Profile of U.S. Semiconductor Industry

- 2011 U.S. Sales: $153 Billion
- 244,800 U.S. Jobs
- 51% U.S. Market Share
- $121,385 Average Income
- 82% of Sales Outside U.S.
- R&D Investment: $27 Billion, 18% of Sales
- Capital Equipment: $23 Billion, 15% of Sales
Worldwide market share by region

Source: SIA/iSuppli/WSTS
Note: Market share based on headquarters of seller, i.e. foundry output not in Taiwanese market share. Numbers rounded
Report Highlights

Four Areas of Report that Resonate with Semiconductor Industry

**RESEARCH INVESTMENT** Basic research in nanoelectronics and other physical science fields is critical in determining world technological leadership in the semiconductor industry.

**WORKFORCE** Enhancing the semiconductor workforce via support for K-12 STEM initiatives, promote U.S. manufacturing, and reform immigration policies to attract and retain masters and PhD graduates from U.S. universities is critically important to the semiconductor industry.

**ENERGY** Semiconductor industry provides model for R&D investments in this area; in addition, our products decrease energy consumption and promote energy efficiency.

**ECONOMIC AND NATIONAL SECURITY** The semiconductor industry has long been viewed as a strategic industry by many countries who seek to attract foreign semiconductor manufacturing or invest to grow the industry domestically.
1) Research Investment

Basic research is critical in determining world technological leadership in the semiconductor industry

**SEMATECH and SRC: Long history of effective industry/government/academic collaboration**

Sematech
--Non-profit consortium that performs R&D to advance semiconductor manufacturing.
--Formed in 1987 as partnership between the United States government and 14 U.S.-based semiconductor manufacturers

SRC
--Non-profit semiconductor technology research consortium funded in 1982.

**Focus Center Research Program and the Nanoelectronics Research Initiative**

University research programs co-funded with governments to achieve ultimate CMOS and beyond CMOS devices:
--NRI-NIST Centers
--NRI-NSF joint awards
--Expanded support opportunities with agencies and states
1) Research Investment

Industry consortia support for university basic research behind 10 fold drop in costs every six years

$/MB DRAM

- Now grants ~$300M for University Research (2005-2011)
- Industry/DoD Research Partnership at 38 U.S. Universities (~$40M annually)
- $194 M over next 5 years for leading edge semiconductor research

SIA’s founded by five CEOs

Focus on Manufacturing Development

NRI Focus on “Beyond CMOS” – Industry/NIST/NSF & States

Physical Limits of CMOS

Source: DQ/Micron/WSTS
Nanoelectronics Research Initiative (NRI) Funded Universities

35 Universities in 20 States
1) Semiconductor Industry Commitment to R&D

U.S. semiconductor industry provides relatively constant R&D investment as percentage of sales regardless of annual sales growth.

Source: WSTS; IC Insights
2) Workforce

Enhancing the semiconductor workforce via support for K-12 STEM initiatives, promote U.S. manufacturing, and reform immigration policies to attract and retain masters and PhD graduates from U.S. universities is critically important to the semiconductor industry.

SIA has long prioritized K-12 STEM education
--Need to keep pace with STEM education in other countries

U.S. Semiconductor Manufacturing Competitiveness
--It is important to enact policies to continue to make the U.S. an attractive place to invest and establish high-tech manufacturing, and by extension R&D, education, and employment.

High-skilled immigration reform
--Important piece of industry’s strategy to hire the best and the brightest.
2) Workforce

Synergy among workforce, R&D, and manufacturing
3) Energy

Semiconductor industry provides model for R&D investments in this area; in addition, our products decrease energy consumption and promote energy efficiency.

**Semiconductor industry maintains high level of R&D investment no matter the economic climate**
--High levels of R&D investment is key to survival in the industry.

**Semiconductor industry’s positive impact on energy efficiency**
--ACEEE study on energy efficiency in buildings.
4) Economic and National Security

The semiconductor industry has long been viewed as a strategic industry by many countries who seek to attract foreign semiconductor manufacturing or invest to grow the industry domestically.

*Other countries continue to:*

1) invest in semiconductor talent
2) attract semiconductor investment
3) fund R&D in the physical sciences

*Where will the nanoelectronics valley be?*
www.sia-online.org
Thank you!