SIA Innovation Agenda

Keeping U.S. Leadership in Semiconductor Technology

March 11, 2009

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Profile Of U.S. Semiconductor Industry

2009 Sales = $115 Billion
2009 World Market Share = 51% of $226 Billion Market
U.S. Jobs = 185,000
Average Income = $96,000
Percent of Sales Outside U.S. Market = 81%
R&D Investment = $20 Billion, 17% of Sales
Capital Equipment = $13 Billion, 11% of Sales
Historically about 25-30% of Revenues Invested in the Future

Source: SIA, U.S. DoL
Semiconductors are America’s 2nd Largest Export

Source: U.S. International Trade Commission. Industry Defined By: NAIC Codes 336411 (Aircraft); 334413 (Semiconductors); 336111 (Automobiles); 324110 (Petroleum Refinery Products)

The Global Market

Source: SIA
Note: Market share based on headquarters of seller, i.e. foundry output not in Taiwanese market share. Numbers rounded
Top universities and faculty talent are engaged with the FCRP
(41 Universities, over 200 Research Faculty, ~ 500 Students)

The Focus Center Academic Talent Pool

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Northwestern U.
U. Wisconsin
U. Illinois
U. Minnesota

Purdue U.
U. Michigan
Cornell
RPI
Albany U.
U. Mass
MIT
Harvard
Stony Brook
Columbia
NYU
Princeton
Carnegie Mellon
Penn State U.
U. Virginia
N.Carolina State
Georgia Tech
U. Florida

U. Washington
Portland Univ
U.C. Berkeley
Stanford
UC Davis
UC Santa Cruz

UCLA
U.C. Santa Barbara
Caltech
U. of Southern Calif
U. C. Riverside
UC Irvine
U.C. San Diego

Arizona State
U.T. Austin
Rice Univ.
Texas A&M
U. North Texas
U.T. Dallas

Chips Drive Every Energy Efficiency Solution

All energy “smart devices” have a chip behind them (cars, phones, appliances)

It is estimated that industrial applications of new energy-saving chip technologies could improve energy efficiency by up to 80% due to more efficient notice control and power management.

LCD screen power savings delivered by a single chip company have resulted in 20 billion hours of energy savings per year, enough to prevent 16 million pounds of carbon dioxide from entering the atmosphere.

In 2006 the U.S. spent nearly $4.5 billion in energy costs to power servers, cooling and auxiliary infrastructure equipment in data centers.
Semiconductors Have Enabled Computers to Lead in Energy Efficiency Improvements!

<table>
<thead>
<tr>
<th></th>
<th>1978</th>
<th>2008</th>
<th>Energy efficiency improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto</td>
<td>14.3 miles per gallon</td>
<td>20.0 miles per gallon</td>
<td>40 percent</td>
</tr>
<tr>
<td>Passenger Airlines</td>
<td>22.8 revenue passenger miles per gallon</td>
<td>50.4 revenue passenger miles/gallon</td>
<td>121 percent</td>
</tr>
<tr>
<td>Lighting</td>
<td>Incandescent light bulb 13 lumens per watt</td>
<td>Compact fluorescent bulb – 57 lumens/watt</td>
<td>339 percent</td>
</tr>
<tr>
<td>Computer Systems</td>
<td>1,400 instructions per second/watt</td>
<td>40,000,000 instructions per second/watt</td>
<td>2,857,000 percent</td>
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</tbody>
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IT Producing Industries Spur Growth

IT Producing Industries are: Semiconductors, Computers, Communications, and Software.
New White Paper Highlights Vulnerability of Critical U.S. R&D and Manufacturing Sector

*The study, “Maintaining America’s Competitive Edge: Government Policies Affecting Semiconductor Industry R&D and Manufacturing Activity” (Dewey & LeBoeuf) details the following:

- Tax breaks and other incentives are offered by other countries to attract multi-billion-dollar capital investments in semiconductor manufacturing and R&D capacity – widely seen as key strategic assets for their national economies.

- A U.S. corporate tax rate that is among the highest in the world, and a U.S. R&D tax credit that is among the least competitive among developed economies.

- An un-level playing field that skews investment decisions. It costs an estimated $1 billion more to build, equip and operate a semiconductor manufacturing facility in the United States than it does in other parts of the world. An estimated 90 percent of the cost difference is the result of tax and incentive policies.

- Inability to hire highly qualified scientists and engineers in semiconductor-related fields from US universities due to visa restrictions. The majority of U.S. graduate engineering degrees awarded in these fields are earned by foreign-born students who require a visa or green card to work in the United States.

- Strategic research and education investments by other governments that build innovation capacity in those countries and increase competitive pressure on the United States.

U.S. Losing Share in New Semiconductor Manufacturing Capacity

Source: SIA/SEMI
US Semiconductor Factories are at a $1 Billion Disadvantage Compared to Overseas Plants

SIA 2009 Agenda for Ensuring U.S. Technology Leadership

- Fully fund the America COMPETES Act authorizations beyond fiscal year 2010 to double the federal investment in basic research in the physical sciences (NSF, NIST, & DoE Office of Science)
- Create incentives for energy efficient solutions and semiconductor-enabled renewable energy technologies
- Permanently extend a strengthened R&D tax credit and reform corporate tax policies to attract multi-billion-dollar semiconductor manufacturing investments to the United States
- Ensure a level playing field for export intensive companies so they are not disadvantaged against foreign competitors in low tax countries
- Enhance our workforce through education reform, improved math and science education, and modernization of the green card system