pro and con, the scholarship evident in the arguments which were adduced, and the civility and persuasiveness of the speakers.

When the hearing ended at about 4:00 p.m., the committee was left with these conclusions:

1. The research reactor is a viable and important facility. Although it is 40 years old, it has been well maintained. One speaker described it as absolutely essential to the mission of the University.

2. Nuclear facilities produce over twenty percent of American energy, and over one-third of the energy used in Virginia. With the problems associated with fossil fuels, reliance on nuclear energy is increasing worldwide, and will inevitably increase in the United States.

3. The future of the research reactor at the University, however, is inextricably tied to the decline in the nuclear engineering faculty and student body. There are only three nuclear engineering faculty left (there were eleven in 1981), only one of whom is an experimentalist. There have been no undergraduate students in nuclear engineering since 1994, and there are only seven graduate students. All the speakers recognized that keeping the research reactor would be insufficient unless additional young faculty in nuclear engineering were hired. That decision, however, was beyond the jurisdiction of this committee.

The most useful of the documentary materials supplied to the committee was the report of the Nuclear Reactor Review Committee chaired by Paul Gross, former Provost of the University. The Gross Committee included Richard Balzheiser, President and CEO of the Electric Power Research Institute, Ralph Minehart, Professor of Physics at the University, Norman C. Rasmussen, Professor of Engineering and Nuclear Engineering at MIT, Jackson B. Richard, Director of the Office of Laboratory Nuclear Operations, Sam Werner of the Department of Physics at the University of Missouri, Ralph O. Allen, the University's Director of Environmental Health and Safety, Guy Stever, Former President at Carnegie-Mellon, and Former Director of the National Science Foundation, and Herbert C. Woodson, Dean of Engineering at the University of Texas. The following are significant excerpts from the Gross Committee's report:

> "Attrition has so reduced the nuclear engineering faculty that it has little chance, without reinforcement, of high national ranking, this despite Prof. Brenizer's well-regarded experimental work. It is probably not by any common measure a highly-ranked program. Two, or better three new faculty appointments, preferably at tenure rank and with appropriate start-up funding, so as to attract the most able candidates, would be necessary for a start."
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> "Appropriate new faculty mean somebody's long-term commitment of millions of dollars. Decommissioning, to the extent that experience at comparable facilities is a guide, also costs millions, and it will take years--perhaps five. But doing nothing will cost the most."
>
> • • •
>
> "To repeat, the committee's conclusion--not a happy one--is that:
>
> "If the prospects for new, dedicated, support--in advance of and beyond the ordinary budget process--for two or more tenure-track, are not unequivocally bright, and if other engineering departments are likely, in budget seasons immediately ahead, to have signally higher priorities, then the best course is to start now on a decommissioning plan, using existing staff for as much of the work as possible, and to organize the funding needed for that large and delicate project."
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> • • •

"At the October 28th meeting, Professors Brenizer and Flack presented an enthusiastic account of UVAR as a national resource and of the nuclear engineering program as a whole. This echoed a key internal document entitled 'The University of Virginia Nuclear Engineering Program and Research Reactor Facility.' Their points, in general, were (1) that the program has had a history of high national regard, (2) that the research done by nuclear engineering faculty has been recognized and honored, (3) that UVAR is unique in Virginia and is needed here, and (4) that the future is bright. On all these points except the last the committee agrees."

• • •

"So the future of nuclear engineering in universities is not 'bright.' Nor is it necessarily dim. It is simply, to sustain the visual metaphor, *clouded*."

• • •

"There are no reasonable alternatives, at present, to nuclear fission power and fossil fuel burning. The dangers of the latter to the environment and to human health are well known. What is not well known, or not admitted, is that the dangers of fossil fuel burning, and those of other 'alternatives,' outweigh the dangers of nuclear power generation. But when the inevitable revival of nuclear power in the United States will begin is anybody's guess."

The Gross Committee also set forth its conclusions:

"1. *Is UVAR appropriate technology, for now and for the future (say, for 30 years ahead)*? Yes. So far as design is concerned, UVAR is as good an instrument as any other university reactor. Its conversion to LEU (itself a result of original design work done at Virginia), and other technical improvements, have kept the technology current. The physical object is dated; but the design is not. Nobody can say with confidence that fission reactors will *not* change in the future; but for now UVAR is research and service tool that works.

"2. *Can the nuclear engineering program, that part of it associated with and dependent upon UVAR, achieve high national ranking*? Yes; but only with a significant commitment of funds. This means several faculty positions at high rank, faculty start-up grants (which such appointments usually require and that can be run well into six figures), and unanticipated expenditures for rehabilitation and upgrading of the building and reactor as

insulation, not only against real troubles, but against the perception of the possibility of trouble. No practical estimate of the dollar cost can be given: there are too many uncertainties. But the commitment would be millions of dollars.

"3. *Should UVAR be where it is--on the university Grounds*? Ideally, *of course not*. It was not, evidently, meant to be on the Grounds when it was built. The university has expanded around it. However inconvenient it might be for experimentalist faculty, it would be much better if the reactor were elsewhere.

"4. *If UVAR is not decommissioned now (meaning, practically, over the next five years), can it be decommissioned twenty or thirty years from now*? Yes. Whatever problems exist now as regards decommissioning--and they will not really be known until detail planning and testing (e g., of the pool concrete) is done--will exist then too. There will doubtless be more care required later in the demolition of radioactive structures. But no principle predicts that things will grow catastrophically worse, *provided that* there is serious commitment to rehabilitate and maintain reactor structures between now and then.

"5. *Since UVAR is both an asset and a liability, can advice be given on which aspect dominates, considering the facility but not the entire nuclear engineering program*? No. The extent to which 'asset' or 'liability' dominates depends upon what resources the university has that *could* be invested in UVAR, and its expectations for yield. If the expectation is that UVAR will soon bring the university new and decisive recognitions, that it will soon attract the ablest faculty and most talented students, then the investment of large sums is not self-evidently astute. Decommissioning is also an investment, but with a predictable outcome. Once it is completed, a conveniently-placed research tool is lost; but the problems resulting from operating a powerful but aging nuclear reactor on the Grounds cease to exist. It would be better for the nation if there were some way to discourage such decommissionings and to encourage the rebuilding of university research reactors. But universities cannot be expected to ignore, as an act of public service, large immediate liabilities in the hope of distant assets. In the case of nuclear reactors, specifically, the larger public they do and must serve would hardly applaud such service."

Footnote 20 to the Gross report is important, and encapsulates the issue which was before the Committee:

"In a sense, a decision on nuclear engineering, hence on UVAR, at this university was made long ago, when the attrition of faculty was not halted over a period of years."

The Dean of SEAS followed a very careful and thorough process in which he met with 131 faculty for individual discussions of the reactor issue. The review process was so thorough that the committee is attaching a flow sheet describing it to this report.

The Dean's Research Advisory Committee (DRAC) came to this conclusion:

"DRAC therefore unanimously concludes that the UVAR is not an important enough asset for SEAS to invest the required resources into it. Based on these observations, DRAC infers from the Report of the Review Committee that steps should be taken immediately to decommission the UVAR."

The Dean's Advisory Council of corporate leaders discussed the Gross report and made this recommendation:

"Our conclusion and strong recommendation to you is to decommission the reactor. We believe this action to be the best least-cost solution in the long run and imperative to the refocused strategic direction that has been set for the School of Engineering and Applied Science."

The administration of SEAS therefore reached this conclusion:

"It is beyond the capability of the School to enhance the UVAR and rebuild Nuclear Engineering to high national ranking while at the same time allocating necessary resources to its highest priority programs, as called for in the Strategic Plan. If the University can provide no new resources for the UVAR and Nuclear Engineering programs centered on the reactor, then the prospects for rebuilding a top-ranking program *based upon an on-site reactor* are very dim. Given its current and likely near-term budgets and faculty lines, the School would have to commit the lion's share of those to return the program to its former faculty size, and to supporting them and UVAR operations properly over the next twenty or thirty years. To do so would preclude significant development of other higher-priority programs of the School."

An energetic and spirited discussion in the Engineering faculty reached its climax on October 21, 1997, when the following motion propounded by members of the Nuclear Engineering faculty was voted upon:

"1) The UVAR is among the top four university research reactors in the United States, based upon its size, power, location, accessibility and operating schedule;

"2) As a unique asset, the UVAR adds to the reputation of the University;

"3) The UVAR has an active and expanding research and service program, resulting in a significant level of funding which greatly offsets its total cost of operation;

"4) The UVAR has considerable upside potential for doing more research once the cloud of doubt about its continued existence is removed (e.g., animal irradiations, brain tumor therapy, semiconductor doping, nuclear proliferation measurements, electrical cable integrity studies, neutron radiography, etc); and,

"5) The decommissioning of the UVAR could take 5 years or more, require nearly full staffing to maintain licensing commitments, and cost somewhere in the neighborhood of $5-10 million, while producing no redeeming research activity.

"Be it resolved that the Faculty of SEAS support the continued operation of the UVAR."

The motion failed in a vote of 42 to 44. During the hearing of the 14th this committee learned, however, that the faculty division was even more narrow, for Professor Flack, the Chairman of MANE (Mechanical, Aeronautical and Nuclear Engineering) and Professor Brenizer, both of whom were strongly opposed to decommissioning the reactor, were absent.

Your committee wishes that arrangements could be made with private industry to assume responsibility for the current operation and ultimate decommissioning of the reactor. The committee has been informed that there have been discussions looking to such a solution. Absent such a development the committee is unanimously of the opinion that the decision which has been taken by the School of Engineering and Applied Science (SEAS) was carefully and properly made, and that the Board of Visitors should affirm and approve that decision.

5-21-98

Appendix 5.
1999 Legislation With Technology or Science Content
(By Alphabetical Subject Matter)

Legislation recommended by the Joint Commission on Technology and Science is **bolded.** Passed legislation is *italicized.* Bills carried over in the 1998 Session which failed in 1999 are not included in this appendix.

	HBs	HJRs	HRs	SBs	SJRs	SRs	Totals
Introduced	68	11	1	23	8	1	112
Passed	37	9	0	11	6	1	64
Failed	31	2	1	12	2	0	48

Civil Law and Practice (10)

HB 1452 - Cover sheets on deeds and other instruments; circuit court clerks.
HB 1664 - Virginia Supreme Court; uniform statewide formatting standards for cover sheets on deeds and other instruments.
HB 1665 - Courts of record; indexing by tax map reference.
HB 1666 - Virginia Supreme Court; uniform statewide formatting standards for land records indexing.
HB 1834 - Cover sheets on deeds and other instruments; circuit court clerks.
HB 2104 - Uniform Commercial Code; financing statements; electronic filing.
HB 2186 - Personal jurisdiction for sending unsolicited bulk electronic mail.
HB 2719 - Corporations; proxies; electronic and other authorizations.
HB 2721 - Corporations; electronic notification of shareholders' meetings.
SB 920 - Personal jurisdiction for sending unsolicited bulk electronic mail.

Criminal Law and Practice (21)

HB 748 - Unlawful e-mail.
HB 1481 - Child pornography and indecent liberties with children.
HB 1580 - Child pornography and indecent liberties with children.
HB 1620 - Child pornography and indecent liberties with children.
HB 1668 - Virginia Computer Crimes Act; unsolicited bulk electronic mail; personal jurisdiction.
HB 1714 - Virginia Computer Crimes Act; unsolicited bulk electronic mail; personal jurisdiction.
HB 1757 - Child pornography and indecent liberties with children.
HB 1758 - Taking indecent liberties with children through the Internet; penalties.
HB 1760 - Child pornography and indecent liberties with children.
HB 1761 - Assuming the identity of another person.
HB 1779 - Use of electronic means to facilitate certain offenses involving children.
HB 2168 - Taking indecent liberties with children; criminal solicitation of children.
HB 2236 - Encryption used in criminal activity.

HB 2284 - Reporting of sexually explicit visual material involving a minor and appearing on the Internet.
HB 2674 - Unauthorized interception and use of personal information; penalty.
HB 2682 - Criminal history record access via the Internet.
HJR 649 - Sense of the General Assembly; encouraging the use of strong encryption technology.
SB 881 - Virginia Computer Crimes Act; unsolicited bulk electronic mail; personal jurisdiction.
SB 884 - Child pornography and indecent liberties with children.
SB 1170 - Central Criminal Records Exchange information via the Internet.
SJR 359 - Commending the Bedford County Sheriff's office.

Economic Development and Tax (9)

HB 1667 - Technology and biotechnology investment incentives.
HB 1713 - Retail sales and use tax exemption for certain tangible personal property used to provide Internet services.
HB 1858 - Reduced sales and use tax for certain clothing, footwear, and computers.
HJR 578 - Study; state and local tax structure.
SB 1188 - Information Technology Employment Performance Grant Program created.
SJR 401 - Study; state and local tax structure.
SJR 414 - Sense of the General Assembly; encouraging growth of information technology in Southwest Virginia.
SJR 502 - Study; Secretary of Technology; developing a coordinated research and development policy for the Commonwealth.
SJR 513 - Sense of the General Assembly; encouraging industries engaged in Internet commerce to regulate themselves.

Education (11)

HB 1043 - Acceptable Internet use policies in Virginia's public schools and libraries.
HB 1561 - Public libraries; inhibiting electronic access to obscene, etc. material.
HB 1672 - State Council of Higher Education for Virginia; data collection on students with disabilities.
HB 1703 - Public schools; inhibiting electronic access to obscene, etc. material.
HB 1940 - Christopher Newport University; electronic commerce programs and activities.
HB 2263 - Teacher licensure; technology proficiency.
HB 2321 - Family Involvement in Technology Program created.
HB 2694 - Advantage Virginia Incentive Program created.
HB 2756 - Internet access in Virginia's public schools and libraries.
HJR 651 - Sense of the General Assembly; encouraging accelerated degree programs in information systems.
HR 41 - Legislative study; scholarship program for Virginia students who become employed in occupational areas of high demand in the Commonwealth.

Public Access and Information (8)

HB 2152 - Privacy Protection Act; definition of "information system" clarified.
HB 2161 - Privacy Protection Act; sale or release of certain electronic information prohibited; damages.
HB 2638 - Virginia Freedom of Information Act; procedure for electronic response to request for official records.
HJR 595 - Study; Clerks of the House of Delegates and the Senate; connecting to Net.Work.Virginia.
SB 806 - Virginia Freedom of Information Act; electronic notice of public meetings.
SB 1026 - Virginia Freedom of Information Act; certain electronic communication meetings permitted.
SJR 361 - Study; Clerks of the House of Delegates and the Senate; connecting to Net.Work.Virginia.
SJR 405 - Sense of the General Assembly; television coverage of legislative sessions.

Telecommunications (8)

HB 2015 - Local telecommunications services; City of Manassas.
HB 2262 - Local telecommunications services; City of Bedford.
HB 2277 - Local telecommunications services; certain leases by localities, electric commissions or boards, and economic and industrial development authorities permitted.
HB 2436 - Advanced Communications Assistance Fund created for underserved localities in the Commonwealth.
HB 2640 - Landlord and tenant; telecommunication carriers; telecommunications service facilities; property owner's conditions.
HB 2641- Landlord and tenant; telecommunications carriers; telecommunications service facilities; property owner's conditions, oversight by the State Corporation Commission.
HJR 258 - Memorializing Congress to oppose certain regulations proposed by the Federal Communications Commission regarding certain communications towers.
SB 973 - Local telecommunications services; City of Martinsville.

Transportation (5)

HB 2040 - Special license plates; Internet commerce industry.
HB 2142 - "Photo-red" enforcement of traffic light signals; procedures at the Department of Motor Vehicles.
SB 775 - "Photo-red" enforcement of traffic light signals; leased and rented vehicles included.
SB 1003 - "Photo-red" enforcement of traffic light signals; procedures at the Department of Motor Vehicles.
SB 1091 - "Photo-red" enforcement of traffic light signals; procedures at the Department of Motor Vehicles.

Virginia State Government (28)

HB 1115 - Information technology access by individuals who are blind or visually impaired.
HB 1670 - Agency heads required to appoint an agency information officer.
HB 1727 - Secretary of Technology created.

HB 1853 - Voter registration records; lists of decedents and felons to be transmitted electronically.
HB 1854 - Administration of voter registration laws and Voter Registration Act; certain information to be transmitted electronically.
HB 1944 - Commissioners of the revenue authorized to produce property tax book by electronic means.
HB 1995 - Department of Criminal Justice Services; definition of "electronic security equipment."
HB 2010 - Campaign finance disclosure reports; electronic filings.
HB 2188 - Secretary of Technology created.
HB 2240 - Duties of the Executive Secretary of the Supreme Court regarding the Law Office and Public Access System.
HB 2343 - Powers and duties of the Department of Personnel and Training; acceptable Internet use policy for state employees.
HB 2344 - Surplus computers and related equipment donated directly to public schools.
HB 2564 - Division of Purchases and Supply; procurement of computers and related equipment.
HJR 594 - Sense of the General Assembly; supporting the Criminal Justice Information Technology Institute.
HJR 596 - Sense of the General Assembly; encouraging state agencies' use of electronic commerce.
HJR 683 - Study; Secretary of Technology; telemedicine equipment guidelines.
HJR 759 - Study; Boards of Medicine and Pharmacy; sale of prescription drugs via the Internet.
SB 807 - Authorizing absentee ballot applications to be filed electronically.
SB 808 - Secretary of Technology created.
SB 819 - Definitions of certain words in the Code of Virginia; electronic filing of information permitted.
SB 929 - State Treasurer required to post notices of unclaimed property on the Internet.
SB 1095 - Agency heads required to appoint agency information officer.
SB 1108 - Duties of the Executive Secretary of the Supreme Court regarding the Law Office and Public Access System.
SB 1205 - Electronic voting systems and ballots.
SB 1214 - Commissioner of Health required to report certain information about telemedicine initiatives.
SB 1327 - Information technology access by individuals who are blind or visually impaired.
SJR 376 - Commending the Virginia Technology Council.
SR 44 - Senate Rules amended; General Laws Committee authorized to receive legislation related to technology and science.

Year 2000 (12)

HB 1662 - Virginia Public Procurement Act; procurements of goods and services to remediate Year 2000 problems deemed emergency procurements.
HB 1663 - Year 2000 assessment privilege created.
HB 1669 - Localities; immunity for computer failures related to Year 2000 date change.
HB 1671 - Voluntary disclosure and free exchange of Year 2000 readiness information.

HB 2153 - New Year's Day 2000 legal holiday.
HB 2158 - Virginia Tort Claims Act; Year 2000 immunity for certain employees.
HB 2706 - Year 2000 claims against the Commonwealth.
HJR 505 - Sense of the General Assembly; Year 2000 planning to include emergency and public safety services.
HJR 741 - Sense of the General Assembly of Virginia; encouraging state agencies to avoid certain dates for implementation of new programs or procedures.
SB 983 - Limiting liability and damages for economic loss in connection with the Year 2000 date change.
SB 1013 - Year 2000 assessment privilege created.
SB 1180 - Limiting liability and damages for economic loss in connection with the Year 2000 date change.

Appendix 6.
Final Summaries of 1999 Legislation With Technology or Science Content
(In Numerical Order by HBs, HJRs, HRs, SBs, SJRs, and SRs)

BILL NUMBER: House Bill 748—Passed (Chapter 936, 1999 Acts).
PATRON: Marshall
SUMMARY: ***Unlawful e-mail.*** Creates a Class 1 misdemeanor to punish the person who sends for commercial purposes any electronic file or message containing sexually explicit material which is harmful to juveniles and may be examined by a juvenile.

BILL NUMBER: House Bill 1043—Passed (Chapter 64, 1999 Acts).
PATRON: Jackson
SUMMARY: ***Acceptable Internet use policies (AIUP) in Virginia's public schools and libraries.*** On or before December 1, 1999, requires every school division superintendent and local public library board (or its equivalent) to file an AIUP with the Superintendent of Public Instruction and the Librarian of Virginia, respectively.

BILL NUMBER: House Bill 1115—Passed (Chapter 773, 1999 Acts).
PATRON: Darner
SUMMARY: ***Information technology access by individuals who are blind or visually impaired.*** Creates the Information Technology Access Act to secure the benefits of access to information technology for individuals who are blind or visually impaired through the procurement of such technology in accordance with standards for equivalent access by both visual and nonvisual means. Identical to Senate Bill 1327.

BILL NUMBER: House Bill 1452—Passed (Chapter 363, 1999 Acts).
PATRON: Murphy
SUMMARY: ***Cover sheets on deeds and other instruments; circuit court clerks.*** Allows the circuit court clerks of Richmond County, Franklin County, Wise County, and Greene County and the City of Norton to request that a cover sheet be filled out on all real estate documents which provides pertinent information to the clerk for indexing purposes. This same provision was added in 1998 for the clerks of Wise County and the City of Norton through an uncodified act. This bill codifies that act. The pilot projects created by these enactments expire on July 1, 2002. Identical to House Bill 1834.

BILL NUMBER: House Bill 1481—Passed by indefinitely in House Appropriations.
PATRON: Hamilton
SUMMARY: ***Child pornography and indecent liberties with children.*** Raises the penalty for possession of child pornography from a Class 3 misdemeanor to a Class 6 felony and also provides that it is a Class 6 felony to use electronic means to promote the use of a minor in an activity involving indecent liberties with children.

BILL NUMBER: House Bill 1561—No action taken by House Science and Technology.
PATRON: Black
SUMMARY: ***Public libraries; inhibiting electronic access to obscene, etc. material.*** Places limitations on public library patron access to the Internet and other components of the

electronic information infrastructure. It is not applicable to libraries in public or private elementary or secondary schools. Public libraries receiving any state funding are required by this bill to obtain computer hardware and software inhibiting library patron access via library computers to obscene materials, child pornography, and material harmful to juveniles. The bill provides that no library shall receive public funds unless its board certifies annually to the Librarian of Virginia and the Secretary of Finance that computer hardware and software have been installed to inhibit, to the fullest extent possible, library patron access via library computers to obscene materials, child pornography, or materials harmful to juveniles, and that such hardware and software have been kept operational at all times.

BILL NUMBER: House Bill 1580—Incorporated into House Bill 1481.
PATRON: Davies
SUMMARY: ***Child pornography and indecent liberties with children.*** Raises the penalty for possession of child pornography from a Class 3 misdemeanor to a Class 6 felony and also provides that it is a Class 6 felony to use electronic means to promote the use of a minor in an activity involving indecent liberties with children.

BILL NUMBER: House Bill 1620—Incorporated into House Bill 1481.
PATRON: Robinson
SUMMARY: ***Child pornography and indecent liberties with children.*** Raises the penalty for possession of child pornography from a Class 3 misdemeanor to a Class 6 felony and also provides that it is a Class 6 felony to use electronic means to promote the use of a minor in an activity involving indecent liberties with children.

BILL NUMBER: House Bill 1662—Passed (Chapter 178, 1999 Acts).
PATRON: Landes
SUMMARY: ***Virginia Public Procurement Act; procurements of goods and services to remediate Year 2000 problems deemed emergency procurements.*** Provides that, until January 1, 2001, the procurement goods and services to remediate computers, software programs, databases, networks, information systems, firmware, or any other devices which are not compliant with the "Year 2000" date change shall be deemed as "emergency procurements." The purpose of the bill is to assist the efforts of state agencies and localities to find and retain vendors to fix their Year 2000 problems forthwith. The bill contains technical amendments and an emergency clause. The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Bill 1663—Passed (Chapter 17, 1999 Acts).
PATRON: May
SUMMARY: ***Year 2000 assessment privilege created.*** Provides that Year 2000 "assessments" and "documents" shall not be discoverable or admissible in evidence unless ordered by the court for good cause shown. The purpose of the bill is to encourage people and businesses to conduct assessments of their Year 2000 readiness and take timely and adequate measures to solve Year 2000 problems without fear that such documents will create opportunities for litigation. The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Bill 1664—No action taken by House Courts of Justice.
PATRON: Bennett
SUMMARY: ***Virginia Supreme Court; uniform statewide formatting standards for cover sheets on deeds and other instruments.*** Requires the Supreme Court to adopt uniform statewide formatting standards for cover sheets on deeds and other real property instruments by December 1, 1999, in consultation with the Virginia Circuit Court Clerks' Association. After the uniform standards are adopted, circuit court clerks may request, but not require, that cover sheets be submitted with deeds and other instruments for the purpose of properly indexing same. Effective December 1, 1999, the bill also repeals Chapter 378 of the 1998 Acts of Assembly, which allowed the circuit court clerk of Wise County and the City of Norton to request that a cover sheet be filled out on all real estate documents. The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Bill 1665—Incorporated into House Bill 1441.
PATRON: Bennett
SUMMARY: ***Courts of record; indexing by tax map reference.*** Allows circuit court clerks in the Commonwealth to require deeds submitted for recordation to reference in the left margin the tax map reference number or parcel identification number of the affected parcel. The current section specifically lists which clerks may require the parcel identification number. The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Bill 1666—No action taken by House Courts of Justice.
PATRON: Bennett
SUMMARY: ***Virginia Supreme Court; uniform statewide formatting standards for land records indexing.*** Requires the Supreme Court to adopt uniform statewide formatting standards for land records indexing by December 1, 1999, in consultation with the Virginia Circuit Court Clerks' Association. The initial standards must include the land records indexing standards developed by the Land Records Management Task Force pursuant to a prior act of the General Assembly and be implemented in the circuit courts by December 1, 2000. The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Bill 1667—Passed (Chapter 450, 1999 Acts).
PATRON: Purkey
SUMMARY: ***Technology and biotechnology investment incentives.*** Creates a research and development tax credit, not to exceed 15 percent of the amount spent by the taxpayer on an eligible research and development activity. The maximum credit is $100,000 per year. The tax credit will become effective only if reenacted by the 2000 General Assembly Session. The bill also directs the Secretaries of Technology and Commerce and Trade to conduct a study of tax incentives for research and development initiatives. The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Bill 1668—Passed (Chapter 904, 1999 Acts).
PATRON: Plum
SUMMARY: ***Virginia Computer Crimes Act; unsolicited bulk electronic mail; personal jurisdiction.*** Amends Virginia's long-arm statute to provide that using a computer or

computer network located in Virginia constitutes an act in Virginia. The bill also (i) expands the definitions of "computer services" and "without authority" and provides a new definition for "electronic mail service provider" in the Virginia Computer Crimes Act; (ii) makes it the crime of computer trespass to (a) falsify or forge e-mail message transmission information in connection with unsolicited bulk e-mail and (b) knowingly sell, give, distribute, or possess software whose principal purpose is to facilitate unsolicited bulk e-mail; (iii) provides that electronic mail service providers shall not be liable for actions they take to prevent unsolicited bulk email; (iv) provides civil relief to an injured person, other than an electronic mail service provider, for actual damages or the lesser of $10 for each unsolicited bulk e-mail message or $25,000 per day and states that the injured person shall not have a cause of action against an electronic mail service provider which merely transmits the e-mail message; (v) provides civil relief to an injured electronic mail service provider for actual damages or the greater of $10 for each unsolicited bulk e-mail message or $25,000 per day; and (vi) cross-references the Virginia long-arm statute in the Virginia Computer Crimes Act to ensure the establishment of personal jurisdiction in Virginia's courts. The purpose of the bill is curb a practice known as "spamming," the sending of unsolicited electronic mail to unsuspecting recipients. The bill is a recommendation of the Joint Commission on Technology and Science. Identical to House Bill 1714 and Senate Bill 881.

BILL NUMBER: House Bill 1669—Passed (Chapter 978, 1999 Acts).
PATRON: Almand
SUMMARY: ***Localities; immunity for certain computer failures related to Year 2000 date change.*** Provides that tort actions may not be brought against the Commonwealth's counties, cities, towns or entities established by one or more local governments to provide public transportation services, or other political subdivisions, or employees or officers thereof based upon the failure of a computer, software program, database, network, information system, firmware, or other device to interpret, produce, calculate, generate, or account for a date which is compatible with the "Year 2000" date change. Acts or omissions constituting gross negligence or willful misconduct are excluded from the bill's coverage. The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Bill 1670—Passed (Chapter 70, 1999 Acts).
PATRON: May
SUMMARY: ***Agency heads required to appoint an agency information officer (AIO).*** Requires specified department directors in state government to appoint an AIO from among the department's employees. The AIO would have two specific duties: (i) to ensure the coordinated planning, practical acquisition, effective development, and efficient use of information technology resources and communications services to meet the department's needs and (ii) to serve as the department's liaison to the Office of the Secretary of Technology. The bill is a recommendation of the Joint Commission on Technology and Science. Identical to Senate Bill 1095.

BILL NUMBER: House Bill 1671—Passed (Chapter 859, 1999 Acts).
PATRON: Nixon
SUMMARY: ***Voluntary disclosure and free exchange of Year 2000 readiness information.*** Provides immunity from liability for damages to any person for injury resulting from disclosing information, in good faith, about "the Year 2000 problem," or "a Year 2000 failure," affecting computer systems and programs. The bill would not, however, limit liability for those persons who disclose Year 2000 information for profit or which is material and false, inaccurate, or misleading, as specified; nor would it affect any other remedy available. The bill contains an emergency clause and is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Bill 1672—Passed (Chapter 451, 1999 Acts).
PATRON: Purkey
SUMMARY: ***State Council of Higher Education for Virginia (SCHEV); data collection on students with disabilities.*** Requires SCHEV, as part of its existing duty to develop a uniform comprehensive data information system on admissions, enrollments, etc., to collect data on self-identified students with documented disabilities. In higher education, students with disabilities are self-identified and are entitled to accommodations according to their disabilities under the Americans with Disabilities Act. The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Bill 1703—No action taken by House Science and Technology.
PATRON: Abbitt
SUMMARY: ***Public schools; inhibiting electronic access to obscene, etc. material.*** Requires public schools providing student access to the Internet and other aspects of the electronic information infrastructure to employ, or contract with persons to implement, computer technology inhibiting access to materials harmful to juveniles, obscene materials, and child pornography. Local school boards are to report their compliance with this requirement annually to the Superintendent of Public Instruction.

BILL NUMBER: House Bill 1713—Passed (Chapter 981, 1999 Acts).
PATRON: Rust
SUMMARY: ***Retail sales and use tax exemption for certain tangible personal property used to provide Internet services.*** Exempts certain tangible personal property used to provide Internet services to customers from the retail sales and use tax. The exemption applies to computer hardware and software services, hosting equipment, and distribution equipment purchased by an Internet service provider who provide a package of services, including access to proprietary content, to end-user subscribers.

BILL NUMBER: House Bill 1714—Passed (Chapter 905, 1999 Acts).
PATRON: Rust
SUMMARY: ***Virginia Computer Crimes Act; unsolicited bulk electronic mail; personal jurisdiction.*** Amends Virginia's long-arm statute to provide that using a computer or computer network located in Virginia constitutes an act in Virginia. The bill also (i) expands the definitions of "computer services" and "without authority" and provides a new definition for

"electronic mail service provider" in the Virginia Computer Crimes Act; (ii) makes it the crime of computer trespass to (a) falsify or forge e-mail message transmission information in connection with unsolicited bulk e-mail and (b) knowingly sell, give, distribute, or possess software whose principal purpose is to facilitate unsolicited bulk e-mail; (iii) provides that electronic mail service providers shall not be liable for actions they take to prevent unsolicited bulk email; (iv) provides civil relief to an injured person, other than an electronic mail service provider, for actual damages or the lesser of $10 for each unsolicited bulk e-mail message or $25,000 per day and states that the injured person shall not have a cause of action against an electronic mail service provider which merely transmits the e-mail message; (v) provides civil relief to an injured electronic mail service provider for actual damages or the greater of $10 for each unsolicited bulk e-mail message or $25,000 per day; and (vi) cross-references the Virginia long-arm statute in the Virginia Computer Crimes Act to ensure the establishment of personal jurisdiction in Virginia's courts. The purpose of the bill is curb a practice known as "spamming," the sending of unsolicited electronic mail to unsuspecting recipients. Identical to House Bill 1668 and Senate Bill 881.

BILL NUMBER: House Bill 1727—Passed (Chapter 412, 1999 Acts).
PATRON: Scott
SUMMARY: ***Secretary of Technology created.*** Creates the Secretary of Technology of the Commonwealth, who shall also function as Virginia's Chief Information Officer, and provides for the powers and duties thereof. The bill assigns responsibility to the Secretary for the Department of Information Technology, Innovative Technology Authority, Virginia Geographic Information Network Advisory Board, Virginia Information Providers Network Authority, and the new Department of Technology Planning (DTP), which is also created in the bill. The bill abolishes the Council on Information Management (CIM) and transfers its employees to the new DTP. The bill also repeals the Virginia Technology Council (VTC) and makes technical changes and corrections to accommodate the new Secretariat and the new DTP and the abolishment of CIM and VTC. The bill also contains technical amendments to the various listings of boards, commissions, and councils in Titles 2.1 and 9 that have changed names or been repealed in previous legislative sessions. Identical to House Bill 2188 and Senate Bill 808.

BILL NUMBER: House Bill 1757—Incorporated into House Bill 1481.
PATRON: Marshall
SUMMARY: ***Child pornography and indecent liberties with children.*** Raises the penalty for possession of child pornography from a Class 3 misdemeanor to a Class 6 felony and also provides that it is a Class 6 felony to use electronic means to promote the use of a minor in an activity involving indecent liberties with children.

BILL NUMBER: House Bill 1758—Incorporated into House Bill 1760.
PATRON: Byron
SUMMARY: ***Taking indecent liberties with children through the Internet; penalties.*** Combines sections of the Code related to taking indecent liberties with children, the distribution of obscene materials and material harmful to juveniles in one section when the crime is effected through the use of the Internet. Under current law it is already a crime to (i) propose that any child perform an act of sexual intercourse; (ii) distribute obscene materials; or (iii) distribute, to a

juvenile, any material harmful to juveniles. This bill clarifies that to propose a sexual act to a juvenile by using the Internet to disseminate the obscene or harmful materials is a crime.

BILL NUMBER: House Bill 1760—Passed (Chapter 659, 1999 Acts).
PATRON: Byron
SUMMARY: ***Child pornography and indecent liberties with children.*** Increases the penalty for first offense possession of child pornography from a Class 3 misdemeanor to a Class 1 misdemeanor. The bill punishes the use of a communication system for accomplishment of certain sex crimes with children and production and possession of child pornography as a Class 5 felony. The bill also expands the crimes for which sex offender registration is required to include making and possessing child pornography.

BILL NUMBER: House Bill 1761—No action taken by House Courts of Justice.
PATRON: Byron
SUMMARY: ***Assuming the identity of another person.*** Provides that any person who assumes the identity of another person with the intent to (i) obtain credit, money, goods, services, etc., (ii) avoid the payment of debt or other legal obligation, or (iii) avoid prosecution for a crime, is guilty of a Class 6 felony.

BILL NUMBER: House Bill 1779—Incorporated into House Bill 1481.
PATRON: Black
SUMMARY: ***Use of electronic means to facilitate certain offenses involving children.*** Clarifies that the use of a computer to commit a violation of the taking indecent liberties with children statute is a Class 6 felony.

BILL NUMBER: House Bill 1834—Passed (Chapter 369, 1999 Acts).
PATRON: Davies
SUMMARY: ***Cover sheets on deeds and other instruments; circuit court clerks.*** Allows the circuit court clerks of Richmond County, Franklin County, Wise County, and Greene County and the City of Norton to request that a cover sheet be filled out on all real estate documents which provides pertinent information to the clerk for indexing purposes. This same provision was added in 1998 for the clerks of Wise County and the City of Norton through an uncodified act. This bill codifies that act. The pilot projects created by these enactments expire on July 1, 2002. Identical to House Bill 1452.

BILL NUMBER: House Bill 1853—Passed (Chapter 117, 1999 Acts).
PATRON: Van Landingham
SUMMARY: ***Voter registration records; lists of decedents and felons to be transmitted electronically.*** Provides that the monthly lists furnished to the State Board of Elections by the State Registrar of Vital Records and Division of Criminal Records, respectively, shall be transmitted electronically in a format specified by the State Board. The bill requires the State Board to maintain a cumulative permanent record of the information on decedents and felons for use in administering the voter registration system. The bill takes effect April 1, 2000.

BILL NUMBER: House Bill 1854—Passed (Chapter 118, 1999 Acts).
PATRON: Van Landingham
SUMMARY: ***Administration of voter registration laws and Voter Registration Act; certain information transmitted electronically.*** Establishes a National Voter Registration Act Coordinating Committee consisting of representatives of the State Board of Elections, Department of Motor Vehicles (DMV), three other agencies providing voter registration opportunities, and general registrars. The committee will report recommendations to the Secretary of the State Board. The bill also provides for the electronic transfer of information from DMV to the State Board and general registrars.

BILL NUMBER: House Bill 1858—No action taken by House Finance.
PATRON: Day
SUMMARY: ***Reduced sales and use tax for certain clothing, footwear, and computers.*** Establishes a state sales and use tax exemption during the period from September 1 through September 7, 1999, and every September 1 through September 7 thereafter, for "clothing and footwear" costing less than $500; "computer systems" costing less than $1500; and "computers," "computer hardware," and "computer software" costing less than $500. The bill also requires the Tax Department to promulgate regulations which implement the temporary exemption program by August 15, 1999.

BILL NUMBER: House Bill 1940—Vetoed by Governor May 7, 1999.
PATRON: Diamonstein
SUMMARY: ***Christopher Newport University; electronic commerce programs and activities.*** Directs Christopher Newport University, from such funds as may be appropriated or received for such purpose, to initiate electronic commerce programs and activities designed to assist business, educational, and local governmental entities in the Commonwealth in adopting and implementing electronic commerce technologies. These programs and activities are to, among other things, (i) assist the development of means by which businesses and local and regional governmental entities may explore and adopt electronic commerce technologies; (ii) disseminate information pertaining to best business practices, legal and policy issues, and other topics related to the effective uses of electronic commerce; (iii) provide mentoring in electronic commerce for businesses; (iv) assist local governments in developing and enhancing the delivery of on-line services to citizens; (v) in conjunction with Virginia school divisions and institutions of higher education, particularly Virginia State University, promote the implementation of a credit-bearing, integrated electronic commerce curriculum; (vi) promote and deliver non-credit courses in electronic commerce, which may include distance learning formats; and (vii) gather and disseminate information regarding industry needs and trends as well as programs addressing electronic commerce education and training in the Commonwealth. In addition, the University is to serve as a resource in electronic commerce issues for local governmental agencies and, as may be appropriate and upon request, may participate in studies of policies, programs, and other matters regarding the effective use of electronic commerce technologies in Virginia.

BILL NUMBER: House Bill 1944—Passed (Chapter 52, 1999 Acts).
PATRON: Bryant
SUMMARY: ***Commissioners of the revenue authorized to produce property tax book by electronic means.*** Allows the commissioners of the revenue to produce the personal property tax book by electronic means in addition to the methods now authorized, including microfiche, microfilm and other microphotographic processes.

BILL NUMBER: House Bill 1995—Passed (Chapter 33, 1999 Acts).
PATRON: Keating
SUMMARY: ***Department of Criminal Justice Services; definition of "electronic security equipment."*** Clarifies the definition of "electronic security equipment" by eliminating the reference to radio frequency-based technology.

BILL NUMBER: House Bill 2010—Passed (Chapter 864, 1999 Acts).
PATRON: Van Landingham
SUMMARY: ***Campaign finance disclosure reports; electronic filings.*** Provides explicitly that candidates for the General Assembly may file reports electronically with the State Board of Elections and with the local electoral board so long as the local board has equipment to receive reports electronically. The bill also specifies that the address for a contributing corporation or other entity need be listed only once on the report of contributions received.

BILL NUMBER: House Bill 2015—No action taken by House Counties, Cities and Towns.
PATRON: Parrish
SUMMARY: ***Local telecommunications services; City of Manassas.*** Allows the City of Manassas (described by proximity to state highways) to provide telecommunications services to the public. The section currently prohibits the provision of such services by localities, except for the Town of Abingdon.

BILL NUMBER: House Bill 2040—Incorporated into House Bill 1797.
PATRON: Devolites
SUMMARY: ***Special license plates; Internet commerce industry.*** Authorizes issuance of special license plates designed to represent the Internet commerce industry.

BILL NUMBER: House Bill 2104—Passed (Chapter 96, 1999 Acts).
PATRON: Bennett
SUMMARY: ***Uniform Commercial Code (UCC); financing statements; electronic filings***. Clarifies that UCC financing statements and related documents (amendments, continuation statements, termination statements, assignments, and statements of release) may be electronically filed with the State Corporation Commission. The bill contains an emergency clause.

BILL NUMBER: House Bill 2142—Passed by indefinitely in House Transportation.
PATRON: Moran
SUMMARY: ***"Photo-red" enforcement of traffic light signals; procedures at the Department of Motor Vehicles.*** Allows DMV to release vehicle owner data to agents or employees of localities operating "photo-red" programs for use in connection with those

programs; eliminates the requirement that certificates of information obtained by "photo-red" monitoring equipment be sworn to or affirmed by employees of the locality operating the program; and increases the maximum monetary penalty for "photo-red" violations from $50 to $100.

BILL NUMBER: House Bill 2152—Passed (Chapter 41, 1999 Acts).
PATRON: Nixon
SUMMARY: ***Privacy Protection Act; definition of "information system" clarified.*** Clarifies that the definition of "information system" includes information collected or managed by means of the Internet.

BILL NUMBER: House Bill 2153—Passed (Chapter 206, 1999 Acts).
PATRON: Scott
SUMMARY: ***New Year's Day 2000 legal holiday.*** Provides that state offices shall be closed on Monday, January 3, 2000, to commemorate Virginia's legal holiday of New Year's Day. Since January 1, 2000, falls on a Saturday, the current statute provides that state offices would be closed on Friday, December 31, 1999. By moving the legal holiday to Monday, January 3, 2000, this bill provides a three-day weekend almost completely within the year 2000 to permit state agencies to deal with any computer glitches which may arise as a result of the century date change, without disrupting services to the public. The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Bill 2158—Passed (Chapter 1002, 1999 Acts).
PATRON: Almand
SUMMARY: ***Virginia tort Claims Act; Year 2000 immunity for certain employees.*** Provides that civil actions may not be brought against any officers or employees of the Commonwealth or its political subdivisions, constitutional officers, finance directors or jail superintendents based upon the failure of a computer, software program, database, network, or information system operated by or on their behalf to interpret, produce, calculate, generate or account for a date which is compatible with the "Year 2000" date change.

BILL NUMBER: House Bill 2161—Killed in House Science and Technology 4-15.
PATRON: Marshall
SUMMARY: ***Privacy Information Act; sale or release of certain electronic information prohibited; damages.*** Requires providers of electronic mail or message services to obtain consent from their subscribers prior to selling or otherwise releasing subscribers' names or electronic mail or message addresses. The bill also requires providers to determine those types or categories of unsolicited electronic mail or messages the subscriber does not wish to receive. Violators are liable for damages of $100, plus reasonable attorney's fees and costs.

BILL NUMBER: House Bill 2168—Incorporated into House Bill 1760.
PATRON: Marshall
SUMMARY: ***Taking indecent liberties with children; criminal solicitation of children.*** Increases from a Class 6 felony to a Class 5 felony any act deemed an indecent liberty with a

child if such act is accomplished by use of a computer, and raises the penalty for criminal solicitation of a minor from a Class 5 to a Class 4 felony if committed by use of a computer.

BILL NUMBER: House Bill 2186—Incorporated into House Bill 1714.
PATRON: Rust
SUMMARY: ***Personal jurisdiction for sending unsolicited bulk electronic mail.*** Establishes personal jurisdiction for transmitting unsolicited electronic mail in a bulk transmission to or through an internet service provider's network or facility located within the Commonwealth.

BILL NUMBER: House Bill 2188—Passed (Chapter 433, 1999 Acts).
PATRON: May
SUMMARY: ***Secretary of Technology created.*** Creates the Secretary of Technology of the Commonwealth, who shall also function as Virginia's Chief Information Officer, and provides for the powers and duties thereof. The bill assigns responsibility to the Secretary for the Department of Information Technology, Innovative Technology Authority, Virginia Geographic Information Network Advisory Board, Virginia Information Providers Network Authority, and the new Department of Technology Planning (DTP), which is also created in the bill. The bill abolishes the Council on Information Management (CIM) and transfers its employees to the new DTP. The bill also repeals the Virginia Technology Council (VTC) and makes technical changes and corrections to accommodate the new Secretariat and the new DTP and the abolishment of CIM and VTC. The bill also contains technical amendments to the various listings of boards, commissions, and councils in Titles 2.1 and 9 that have changed names or been repealed in previous legislative sessions. Identical to House Bill 1727 and Senate Bill 808.

BILL NUMBER: House Bill 2236—Passed (Chapter 455, 1999 Acts).
PATRON: May
SUMMARY: ***Encryption used in criminal activity.*** Provides that any person who willfully uses encryption to further any criminal activity shall be guilty of an offense which is separate and distinct from the predicate criminal activity and punishable as a Class 1 misdemeanor. Encryption is defined as the enciphering of intelligible data into unintelligible form or the deciphering of unintelligible data into intelligible form.

BILL NUMBER: House Bill 2240—Stricken from the docket in House Science and Technology.
PATRON: Phillips
SUMMARY: ***Duties of the Executive Secretary of the Supreme Court regarding the Law Office and Public Access System.*** Requires the Executive Secretary, on or before July 1, 2000, to ensure that the Law Office and Public Access System or some such similar electronic database which provides public access to the public records of the courts of the Commonwealth, is available free of charge through the global information system known as the Internet.

BILL NUMBER: House Bill 2262—No action taken by House Counties, Cities and Towns.
PATRON: Putney
SUMMARY: ***Local telecommunications services; City of Bedford.*** Allows the City of Bedford (described by population) to provide telecommunications services. The section currently prohibits the provision of such services by localities, except for the Town of Abingdon.

BILL NUMBER: House Bill 2263—Passed (Chapter 1035, 1999 Acts).
PATRON: Van Landingham
SUMMARY: ***Teacher licensure; technology proficiency.*** Directs the Board of Education to include in its licensure regulations a requirement that on and after July 1, 2003, persons seeking initial licensure or license renewal as teachers demonstrate proficiency in the use of educational technology for instruction. Currently, Standard 6 of the Standards of Quality requires local school boards to provide programs of professional development in educational technology for all instructional personnel.

BILL NUMBER: House Bill 2277—Passed (Chapter 916, 1999 Acts).
PATRON: Bryant
SUMMARY: ***Local telecommunications services; certain leases by localities, electric commissions or boards, and economic and industrial development authorities permitted.*** Grants localities, electric commissions or boards, industrial development authorities and economic development authorities the ability to lease on nondiscriminatory terms, for a term not to exceed 10 years, a certain telecommunications infrastructure to one or more certificated local exchange telephone companies and to not-for-profit educational schools and institutions, hospitals, health clinics and medical facilities for use in serving their not-for-profit purposes. The price for such lease may include reasonable provisions for the recovery of the cost of the network and installation of additional fiber and related facilities to complete the lessor's network but shall not otherwise be related to the revenue or profit of the lessee. The lessor may not profit from the leasing of such facilities. No such lease shall be effective unless, prior to entering into such lease: (i) the proposed lessee petitions the State Corporation Commission to approve such lease of the dark fiber and (ii) the Commission, after notice and an opportunity for hearing in the affected area, issues a written order approving the lease or fails to approve or disapprove the lease within 60 days after notice. The State Corporation Commission shall find that it is in the public interest to approve such lease unless one of several factors can be demonstrated to the Commission. The July 1, 2000, sunset provision which was attached to the 1998 amendments (House Bill 335) is repealed.

BILL NUMBER: House Bill 2284—No action taken by House Science and Technology.
PATRON: Marshall
SUMMARY: ***Reporting of sexually explicit visual material involving a minor and appearing on the Internet.*** Requires that a person who has reason to suspect that sexually explicit visual material which has as its subject a person less than 18 years of age and which appears on, is transmitted by or through, or can be accessed, reproduced or downloaded via a commercial computer system or service maintained or offered by the person report the matter within 24 hours to the State Police. Failure to report results is a fine of not more than $500 for

the first offense and not more than $1,000 nor less than $100 for the second or subsequent offense.

BILL NUMBER: House Bill 2321—Passed (Chapter 456, 1999 Acts).
PATRON: Van Yahres
SUMMARY: ***Family Involvement in Technology (FIT) program created.*** Establishes, with such funds as may be appropriated for this purpose, the FIT program, a superintendent's region grants program. The FIT program will promote parental and family involvement in children's education, found a partnership between families and schools, increase students' time on task, integrate educational technology into the public school curriculum to meet the Standards of Learning objectives, and increase access to educational technology, particularly in schools with large populations of disadvantaged children (federal Title I schools). The program is modeled after the Indiana Buddy System.

BILL NUMBER: House Bill 2343—Passed (Chapter 384, 1999 Acts).
PATRON: Jones, S.C.
SUMMARY: ***Powers and duties of the Department of Personnel and Training; acceptable Internet use policy for state employees.*** On and after December 1, 1999, requires DPT to establish an acceptable Internet use policy (AIUP) for state employees as part of its existing statutory duty to develop state personnel policies. The AIUP is required to (i) prohibit use of the state's computers and communications services for sending, receiving, viewing, or downloading illegal material and (ii) establish strict disciplinary measures for violations thereof. Agency heads may supplement the Department's AIUP as they deem appropriate. The bill also amends the Restrictions on State Employee Access to Information Infrastructure Act by including the term "lasciviousness" within the definition of "sexually explicit". In a second enactment clause, heads of state agencies whose officers and employees are exempt from the Virginia Personnel Act are required to adopt the Department's AIUP for their employees. The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Bill 2344—Stricken from the docket by House General Laws.
PATRON: Jones, S.C.
SUMMARY: ***Surplus computers and related equipment donated directly to public schools.*** Permits directors of state agencies to donate computers and related peripheral equipment which they determine to be surplus directly to any public elementary, middle, or secondary school in the Commonwealth. The bill also contains technical amendments.

BILL NUMBER: House Bill 2436—Passed (Chapter 924, 1999 Acts).
PATRON: Bennett
SUMMARY: ***Advanced Communications Assistance Fund created for underserved localities in the Commonwealth.*** Creates the Advanced Communications Assistance Fund, to be administered by the Innovative Technology Authority, to help underserved localities in the Commonwealth take full advantage of advanced communications services. The Fund, which may be used for grants or loans, will consist of such funds as may be appropriated by the General Assembly and any gifts, grants, or donations from public or private sources.

BILL NUMBER: House Bill 2564—Passed (Chapter 436, 1999 Acts).
PATRON: Reid
SUMMARY: ***Division of Purchases and Supply; procurement of computers and related equipment.*** Provides that blanket purchasing agreements for computers and related peripheral equipment emphasize performance criteria, including price, quality, and delivery, without regard to brand name.

BILL NUMBER: House Bill 2638—Passed (Chapter 438, 1999 Acts).
PATRON: Devolites
SUMMARY: ***Virginia Freedom of Information Act; procedure for electronic response to request for official records.*** Allows public bodies, when responding to request for information, to post requested records on a website or to deliver the records through an electronic mail address provided by the requester.

BILL NUMBER: House Bill 2640—Passed by indefinitely in House General Laws.
PATRON: Devolites
SUMMARY: ***Landlord and tenant; telecommunications carriers; telecommunications service facilities; property owner's conditions.*** Provides that property owners may not discriminate against telecommunications carriers who want to install telecommunications service facilities on such property to serve tenants. Property owners may, however, impose reasonable and nondiscriminatory limitations and restrictions on telecommunications carriers seeking access to the property, including (i) conditioning when the property may be accessed, (ii) limiting the number of telecommunications providers who may have access to the property to install telecommunications facilities, (iii) requiring an indemnification agreement, and (iv) requiring the tenant or the telecommunications carrier to bear the entire cost of installing, and operating or removing such installed telecommunications facilities.

BILL NUMBER: House Bill 2641—Stricken from the docket in House General Laws.
PATRON: Devolites
SUMMARY: ***Landlord and tenant; telecommunications carriers; telecommunications service facilities; property owner's conditions, oversight by the State Corporation Commission.*** Provides that property owners may not discriminate against telecommunications carriers who want to install telecommunications service facilities on such property to serve tenants. Property owners may, however, impose reasonable and nondiscriminatory limitations and restrictions on telecommunications carriers seeking access to the property, including (i) conditioning when the property may be accessed, (ii) limiting the number of telecommunications providers who may have access to the property to install telecommunications facilities, (iii) requiring an indemnification agreement, and (iv) requiring the tenant or the telecommunications carrier to bear the entire cost of installing, and operating or removing such installed telecommunications facilities. The State Corporation Commission would have jurisdiction to enforce the provisions of this bill.

BILL NUMBER: House Bill 2674—No action taken by House Courts of Justice.
PATRON: O'Brien
SUMMARY: ***Unauthorized interception and use of personal information; penalty.*** Creates a Class 3 misdemeanor for any person who knowingly intercepts and uses "personal information" about any other person, without having first obtained the consent of such person, via any telecommunication device. "Personal information" means the same as provided for in the Privacy Protection Act in Title 2.1.

BILL NUMBER: House Bill 2682—No action taken by House Courts of Justice.
PATRON: O'Brien
SUMMARY: ***Criminal history record access via the Internet.*** Removes limitations on access to criminal history records and requires the Criminal Justice Services Board to promulgate regulations regarding public access through criminal justice agencies, including via the Internet. Currently only certain agencies and authorized parties are allowed access to individuals' criminal history records.

BILL NUMBER: House Bill 2694—Passed by for the day in Senate Finance.
PATRON: Scott
SUMMARY: ***Advantage Virginia Incentive Program (AVIP) created.*** Creates AVIP, to be administered by the Statewide Workforce Advisory Council, to provide scholarships to students attending two- and four-year public institutions of higher education in Virginia who become employed in "occupational areas of high demand in the Commonwealth," as such areas are designated by the Council. Eligible students can receive scholarships of up to $2500 per academic year, not to exceed a maximum of $10,000, for tuition, books, and fees. A recipient is required to repay his scholarship by agreeing to become employed in an occupational area of high demand in the Commonwealth within one calendar year after his graduation, and continue thereafter until he has been continuously employed in such area for a period of years equal in number to the years that he has benefited from an AVIP scholarship. Students who fail to maintain eligibility during a scholarship year or refuse to fulfill these terms and conditions are required to repay their AVIP scholarship with interest and any penalties the Council assesses. The bill also establishes the Advantage Virginia Incentive Fund to be a repository for AVIP scholarship funds and creates a state tax credit, not to exceed $100,000, for any individual, estate or trust, partnership, or corporate taxpayer who contributes to the Fund.

BILL NUMBER: House Bill 2706—Vetoed by Governor May 7, 1999.
PATRON: May
SUMMARY: ***Year 2000 claims against the Commonwealth.*** Provides that no cause of action shall be permitted which is based on any claim arising from the failure of a computer, software program, database, network, information system, firmware or any other device to interpret, produce, calculate, generate, or account for a date which is compatible with the "Year 2000" date change.

BILL NUMBER: House Bill 2719—Passed (Chapter 101, 1999 Acts).
PATRON: Cantor
SUMMARY: ***Corporations; proxies; electronic and other authorizations.*** Broadens the proxy provisions of the Virginia Nonstock Corporation Act to permit proxy appointment by written authorization, telegram, cablegram or other electronic means. Under current law, proxy appointment can be accomplished only through written authorizations signed by nonstock corporation members entitled to vote. The bill also stipulates that a fiduciary entitled to vote shares may vote them by proxy.

BILL NUMBER: House Bill 2721—Passed (Chapter 102, 1999 Acts).
PATRON: Cantor
SUMMARY: ***Corporations; electronic notification of shareholders' meetings.*** Authorizes corporations with 300 or more shareholders to notify shareholders of annual and special shareholders' meetings by electronic means. The authorization is effective as to those shareholders who direct such a corporation to send them meeting notices in electronic format. Shareholders are permitted to provide this direction in written or electronic form.

BILL NUMBER: House Bill 2756—No action taken by House Science and Technology.
PATRON: Marshall
SUMMARY: ***Internet access in Virginia's public schools and libraries.*** Requires local school division superintendents, on or before September 1, 1999, to implement guidelines designed to prevent minors from selecting, acquiring, accessing, or downloading obscenity, child pornography, and other illegal material. The bill defines "obscenity," "child pornography," and "harmful to juveniles," and requires the superintendents to make determinations as to what materials constitute obscenity and child pornography and are harmful to juveniles and otherwise illegal. The bill also requires local public library boards or local governing bodies (where there is no board) to implement guidelines identical to those required of local school division superintendents. The bill stipulates that its provisions shall not be construed to prohibit superintendents, boards, and governing bodies from developing or implementing other lawful guidelines that are more restrictive than the bill.

BILL NUMBER: House Joint Resolution 258—Passed.
PATRON: Wilkins
SUMMARY: ***Memorializing Congress to oppose certain regulations proposed by the Federal Communications Commission (FCC) regarding certain communications towers.*** Memorializes Congress to oppose any proposed FCC regulations that preclude the ability of local governments to regulate the erection of digital television towers, radio towers, and other wireless communication towers.

BILL NUMBER: House Joint Resolution 505—Passed.
PATRON: Baskerville
SUMMARY: ***Sense of the General Assembly; Year 2000 planning to include emergency and public safety services.*** Expresses the sense of the General Assembly that communities across the Commonwealth be supported in their efforts to become "Year 2000 compliant" and be encouraged, as part of their contingency planning for the century date change,

to prepare to provide emergency and public safety services in the time before, during, and after January 1, 2000. The resolution is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Joint Resolution 578—Passed.
PATRON: Clement
SUMMARY: ***Study; state and local tax Structure.*** Establishes a commission to study Virginia's state and local tax structure for the 21st century. The Commission shall study the proper division of revenues and responsibilities for services between the state and local governments and how the state and local tax structure should be changed to adapt to the tremendous economic, social, demographic and technological trends which are overwhelming the current taxation structure.

BILL NUMBER: House Joint Resolution 594—Stricken from the docket in Senate Rules.
PATRON: Plum
SUMMARY: ***Sense of the General Assembly; supporting the Criminal Justice Information Technology Institute.*** Expresses the sense of the General Assembly in support of the development of the Criminal Justice Information Technology Institute in the Commonwealth of Virginia.

BILL NUMBER: House Joint Resolution 595—Passed.
PATRON: Plum
SUMMARY: ***Study; Clerks of the House of Delegates and the Senate; connecting to Net.Work.Virginia.*** Directs the Clerk of the House of Delegates and the Clerk of the Senate to explore the feasibility of connecting the General Assembly Building and the Capitol Building to the Net.Work.Virginia communications network and report their findings and recommendations to the Joint Rules Committee and the 2000 Session of the General Assembly. The resolution is a recommendation of the Joint Commission on Technology and Science. Identical to Senate Joint Resolution 361.

BILL NUMBER: House Joint Resolution 596—Killed by Senate Rules 6-7.
PATRON: Nixon
SUMMARY: ***Sense of the General Assembly; encouraging state agencies' use of electronic commerce.*** Expresses the sense of the General Assembly that state agencies and institutions take such steps as are necessary to ensure that the Commonwealth is fully engaged in electronic commerce by July 1, 2002.

BILL NUMBER: House Joint Resolution 649—Passed.
PATRON: May
SUMMARY: ***Sense of the General Assembly; encouraging the use of strong encryption technology.*** Expresses the sense of the General Assembly that availability and unfettered usage of strong encryption technology for any legitimate purpose will enable and facilitate the growth of the information economy and therefore should be encouraged and supported by government at all levels.

BILL NUMBER: House Joint Resolution 651—Passed.
PATRON: Cox
SUMMARY: ***Sense of the General Assembly; encouraging accelerated degree programs in information systems.*** Encourages public institutions of higher education to offer accelerated degree programs in the information systems field to prepare nontraditional students for employment in the industry.

BILL NUMBER: House Joint Resolution 683—Passed.
PATRON: Brink
SUMMARY: ***Study; Secretary of Technology; telemedicine equipment guidelines.*** Requests the Secretary of Technology, in cooperation with the Secretary of Health and Human Resources and other affected agencies and entities, to develop guidelines to ensure compatibility, to the extent feasible, among the telemedicine equipment purchased by such agencies and entities involved in telemedicine.

BILL NUMBER: House Joint Resolution 741—Passed.
PATRON: Dudley
SUMMARY: ***Sense of the General Assembly of Virginia; encouraging state agencies to avoid certain dates for implementation of new programs or procedures.*** Expresses the sense of the General Assembly that state agencies and institutions avoid certain dates for the implementation of new programs or procedures as they prepare for the Year 2000. Dates that may be affected by "the millenium bug" include April 1, 1999; April 9, 1999; July 1, 1999; September 9, 1999; October 1, 1999; December 31, 1999; January 1, 2000; February 29, 2000; March 1, 2000; December 31, 2000; and January 1, 2001. The resolution is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: House Joint Resolution 759—Passed.
PATRON: O'Brien
SUMMARY: ***Study; Boards of Medicine and Pharmacy; sale of prescription drugs via the Internet.*** Requests the Board of Medicine, in consultation with the Board of Pharmacy, to study the sale of prescription drugs in the Commonwealth via the Internet.

BILL NUMBER: House Resolution 41—No action taken by House Rules.
PATRON: Scott
SUMMARY: ***Legislative study; scholarship program for Virginia students who become employed in occupational areas of high demand in the Commonwealth.*** Requests the House Committees on Education, Finance, and Science and Technology to study the feasibility of establishing a scholarship program for students attending two- and four-year public institutions of higher education in Virginia who become employed in occupational areas of high demand in the Commonwealth.

BILL NUMBER: Senate Bill 775—Passed (Chapter 884, 1999 Acts).
PATRON: Barry
SUMMARY: ***"Photo-red" enforcement of traffic light signals; leased and rented vehicles included.*** Includes leased and rented vehicles in scope of "photo-red" traffic light signal enforcement programs.

BILL NUMBER: Senate Bill 806—Passed (Chapter 696, 1999 Acts).
PATRON: Schrock
SUMMARY: ***Virginia Freedom of Information Act; electronic notice of public meetings.*** Permits public bodies to employ methods of electronic notice of meetings in lieu of, or in addition to, U.S. mail notification (e.g., posting on website, electronic mail notification, and list service). The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: Senate Bill 807—Passed by for the day in Senate Privileges and Elections.
PATRON: Schrock
SUMMARY: ***Authorizing absentee ballot applications to be filed electronically.*** Requires the State Board of Elections to implement a system, beginning with the general election in November 2000, which enables persons to file absentee ballot applications electronically through the Internet. The bill also ensures that false statements made electronically are punishable the same as any other false statement made in connection with Virginia's election laws (as the crime of election fraud, a Class 5 felony). The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: Senate Bill 808—Passed (Chapter 421, 1999 Acts).
PATRON: Schrock
SUMMARY: ***Secretary of Technology created.*** Creates the Secretary of Technology of the Commonwealth, who shall also function as Virginia's Chief Information Officer, and provides for the powers and duties thereof. The bill assigns responsibility to the Secretary for the Department of Information Technology, Innovative Technology Authority, Virginia Geographic Information Network Advisory Board, Virginia Information Providers Network Authority, and the new Department of Technology Planning (DTP), which is also created in the bill. The bill abolishes the Council on Information Management (CIM) and transfers its employees to the new DTP. The bill also repeals the Virginia Technology Council (VTC) and makes technical changes and corrections to accommodate the new Secretariat and the new DTP and the abolishment of CIM and VTC. The bill also contains technical amendments to the various listings of boards, commissions, and councils in Titles 2.1 and 9 that have changed names or been repealed in previous legislative sessions. Identical to House Bills 1727 and 2188.

BILL NUMBER: Senate Bill 819—Passed (Chapter 145, 1999 Acts).
PATRON: Ticer
SUMMARY: ***Definitions of certain words in the Code of Virginia; electronic filing of information permitted.*** Expands the definitions of "written," "writing," "writings," and "in writing" in Title 1 of the Code to include electronic representations of words, letters, symbols, numbers, or figures. The bill also permits the Commonwealth's public bodies to accept electronic filing of information. The bill stipulates that unless otherwise provided for in the

Code, electronic filing in the courts remains subject to the Rules adopted by the Supreme Court of Virginia. The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: Senate Bill 881—Passed (Chapter 886, 1999 Acts).
PATRON: Mims
SUMMARY: ***Virginia Computer Crimes Act; unsolicited bulk electronic mail; personal jurisdiction.*** Amends Virginia's long-arm statute to establish that "use" of a computer or "computer network" located in the Commonwealth shall constitute an act in the Commonwealth. The bill also (i) expands the definitions of "computer services" and "without authority" and provides a new definition for "electronic mail service provider" in the Virginia Computer Crimes Act; (ii) makes it the crime of computer trespass to (a) falsify or forge e-mail message transmission information in connection with unsolicited bulk e-mail and (b) sell, give, distribute, or possess software whose principal purpose is to facilitate unsolicited bulk e-mail; (iii) provides that e-mail service providers shall not be liable for actions they take to prevent unsolicited bulk e-mail; (iv) provides civil relief to an injured person, other than an e-mail service provider, for actual damages or the lesser of $10 for each unsolicited bulk e-mail message or $25,000 per day and states that the injured person shall not have a cause of action against an e-mail service provider which merely transmits the e-mail message; (v) provides civil relief to an injured e-mail service provider for actual damages or the greater of $10 for each unsolicited bulk e-mail message or $25,000 per day; and (vi) cross-references the Virginia long-arm statute in the Virginia Computer Crimes Act to help ensure the establishment of personal jurisdiction in Virginia's courts. The purpose of the bill is to curb a practice known as "spamming," the sending of unsolicited e-mail to unsuspecting recipients. Identical to House Bills 1668 and 1714.

BILL NUMBER: Senate Bill 884—Passed by indefinitely in Senate Finance.
PATRON: Mims
SUMMARY: ***Child pornography and indecent liberties with children.*** Raises the penalty for possession of child pornography from a Class 3 misdemeanor to a Class 1 misdemeanor and also provides that it is a Class 6 felony to use electronic means to promote the use of a minor in an activity involving indecent liberties with children.

BILL NUMBER: Senate Bill 920—Incorporated into Senate Bill 881.
PATRON: Mims
SUMMARY: ***Personal jurisdiction for sending unsolicited bulk electronic mail.*** Establishes personal jurisdiction for sending unsolicited bulk e-mail to or through an Internet service provider's network or facility located within the Commonwealth.

BILL NUMBER: Senate Bill 929—Stricken from docket in Senate Courts of Justice.
PATRON: Woods
SUMMARY: ***State Treasurer required to post notices of unclaimed property on the Internet.*** Requires the State Treasurer to routinely and promptly post on a website on the Internet information relating to unclaimed property in the same manner and relative form as he is required to publish annually in the newspaper.

BILL NUMBER: Senate Bill 973—Stricken from the docket in Senate Local Government.
PATRON: Reynolds
SUMMARY: ***Local telecommunications services City of Martinsville.*** Allows the City of Martinsville (described by population) to install and lease telecommunications infrastructure in order to make telecommunications services, including high-speed telecommunications fiber, accessible to the public. The section currently prohibits the provision of such services by localities, except for the Town of Abingdon.

BILL NUMBER: Senate Bill 983—Passed (Chapter 954, 1999 Acts).
PATRON: Barry
SUMMARY: ***Limiting liability and damages for economic loss in connection with the Year 2000 date change.*** Stipulates liability and damage rules for civil actions based on "Year 2000 problems." The rules are: (i) no person shall be liable to any person who (a) is not in privity of contract with him, (b) has not been extended an express warranty by him, or (c) in the case of a trust, is not the beneficiary of a trust administered by him; (ii) no person shall be liable for damages caused by a delay or interruption in performance, or in the delivery of goods or services, resulting from or in connection with a Year 2000 problem, to the extent such problem was caused by a "third party" or a third party's Y2K problem; (iii) no employee, officer, or director shall be liable in his capacity as such to any person; (iv) no person shall be liable for consequential or punitive damages; and (v) total damages shall not exceed actual direct damages in any Y2K liability case. The bill does not affect the right of recovery for damages in connection with wrongful death or injuries to persons or property. Senate Bill 1180 was incorporated into this bill.

BILL NUMBER: Senate Bill 1003—Killed in House Transportation 6-20.
PATRON: Ticer
SUMMARY: ***"Photo-red" enforcement of traffic light signals procedures at the Department of Motor Vehicles.*** Allows DMV to release vehicle owner data to agents or employees of localities operating "photo-red" programs for use in connection with those programs; eliminates the requirement that certificates of information obtained by "photo-red" monitoring equipment be sworn to or affirmed by employees of the locality operating the program; and increases the maximum monetary penalty for "photo-red" violations from $50 to $100.

BILL NUMBER: Senate Bill 1013—Passed by for the day in Senate Court of Justice.
PATRON: Howell
SUMMARY: ***Year 2000 assessment privilege created.*** Creates a privilege for "documents" created during "Year 2000 assessments" conducted during the period January 1, 1996, to January 1, 2002, as those terms are defined in the bill. The purpose of the bill is to encourage people and businesses to conduct assessments of their Year 2000 readiness and take timely and adequate measures to solve Year 2000 problems without fear that such documents will later be used against them in litigation. The bill is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: Senate Bill 1026—Passed (Chapter 704, 1999 Acts).
PATRON: Newman
SUMMARY: ***Virginia Freedom of Information Act; certain electronic communication meetings permitted.*** Exempts from FOIA's restrictions on electronic communications meetings (i) any public body (a) in the legislative branch of state government or (b) responsible to or under the supervision, direction, or control of the Secretary of Commerce and Trade or the Secretary of Technology or (ii) the State Board for Community Colleges. The bill does not apply to any session of the General Assembly. The bill adopts the basic requirements of nonelectronic communication public meetings as the required procedure for holding electronic communication meetings. The bill (i) defines "electronic communication means," "emergency," and "meeting"; (ii) requires that, except in an emergency, notice of a meeting must be provided no less than seven days before the meeting in a manner reasonably calculated under the circumstances to apprise the public of the meeting information; (iii) requires that notice for emergency meetings be given contemporaneously with notice provided to members of the public body or Board in a manner reasonably calculated under the circumstances to apprise the public of the meeting information; (iv) for purposes of establishing the participation requirement, requires that every location where a member of the public body or Board is physically present must be in Virginia and open and accessible to the public; (v) after the presence of three members or a quorum is established, permits members of the public body or the Board who are not physically present in Virginia or at a location open and accessible to the public to participate in the meeting and vote; and (vi) requires public bodies and the Board, when they use the provisions of this bill, to file reports thereon by October 15, 2000. The bill contains an emergency clause, expires on July 1, 2000, and is a recommendation of the Joint Commission on Technology and Science.

BILL NUMBER: Senate Bill 1091—Stricken from the docket in Senate Transportation.
PATRON: Ticer
SUMMARY: ***"Photo-red" enforcement of traffic light signals; procedures at the Department of Motor Vehicles.*** Allows DMV to release vehicle owner data to agents or employees of localities operating "photo-red" programs for use in connection with those programs and eliminates the requirement that certificates of information obtained by "photo-red" monitoring equipment be sworn to or affirmed by employees of the locality operating the program.

BILL NUMBER: Senate Bill 1095—Passed (Chapter 892, 1999 Acts).
PATRON: Ticer
SUMMARY: ***Agency heads required to appoint agency information officers.*** Requires specified department directors in state government to appoint an agency information officer (AIO) from among the department's employees. The AIO would have two specific duties: (i) to ensure the coordinated planning, practical acquisition, effective development, and efficient use of information technology resources and communications services to meet the department's needs and (ii) to serve as the department's liaison to the Office of the Secretary of Technology. The bill is a recommendation of the Joint Commission on Technology and Science. Identical to House Bill 1670.

BILL NUMBER: Senate Bill 1108—Passed by indefinitely in Senate Courts of Justice.
PATRON: Wampler
SUMMARY: ***Duties of the Executive Secretary of the Supreme Court regarding the Law Office and Public Access System.*** Requires the Executive Secretary, on or before July 1, 2000, to ensure that the Law Office and Public Access System or some such similar electronic database which provides public access to the public records of the courts of the Commonwealth, is available free of charge through the global information system known as the Internet.

BILL NUMBER: Senate Bill 1170—No action taken by House Courts of Justice.
PATRON: Stolle
SUMMARY: ***Central Criminal Records Exchange information via the Internet.*** Requires the State Police to develop and maintain a system for making certain criminal history conviction record information available, by means of the Internet, to any member of the public who pays a $15 fee.

BILL NUMBER: Senate Bill 1180—Incorporated into Senate Bill 983.
PATRON: Reynolds
SUMMARY: ***Limiting liability and damages for economic loss in connection with the Year 2000 date change.*** Stipulates liability and damage rules for civil actions based on "Year 2000 problems." The rules are: (i) no person shall be liable to any person not in privity of contract with such person; (ii) no person shall be liable for damages caused by a delay or interruption in performance, or in the delivery of goods or services, resulting from or in connection with a Year 2000 problem, to the extent such Year 2000 problem was caused by a "third party"; (iii) no employee, officer, or director shall be liable in his capacity as such to any person; (iv) no person shall be liable for consequential or punitive damages; and (v) total damages shall not exceed actual direct damages.

BILL NUMBER: Senate Bill 1188—Passed (Chapter 441, 1999 Acts).
PATRON: Wampler
SUMMARY: ***Information Technology Employment Performance Grant Program created.*** Provides a grant to any electronics equipment or computer and data processing services firm that after July 1, 1999, creates at least 50 permanent full-time positions within (i) the planning district with the highest rate of unemployment or (ii) an adjacent planning district. If such a firm employs the workers for 36 consecutive months, it becomes entitled to a grant of $1,000 per employee per year, not to exceed $150,000. A firm is eligible for one grant. Grants are payable from a special fund, comprised of appropriated funds and any other sums made available to it from any public or private source and all interest and income from fund investments. If sufficient funds are not available in the fund in any year to pay all claims, they will be paid on a pro rata basis and the shortfall will be carried over to succeeding years.

BILL NUMBER: Senate Bill 1205—Stricken from the docket in Senate Privileges and Elections.
PATRON: Trumbo
SUMMARY: ***Electronic voting systems and ballots.*** Permits a vendor to offer for sale in Virginia electronic voting or counting systems and related ballots without following the usual State Board of Elections verification and testing procedures. The vendor must show that the

system and ballots have been approved by the National Association of State Election Directors, and the State Board must find that (i) the system has been successfully tested in an election, (ii) the vendor has adequate financial resources, and (iii) the vendor has provided verification that the system has been successfully tested by an NASED-approved independent testing laboratory.

BILL NUMBER: Senate Bill 1214—Passed (Chapter 1031, 1999 Acts).
PATRON: Martin
SUMMARY: ***Commissioner of Health required to report certain information about telemedicine initiatives.*** Requires the Commissioner of Health to report to the Governor and General Assembly by October 1 of each year on the status of telemedicine initiatives by state agencies. The report will include the current status, cost-effectiveness and efficacy, and recommendations for improvements and expansion. This is a recommendation of the Joint Commission on Health Care.

BILL NUMBER: Senate Bill 1327—Passed (Chapter 769, 1999 Acts).
PATRON: Whipple
SUMMARY: ***Information technology access by individuals who are blind or visually impaired.*** Creates the Information Technology Access Act to secure the benefits of access to information technology for individuals who are blind or visually impaired through the procurement of such technology in accordance with standards for equivalent access by both visual and nonvisual means. Identical to House Bill 1115.

BILL NUMBER: Senate Joint Resolution 359—Passed.
PATRON: Newman
SUMMARY: ***Commending the Bedford County Sheriff's office.***

BILL NUMBER: Senate Joint Resolution 361—Passed.
PATRON: Newman
SUMMARY: ***Study; Clerks of the House of Delegates and the Senate; connecting to Net.Work.Virginia.*** Directs the Clerk of the Senate and the Clerk of the House of Delegates to explore the feasibility of connecting the General Assembly Building and the Capitol Building to the Net.Work.Virginia communications network and report their findings and recommendations to the Joint Rules Committee and the 2000 Session of the General Assembly. Identical to House Joint Resolution 595.

BILL NUMBER: Senate Joint Resolution 376—Passed.
PATRON: Howell
SUMMARY: ***Commending the Virginia Technology Council.***

BILL NUMBER: Senate Joint Resolution 401—Passed.
PATRON: Miller, K.G.
SUMMARY: ***Study; state and local tax structure.*** Establishes a commission to study Virginia's state and local tax structure for the 21st century. The commission shall study the proper division of revenues and responsibilities for services between state and local governments and how the state and local tax structure should be changed to adapt to the tremendous economic, social, demographic and technological trends which are overwhelming the current taxation

structure. The commission shall consider all taxes, with emphasis on property taxes, sales and use taxes, and the income tax, and examine the relationship between state and local taxing authority and service responsibilities.

BILL NUMBER: Senate Joint Resolution 405—Killed by the House 44-54.
PATRON: Forbes
SUMMARY: ***Sense of the General Assembly; television coverage of legislative sessions.*** Expresses the sense of the General Assembly that television coverage of the sessions of the Senate and the House of Delegates may be provided to public and private broadcasting interests for transmission to the citizens of the Commonwealth.

BILL NUMBER: Senate Joint Resolution 414—Passed.
PATRON: Wampler
SUMMARY: ***Sense of the General Assembly; encouraging growth of information technology in Southwest Virginia.*** Expresses the sense of the General Assembly that steps should be taken to include Southwest Virginia in the Commonwealth's efforts to attract and encourage information technology growth in Virginia.

BILL NUMBER: Senate Joint Resolution 502—Passed.
PATRON: Couric
SUMMARY: ***Study; Secretary of Technology; developing a coordinated research and development policy for the Commonwealth.*** Directs the Secretary of Technology, in consultation with institutions of higher education, federal laboratories, and the private sector, to study and develop a coordinated research and development policy for the Commonwealth. The Center for Innovative Technology will assist the Secretary. The study is to include a review of the intellectual property policies and procedures of institutions of higher education and federal laboratories, and best practices to link intellectual resources to commercialization.

BILL NUMBER: Senate Joint Resolution 513—No action taken by House Science and Technology.
PATRON: Lucas
SUMMARY: ***Sense of the General Assembly; encouraging industries engaged in Internet commerce to regulate themselves.*** Encourages and supports industries engaged in Internet-based commerce to regulate themselves and suggests means by which they may do so.

BILL NUMBER: Senate Resolution 44—Passed.
PATRON: Wampler
SUMMARY: ***Senate Rules amended; General Laws Committee authorized to receive legislation related to technology and science.*** Amends the jurisdiction of the Committee on General Laws to include matters involving inter-or intra-governmental information technology applications and uses and technology, engineering or electronic research, development, policy, standards, measurements, or definitions, or the scientific, technical, or technological requirements thereof, except for those affecting the operations of the General Assembly or the Senate.

Appendix 7.
List of Advisory Committee Participants

Advisory Committee One (Internet Access)

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Appendix 8.
Dissent of Senator Stephen D. Newman to Recommendations Two and Five in the Report of Advisory Committee One

SENATE OF VIRGINIA

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COMMITTEE ASSIGNMENTS
EDUCATION AND HEALTH
LOCAL GOVERNMENT
REHABILITATION AND SOCIAL SERVICES
TRANSPORTATION

April 20, 1999

Ms. Diane Horvath
910 Capitol Street
General Assembly Building, 2nd Floor
Richmond, VA 23219

Dear Diane,

I can't tell you how disappointed I was to read your letter today. I was hopeful that items number 2 and 5 from the Advisory Committee could be eliminated.

As you will recall, I inquired about this change while the meeting was underway to determine whether I needed to reconsider the vote to remove the objectionable items. Given the opinion of council, I was assured that these items could be removed administratively. Now I understand that this is not possible.

As you know, my objection in part related to the fact that as one of the co-chairmen of this advisory committee, I was unaware of any advisory committee vote to include these items in the report. If there had a thoughtful discussion on these items, I feel sure there would have been much debate and at least a split vote on these matters.

Thank you for your letter and please use this letter to log my dissent on the above mentioned matters. With my regards, I remain

Sincerely yours,

Steve Newman