Electronic Waste: Investing in Research and Innovation and Fostering a Public-Private Partnership to Meet the Challenge

Testimony of Phillip J. Bond

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House Committee on Science and Technology

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Mr. Chairman and members of the committee, good morning. My name is Phil Bond and I am the President of TechAmerica. Thank you for this opportunity to testify today in support of legislation that would authorize federal programs to study and conduct research on ways to reduce the environmental impacts posed by discarded electronic products.

Many of you may not know TechAmerica, but you know who we are. TechAmerica was launched as a result of the mergers of AeA, the Information Technology Association of America, the Cyber Security Industry Alliance (CSIA), the Information Technology Association of America (ITAA) and the Government Electronics & Information Association (GEIA). TechAmerica is the leading voice for the U.S. technology industry, which is the driving force behind productivity growth and jobs creation in the United States and the foundation of the global innovation economy. Representing approximately 1,500 member companies of all sizes from the public and commercial sectors of the economy, it is the industry's largest advocacy organization. It offers the technology industry's only grassroots-to-global network, with offices in state capitals around the United States, Washington, D.C., Europe (Brussels) and Asia (Beijing).

For the last few decades, the high tech industry has produced innovative and revolutionary products that have powered the U.S. economy and dramatically changed the way Americans live, work, and play. Just think, in 1996 if I had testified before this committee, names like Google and Oracle would mean very little to you. Today, they are two of the most well known brands around and their innovations have changed the way Americans and business do pretty much everything. Over the last 25 years we have moved from Commodore 64s to Portable handheld computers with exponentially more ability; we have gone from portable phones carried in suitcases to portable phones smaller than your hand; from giant jukeboxes and walkmans to iPods; from green screens to hi-definition; from copper phone service to massive high-speed networks.

More than improved technologies, technology has become a fundamental enabler, driving productivity and growth across every economic sector, from farmers using GPS to improve their crop yields to manufacturers using computer assisted design and manufacturing tools to improve productivity on the factory floor. Technology provides innovators with improved tools to help them do whatever they are doing in ways that were unimaginable only a few years ago.

The industry is now stepping up to lead the way in inventing and producing new technologies to make the economy more energy efficient and sustainable. Electric motors that use variable speed drives, powered by chips produced by companies such as Texas

Instruments, are estimated to annually prevent the emissions of 68n million tons of greenhouse gases.[1]

A recent study conducted by the American Council for an Energy Efficient Economy for AeA found that high tech electronics and the widespread advancement of information and communications technologies have been among the principal drivers of increased energy productivity during the past 15-20 years.[2] These technological drivers of energy efficiency span the range from computers and cell phones to numerous types of sensors, microprocessors and other technologies embedded in every day products such as cars, lighting systems, motors and appliances. The report states that the continued development and expanded application of such technologies will help ensure that economic development continues to move in a direction that is both economically dynamic and environmentally sustainable.

The transition to energy independence in the United States will also depend upon the growth and proliferation of electronic devices, which are critical to the functioning of renewable energy systems, electric cars, and the "smart grid." Electronic circuitry is essential to the efficient functioning of hybrid cars just as semiconductor advances will be critical to expanding the consumer utility and acceptance of plug-in electric vehicles by substantially extending their range and performance. Computer chips are being developed by National Semiconductor that improve the conversion efficiency of renewable energy sources such as photovoltaic solar power, increasing the cost-effectiveness and long term sustainability of these installations.

Smart grid technologies will allow two-way communication between the home and our energy utilities that, when combined with networked home and electronic products and appliances, will lower energy usage by all Americans. This collaboration between our network providers, electric companies, hardware manufacturers, network equipment manufacturers and consumer electronics and appliance companies represents a who's-who of TechAmerica's membership of 1500 companies – too numerous to list them all here. The Smart Grid will incentivize the production of energy-efficient and intelligent appliances, smart meters, new sensing and communications capabilities, and

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[1] "*Doing Moore Using Less,*" Semiconductor Industry Association, available at http://www.sia-online.org

[2] http://www.aeanet.org/aeacouncils/AeAEurope_Energy_Efficiency_Report_17Sep07.pdf. Other recent reports highlight the positive contribution that information technology can make in improving the overall efficiency of the economy and combating climate change. See, e.g., American Council for an Energy-Efficient Economy (ACEEE), "*A Smarter Shade of Green,*" (2008) (""For every extra Kwh of electricity that has been demanded by ICT, the US economy increased its overall energy savings by a factor of about 10…"); The Climate Group and the Global e-Sustainability Initiative, "*Smart 2020: Enabling the Low Carbon Economy in the Information Age*" (2008) (ICT strategies could reduce up to 15 percent of global emissions in 2020 against a "business as usual" baseline).

electric powered passenger vehicles – all of which will be produced by, or made possible by TechAmerica's member companies,.

The migration to new computing models, such as cloud computing, will bring new economies of scale resulting from shared data storage and processing capabilities. The result will be significant decreases in societal energy usage while at the same time increasing our overall computing power. Such innovations in the high tech industry will allow greater energy productivity throughout the economy without any sacrifices in quality of life.

Our industry is also uniquely poised to create "green jobs" that will employ Americans and provide very good wages. One "career of the future" that will grow from new models of computing is an energy management coordinator, who would ensure that innovative, high-tech products are programmed and operating at levels that provide the most energy efficient result. TechAmerica's members are driving innovation in this sector.

Clearly, the technology industry will continue to play a critical and leading role in enabling energy efficiency and renewable energy. However, as the Committee recognizes, a by-product of the industry's growth has been an increase in the number of discarded, obsolete electronic products that require management. The United States Environmental Protection Agency has estimated that the electronic waste stream is growing 2-3 times faster than any other waste stream in the United States.[3] Clearly, something must be done.

The high-tech industry has been actively working to address this issue. Our greatest strength is the ability to innovate and create products. Designing for the environment has become an integral strategy in most companies' design and engineering efforts. Additionally, electronic products are fundamentally unique: In every product cycle, they become smaller, faster, more functional, and more energy efficient. That phenomenon alone delivers significant benefits for the environment.

Furthermore, engineers are working to remove hazardous substances, such as lead and mercury, from product designs. These materials often provide unique benefits and functionality, including safety shielding and energy efficiency. Companies are developing substitute materials that can achieve the same functionality with fewer environmental impacts. For example, HP, Apple and Dell, amongst others, have introduced several notebook computer models that use LED technology instead of

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[3] See http://www.epa.gov/NE/solidwaste/electronic/index.html. ("While various reports estimate that electronic waste is less than 4% of the total solid waste stream in the United States (eCycling FAQs), electronic waste is growing 2-3 times faster than any other waste stream (i.e. paper, yard waste)."

mercury-containing fluorescent lamps. Others are exploring the use of halogen free flame retardants in electronic products.

Products are becoming more recyclable. New techniques allow for easy and quick disassembly. Companies are exploring the use of plastic resins that can be reused in new products. They are also working with recyclers to help understand how product design impacts the recycling process. All of these efforts will help facilitate and promote more cost effective and efficient recycling operations for electronic products.

It's important to emphasize that our industry is a partner in this endeavor. One of the hallmarks of America's leadership in the global economy is collaboration between universities, private laboratories, government agencies and companies. Together we create innovative and marketable solutions in areas like defense, healthcare, the hard sciences and, of course, technology. Greening our products and solving the e-waste problem is no different – if all these communities can work together in committing resources to research and development of e-waste solutions, we will be able to tackle this problem without harming the industry's greatest strength – its ability to innovate.

The legislation being proposed by Chairman Gordon and before this committee today will go a long way towards reaching this goal. First, by authorizing a National Academy of Sciences report that will assess the environmental impacts caused by the disposal of electronic products, the legislation will help fill a critical data gap that currently exists. It is important to understand the problem before effective policies can be constructed. Second, by funding the research and development of green alternatives to hazardous materials in electronics as well as research into product design to facilitate the disassembly and recycling of electronic waste, the legislation will address two of the most important challenges the technology industry is seeking to overcome: the development of "greener" products that are easier to recycle. Finally, by working with universities to improve the training of undergraduate and graduate engineering students in environmental considerations – the legislation will guarantee that future products will be designed with environmental considerations as priority design characteristics as opposed to being considered only when the products are discarded.

The key to this research and development being successful will be the ability for universities, labs and not-for-profit organizations to partner with the high tech industry in developing workable, efficient, and cost-effective solutions. Merely funding the research is not enough – ensuring that the research provides concrete and implementable solutions for the private sector will lessen, if not end, the environmental issues posed by the disposal of electronic products.

The current draft of the bill contains several important provisions that I believe will enhance public-private collaboration and ensure that the outcomes envisioned in the

bill lead to concrete, beneficial innovations that improve the environmental profile of high tech products. We congratulate the Chairman for his foresight in including these provisions, and we urge that these principles be retained and strengthened in the bill.

Specifically:

- Section 4 calls for the academic institutions to partner with companies and associations involved in the production, sale, and recycling of electronic products. Requiring the research institutions to partner with companies and associations will improve the likelihood that the research projects will yield beneficial results.
- Similarly, Section 4(b) calls for industry participation in the reviewing body that will evaluate proposals and ensure they have merit. Once again, the explicit call for industry participation in the review of proposals will improve the prospects for projects that provide practical information to the companies that produce these products.
- Section 4(d)(1) states that the application must reference the companies and associations contributing to the project. We believe that requiring evidence of this type of collaboration and support is an essential element of successful partnership between universities, labs, not-for-profits and industry.
- Section 4(d)(3) specifies the application must include information on how the Centers for Electronic Waste Research will "transfer research results into practice to address the electronic waste issue, with emphasis on the feasibility of incorporating research results into industry practice." Making applicants expressly identify how the results will be transferred into practical outcomes is another important element of ensuring successful outcomes.
- Section 4(e)(6) requires that the evaluation of proposals consider the technology transfer plan and the feasibility of integrating the research into practice.

We believe that these provisions will further the goal of ensuring that the academic research will be meaningful and transferred into tangible improvements in the design, production and recycling of electronic products. This approach will improve the prospects for promoting research that is applied by companies and ultimately achieves the environmental benefits that are the goals of this bill.

Again, thank you for the opportunity to testify today. I look forward to working with the Chairman and this committee on passage of this legislation.

Phillip J. Bond
President, TechAmerica

Phillip J. Bond is President of TechAmerica, the broadest US technology association with 1,500 member companies and 17 regional councils across the country. TechAmerica is the new association resulting from the January 1, 2009 merger of the Information Technology Association of America (ITAA) and the American Electronics Association (AeA).

Previously, Bond was appointed President and Chief Executive Officer of ITAA in June, 2006. In that capacity, he engineered two earlier mergers that brought the Government Electronics and IT Association (GEIA) and the Cyber Security Industry Alliance (CSIA) under the ITAA banner. Bond also is President of the World Information Technology and Services Alliance (WITSA), a network of industry associations representing more than 60 high-tech trade groups around the world.

Today, TechAmerica represents some 1,500 leading software, hardware, services, internet, telecommunications, electronic commerce and systems integration companies. The association offers business services, networking, standards development, research and grassroots-to-global policy coordination for its members.

Bond is a highly accomplished executive in both government and industry. Prior to joining ITAA, he served as Senior Vice President of Government Relations for Monster Worldwide, the world's largest online career site, and General Manager of Monster Government Solutions. From 2001 to 2005, Bond was Under Secretary of the U.S. Department of Commerce for Technology and, from 2002-2003, served concurrently as Chief of Staff to Commerce Secretary Donald Evans. In his dual role, Bond worked closely with Secretary Evens to increase market access for U.S. goods and services and further advance America's technological leadership at home and around the world. He oversaw the operations of the National Institute of Standards and Technology, the Office of Technology Policy, and the National Technical Information Service. He has been recognized in Scientific American magazine in its list of the Top 50 Tech Leaders of 2003.

Earlier in his career, Bond served as Director of Federal Public Policy for the Hewlett-Packard Company, and previously as Senior Vice President for Government Affairs and Treasurer of the Information Technology Industry Council. From 1993 to 1998, Bond served as Chief of Staff to Congresswoman Jennifer Dunn (R-WA). He was Principal Deputy Assistant Secretary of Defense for Legislative Affairs from 1992 to 1999. Earlier, Bond was Chief of Staff and Rules Committee Associate for Congressman Bob McEwen (R-OH) from 1990 to 1992. From 1987 to 1990, he served as Special Assistant to the Secretary of Defense for Legislative Affairs.

Bond is a trustee and graduate of Linfield College in Oregon. He also serves on the board of the National Center for Women in Information Technology. He and his wife, Diane, have two daughters and reside in Fairfax Station, Virginia.