

# 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**

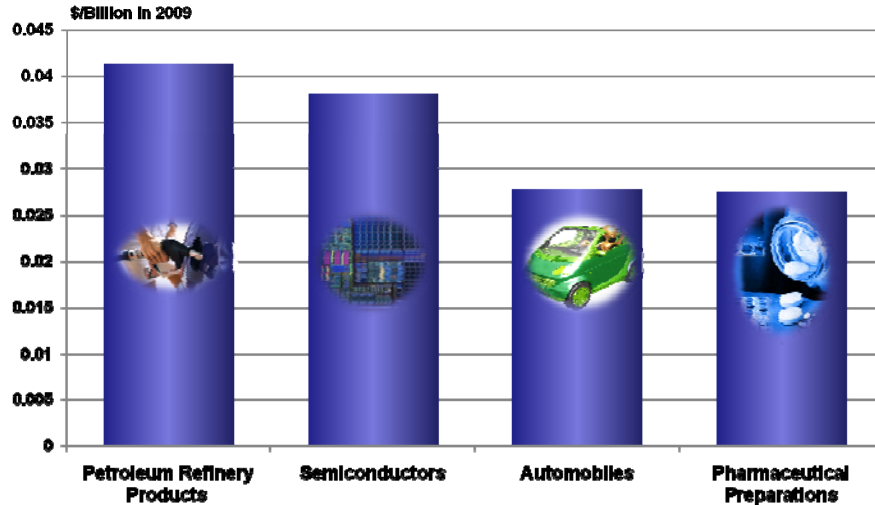
Source: SIA, U.S. DoL



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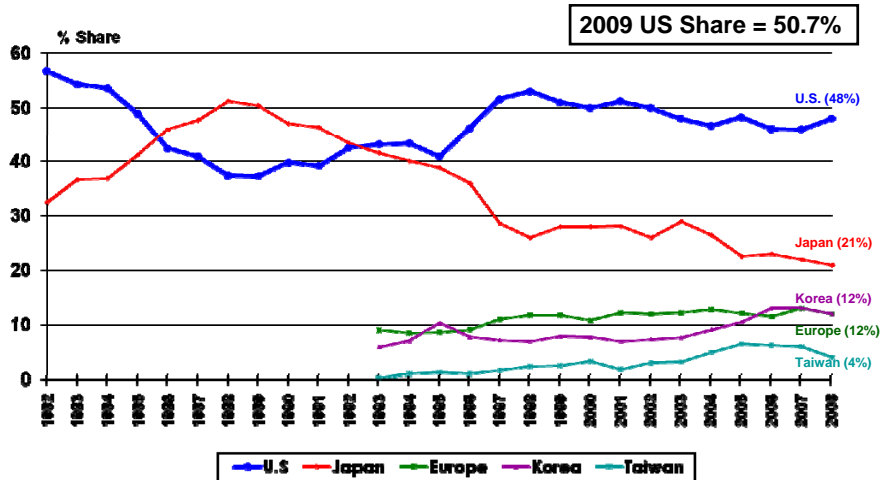
## Semiconductors are America's 2<sup>nd</sup> Largest Export



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



## The Global Market

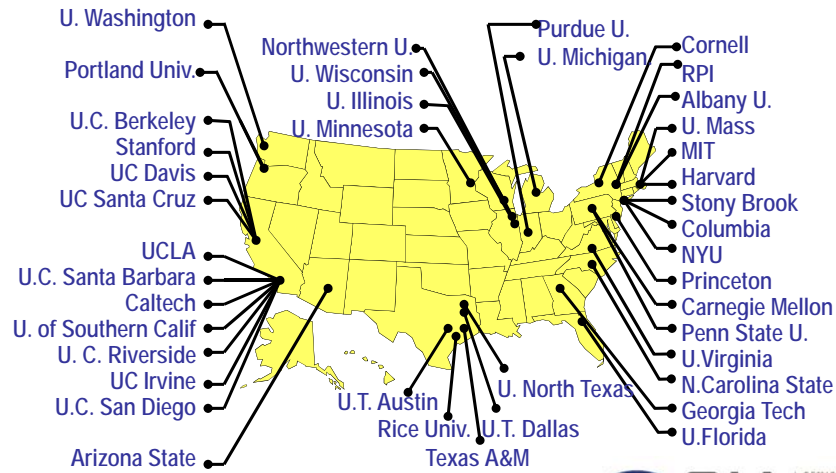


Source: SIA  
 Note: Market share based on headquarters of seller, i.e. foundry output not in Taiwanese market share.  
 Numbers rounded



## The Focus Center Academic Talent Pool

Top universities and faculty talent are engaged with the FCRP  
(41 Universities, over 200 Research Faculty, ~ 500 Students)



## Chips Drive Every Energy Efficiency Solution

Today's Chip Industry, Energy Efficiency, and the Benefit to Our Environment

### DOING MORE USING LESS

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

It is predicted that there will be 5,500 Megawatts (MW) of installed solar power systems worldwide by 2010 – up from about 1,400 MW in 2005.

CHIPS PLAY A KEY ROLE IN THE ELECTRONICS USED IN BOTH SOLAR AND WIND-GENERATED POWER SYSTEMS.

It is estimated that industrial applications of new energy-saving chip technologies could **IMPROVE ENERGY EFFICIENCY BY UP TO 88% DUE TO MORE EFFICIENT MOTOR CONTROL AND POWER MANAGEMENT.**

LCD screen power savings delivered by a single chip company have resulted in 20 million kilowatt-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. **RECENT CHIP ADVANCES BRING NEW MEANS FOR SAVING ENERGY IN ALL AREAS OF DATA CENTER OPERATIONS.**



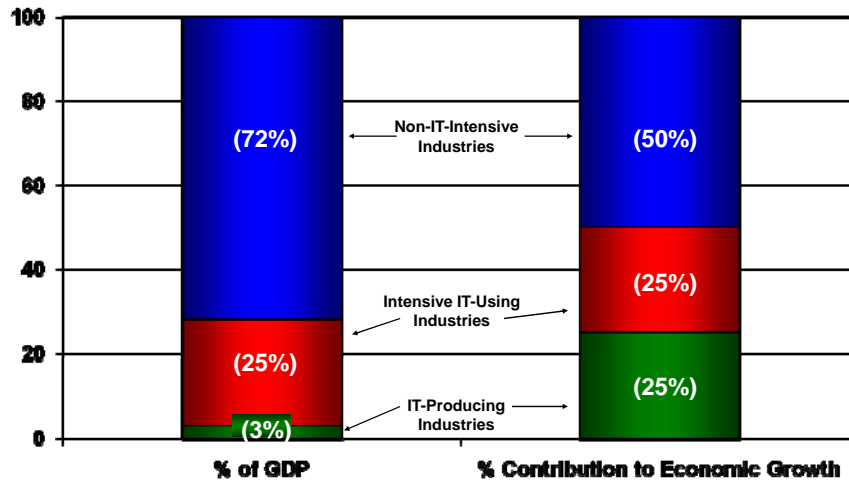
## Semiconductors Have Enabled Computers to Lead in Energy Efficiency Improvements!

	1978	2008	Energy efficiency improvement
Auto	14.3 miles per gallon	20.0 miles per gallon	40 percent
Passenger Airlines	22.8 revenue passenger miles per gallon	50.4 revenue passenger miles/gallon	121 percent
Lighting	Incandescent light bulb 13 lumens per watt	Compact fluorescent bulb – 57 lumens/watt	339 percent
Computer Systems	1,400 instructions per second/watt	40,000,000 instructions per second/watt	2,857,000 percent

Source: Technology CEO Council, "A Smarter Shade of Green", February 6, 2008.



## 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.



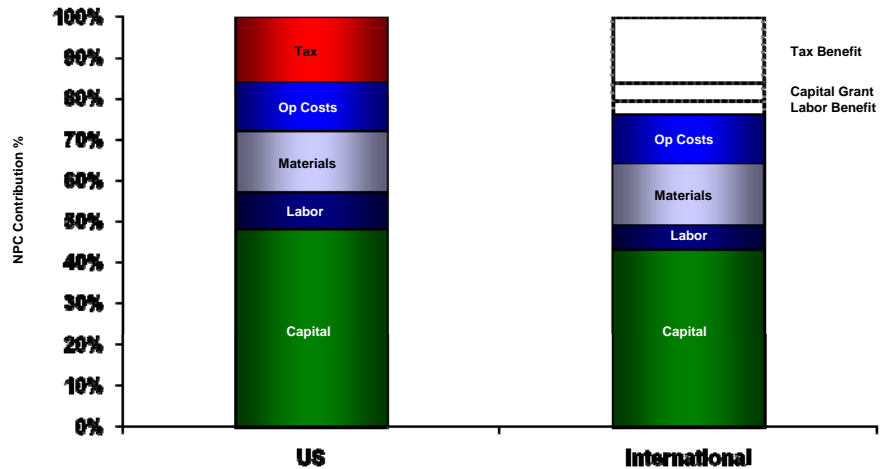
## U.S. Losing Share in New Semiconductor Manufacturing Capacity



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

