

A Critical Technology Infrastructure: Recommendations for American Leadership

**President-elect Barack Obama Transition Team
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Semiconductors are key to addressing many of the nation's most pressing challenges. These devices provide technology to increase economic productivity, promote the environment and improve lives through applications in areas such as information technology, clean energy, medicine, defense, and the consumer market. The semiconductor equipment and materials industry supplies the enabling technologies necessary to produce every semiconductor-based product. Many semiconductor equipment and materials companies also are part of the supply chain for the solar energy, fuel cell and solid state lighting industries that are essential to America's energy future.

The semiconductor industry was created in the United States. Today, we remain the leader—but the market and new production facilities are rapidly moving to Asia and the country's competitive advantage in high technology is diminishing. In addition to the daunting economic pressures facing this industry and many others, the United States is facing tough foreign competition, market share erosion, and challenges to its technological leadership in this field. Government and industry both seek to maintain our innovation leadership position and keep the U.S. semiconductor infrastructure strong for future generations of Americans. We must work together to secure the future.

Why Does the Industry Matter?

The semiconductor supply chain is critical to the American economy and our global competitiveness. The benefits of the industry's products and services – and the end products they make possible – include increased economic productivity, high skills jobs, enhanced national security, and better healthcare.

- **Jobs:** The industry's U.S.-based companies employ about 100,000 people. The industry has facilities in 37 states, with a significant presence in seven states—California, Massachusetts, Minnesota, New Jersey, New York, Pennsylvania, and Texas.
- **Market Share:** In 2007, the size of the global semiconductor equipment and materials market was \$85 billion. The market share for U.S. firms was 39 percent, resulting in a \$33 billion contribution to the U.S. economy. However, U.S. share of the worldwide market has been declining in recent years and we must redouble our efforts to stay ahead.
- **Technology Development Leadership:** These U.S.-based companies are world leaders in the development of new manufacturing technologies and materials that enable a range of products to be faster, more powerful and more affordable. They are the base for emerging technologies such as nanotechnology, microelectromechanical systems (MEMS), printed and flexible electronics, photovoltaics and other energy applications—areas important for U.S. leadership.

AGENDA FOR A NEW ADMINISTRATION

SEMI North America supports initiatives aimed at maintaining and building upon America's competitiveness and global innovation leadership. These include proposals that focus on investing in basic research, increasing science and technology talent, and developing an innovation infrastructure. SEMI urges President-elect Obama and his incoming Administration to make these issues a top priority with concrete results and full funding.

Federal Investments in R&D

Semiconductor equipment makers routinely invest large amounts in research and development—on average between 10% and 15% of revenues each year. But they can't do it alone and government has a critical role to play in basic research. SEMI urges the U.S. government to **double federal R&D investments in key science agencies over the next seven to ten years**. U.S. federal funding for R&D has steadily declined over the last decade, while foreign governments are ramping up R&D spending. Key agencies include the National Science Foundation and the National Institute of Standards and Technology as well as the government-industry Focus Center Research Program. The United States needs the necessary infrastructure to fuel continuous advances in microelectronics technologies.

Permanent R&D Tax Credit

A strong and stable R&D tax credit is essential to attract investment in the United States. SEMI North America urges the government to **improve and permanently extend the federal R&D tax credit**. Other countries grasp the importance of R&D tax credits and are trying to lure companies away from the U.S. with more generous R&D programs. As recently as 2004 the United States was ranked 17th out of 30 member nations of the Organization for Economic Cooperation and Development in a comparison of their R&D credits. The U.S. credit expired at the end of 2007 and has lapsed several times since it was created. Temporary tax credits, while useful, do not allow for companies to plan over the long term. The R&D tax credit is an important incentive to promote not only high value-added jobs but also investment in the equipment and materials necessary for advanced R&D. **This incentive to invest in the physical infrastructure necessary for workers to conduct R&D must be maintained.**

Solar Energy Promotion

SEMI North America commends President-elect Obama for his strong **support for the development and use of alternative energies**. Congress recently passed an eight-year extension of the solar energy investment tax credit – a critical tax incentive for our member companies that provide the essential equipment, materials and services necessary to produce clean, renewable energy from photovoltaic technologies. SEMI urges the government to **make this credit refundable** so that it will provide benefits to companies that are not currently profitable. SEMI urges the government to **include measures promoting renewable energy as part of an economic stimulus plan**. SEMI also supports robust **funding for the Department of Energy's Solar America Initiative**.

Intellectual Property Protection

The semiconductor industry depends on intellectual property (IP) to keep innovation alive but IP offenses such as patent infringement, counterfeiting and trade secret theft have reached serious levels. IP protection is critical to allow the semiconductor supplier base to invest in the

R&D necessary to continue technological advancement and survive in the global electronics supply chain. SEMI North America urges the U.S. government to **work with trading partners** to ensure that they have effective IP protection and enforcement policies and that they **adhere to their IP commitments**.

Education and High-Skills Immigration Reform

We must do more to strengthen the U.S. educational system and attract more Americans to scientific fields. At the same time, we must recognize that we are in a global competition for talent and create an efficient immigration system that welcomes highly-educated foreign nationals to the U.S. workforce rather than sending them abroad to compete against us. SEMI North America urges the government to **increase the cap on H-1B visas** and to **streamline the path to citizenship for foreign professionals with advanced degrees** in critical scientific fields.

Exports and Open Markets

In 2007, close to 80% of semiconductor equipment sales and 60% of semiconductor materials sales were outside the United States. We urge the government to revise export controls to reflect the current state of technology, the changing global economic environment, and the actual relationships between semiconductor equipment and materials and security interests. In addition, American companies need a level playing field to compete for overseas sales. Keeping **international trade expansion as an economic priority** is crucial—including approval for bilateral and regional trade agreements and progress in the multilateral World Trade Organization negotiations.

Conclusion

Governments all over the world recognize the economic and national security benefits of a strong semiconductor infrastructure – and they are making a serious and sustained commitment in this area. Commit now to being the Administration that elevates these policy issues to the top of the list. Technology leadership is ours to lose. But, if we make this a top priority and back it up with concrete action, we can secure the future.

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SEMI is a not-for-profit global industry trade association. SEMI has over 500 U.S. member companies— almost all of the semiconductor equipment and manufacturing companies and many emerging technology companies (PV, display, etc.) located in the United States. SEMI supports industry growth through advocacy, international standards, expositions, and industry research. For more information, visit www.semi.org.