



Semiconductor
Research
Corporation

Logic and Memory Devices Program Annual Review Meeting

Industry Talk: An Update on Federal Funding of Semiconductor Research
October 27, 2021



Dave Henshall

Director of Business Development

david.henshall@src.org

Risks Become Realities: Consequences of Interruptions

- US auto plants shutting down temporarily
- Pentagon confounded by microchip security
- Pres. Biden highlighting reliance of economy on semiconductor supply

Semiconductor shortage forces automobile production cuts

By TOM KRISHER and MICHAEL LIEDTKE January 8, 2021



Bloomberg Opinion

Microchip security continues to confound Pentagon

John M. Donnelly, CQ-Roll Call on Apr 9, 2021
Published in Business News

SUBSCRIBE

Subscribe

Your email is safe with us. [Privacy Policy](#)

Editorial Board

Chip Shortage Exposes Vulnerable Supply Chains

The world is running low on semiconductor chips, and automakers aren't the only ones who should worry.

By Editorial Board
February 26, 2021, 8:00 AM EST



Little chips, big problems. Photographer: Doug Mills/Pool/Getty Images.

COMMENTS
6

LISTEN TO ARTICLE
▶ 4:02

SHARE THIS ARTICLE

Share

Hoping to address supply-chain disruptions following the pandemic, President Joe Biden on Wednesday ordered a wide-ranging review of U.S. reliance on foreign sources for critical goods such as pharmaceuticals, rare-earth metals and high-capacity batteries. On the most urgent matter — a shortage of semiconductors that has upended production at American automakers — he needs to think bigger.

Live on Bloomberg
Watch Live TV >
Listen to Live Radio >

Start with intelligent
asset management.

[Read the guide](#)

IBM



The Pentagon in Arlington County, Virginia.



Monumental Achievements

US Innovation System has three components

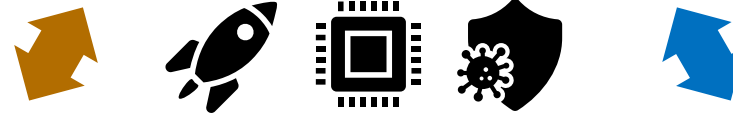
They work synergistically to meet each others' needs

All three are needed to create monumental achievements



Government:

- Needs: economic strength & national security
- Contributes: Oversight, policy, funding



Academia:

- Needs: funds, direction of applications, liberty to create and test ideas
- Contributes: generates and tests idea, identifies tech direction



Industry:

- Need: ideas generated and tested to set technology direction, policy
- Contributes: direction of applications, economic strength & national security, funding

Reviewing of 2020 Semiconductor Bills



CHIPS for America Act

- \$5B establish an Advanced Packaging National Manufacturing USA Institute
- \$3B establish a National Semiconductor Technology Center to conduct research and prototyping of advanced semiconductors
- \$2B for DARPA ERI
- \$3B NSF semiconductor research
- \$2B DOE semiconductor research



FABS/ American Foundries Act

\$25B introduced for in three major categories:

- \$15B for commercial microelectronics manufacturing
- \$5B for Defense and Intelligence microelectronics manufacturing and advanced R&D facilities
- \$5B in semiconductor R&D: \$2B DARPA ERI; \$1.5B NSF semiconductor research; \$1.25B DOE semiconductor research; \$250M NIST





Endless Frontiers Act

- \$100 billion over 5 years, establish a new Technology Directorate.
 - DARPA-like program management authority for NSTF
- Funds 10 Key focus areas including
- \$10B for 10- 15 regional economic development hubs



H1- 2021 Actions Ignite Activity


Q2 2021
src.org



RESTORING STRENGTH
How to fortify the US semiconductor supply chain

Department of Commerce, Bureau of Industry and Security, Docket No. 210310-0052, RIN 0694-XC073
 Submitted by: Semiconductor Research Corp. (SRC), By Todd Younkin, President and CEO; Dave Henshall, Director of Business Development, David.henshall@src.org, April 5, 2021

DC discussions regarding Supply Chain RFI response: government looking for ways to partner with industry, create a new national capability

S.1260 - Endless Frontier Act
117th Congress (2021-2022) | [Get alerts](#)

BILL Hide Overview ✕

Sponsor: [Sen. Schumer, Charles E. \(D-NY\)](#) (Introduced 04/20/2021)

Committees: Senate - Commerce, Science, and Transportation

Committee Meetings: [05/12/21](#)

Latest Action: Senate - 0 amendment

Roll Call Votes: There have been [1 roll call vote](#)

Tracker: Introduced → Passed Senate

H.R.2225 - National Science Foundation for the Future Act
117th Congress (2021-2022) | [Get alerts](#)

BILL Hide Overview ✕

Sponsor: [Rep. Johnson, Eddie Bernice \(D-TX-30\)](#) (Introduced 03/26/2021)

Committees: House - Science, Space, and Technology

Committee Meetings: [06/15/21 10:00AM](#)

Latest Action: House - 06/15/2021 Motion to reconsider laid on the table Agreed to without objection. ([All Actions](#))

Roll Call Votes: There has been [1 roll call vote](#)

Tracker: Introduced → Passed House

H.R.3593 - Department of Energy Science for the Future Act
117th Congress (2021-2022) | [Get alerts](#)

BILL Hide Overview ✕

Sponsor: [Rep. Johnson, Eddie Bernice \(D-TX-30\)](#) (Introduced 05/28/2021)

Committees: House - Science, Space, and Technology

Committee Meetings: [06/15/21 10:00AM](#)

Latest Action: House - 06/28/2021 Motion to reconsider laid on the table Agreed to without objection. ([All Actions](#))

Roll Call Votes: There has been [1 roll call vote](#)

Tracker: Introduced → Passed House → Passed Senate → To President → Became Law

Passage of Senate & House bills in June for funding semiconductor research, aligning with industry



What's Inside the CHIPS Funding


Name	2022 funding	2023- 26 funding/yr.	SRC vision 2023- 26 split	Technology	Tech maturity	Facilities, capex build	Solicitation timing (guess)
Incentives	\$8B	\$8B	\$8B	Microelectronics + advanced packaging	Piloting & scaling (7- 9)	Likely	CY Q2- 22
MMUSAI*	\$500M	\$1.2- 1.8B	\$250M	Microelectronics + advanced packaging	Research (3- 6)	Minimal likely	CY Q4-21
NIST Labs*			\$125M intramural \$125M extramural	Microelectronics + advanced packaging	Research (3- 6)	Minimal likely	CY Q4-21
NSTC	\$2B		\$500M	Microelectronics	Develop & prototype (6- 8)	Likely	CY Q2- 22
NAPP*	\$2.5B		\$500M	Advanced Packaging	Research, development, & prototype (4- 8)	Moderate likely	CY Q4-22

- Additional elements
- Diversity and inclusion
 - Workforce development
 - Create US infrastructure
 - Tech transfer

MMUSAI: Microelectronics Manufacturing USA Institute
 NSTC: National Semiconductor Technology Center
 NAPP: National Advanced Packaging Program
 *Most relevant to SRC and members

Creating a US Packaging Supply Chain

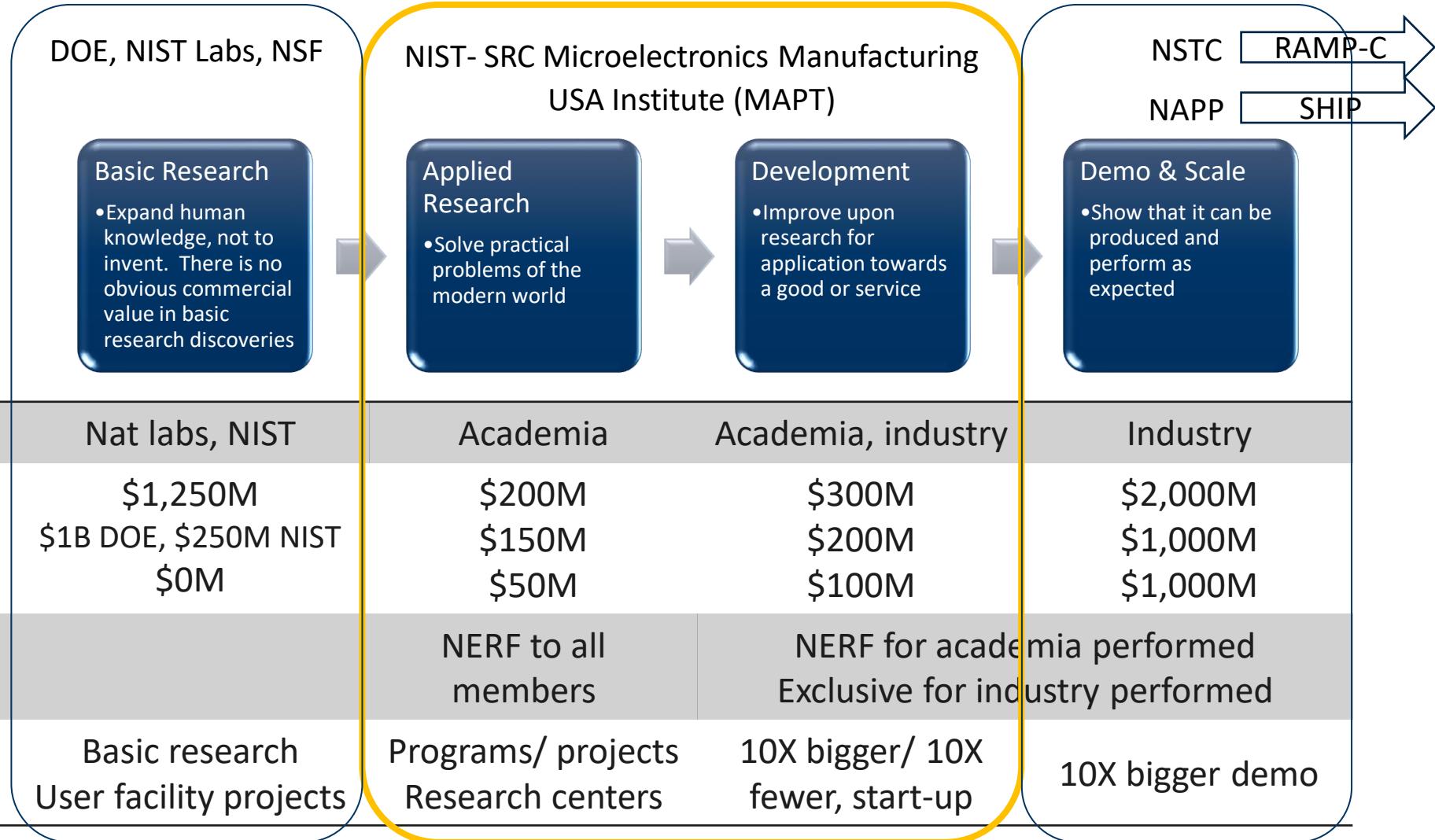
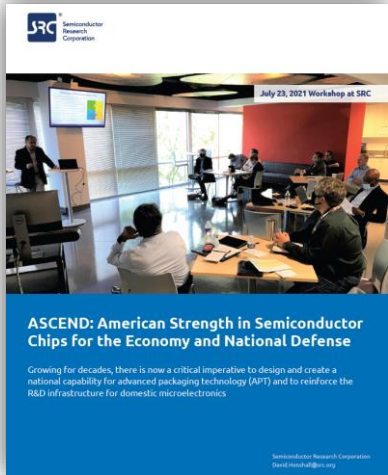
- Re-establish an entire industry that is currently mostly overseas, with the expectations to integrate and coordinate NAFEP, DoE, Incentive Grants, NSIC, DoDDARPA programs, including SHIP, LRI, RAMP, industry programs.
- Prepare for future demand, competition, opportunities.
- Support supply chain well beyond large companies.
- Unprecedented Federal investment.
- High expectations for impact across the US in 5 years.
- Leverage existing investments and knowledge.
- Recognition of national security & economic implications.



Intel Texas Instruments AMD
NXP IBM Purdue SUNY
Binghamton Georgia Tech

July 23 Workshop at SRC

Fitting the Current Legislation Together



Lead performer	Nat labs, NIST	Academia	Academia, industry	Industry
Annual: \$3.8B*	\$1,250M	\$200M	\$300M	\$2,000M
Gov. Cost-share	\$1B DOE, \$250M NIST \$0M	\$150M \$50M	\$200M \$100M	\$1,000M \$1,000M
IP rights		NERF to all members	NERF for academia performed Exclusive for industry performed	
Projects	Basic research User facility projects	Programs/ projects Research centers	10X bigger/ 10X fewer, start-up	10X bigger demo

*Note these budget numbers are annual steady-state

https://www.src.org/about/decadal-plan/src_workshop_white_paper_mmi_final.pdf

Auto Chips Shortage Fueling Legislation



Administration | Priorities

BRIEFING ROOM

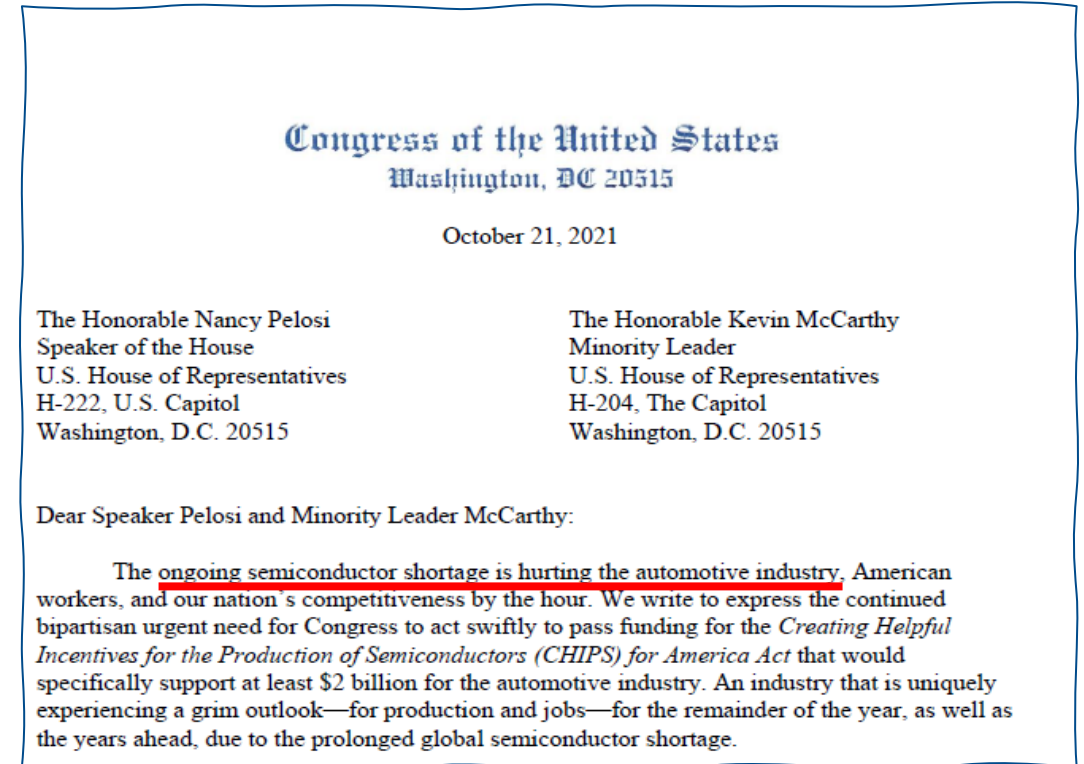
When the Chips Are Down: Preventing and Addressing Supply Chain Disruptions

SEPTEMBER 23, 2021 • BLOG

There are two critical steps that Congress could take to accelerate our progress towards more resilient supply chains. **First, Congress could fund the bipartisan CHIPS for America Act, which would enable transformative investments in domestic semiconductor research, design, and manufacturing. This is the long-term solution to solving the current chip shortage.** Second, Congress could establish the new Critical Supply Chain Resiliency Program (CSCRIP) at the Department of Commerce, which President Biden has proposed as part of his Build Back Better plan that is before Congress right now. The program would serve as a central node in the federal government for supply chain resilience, facilitate better coordination and planning across federal agencies to address vulnerabilities, and invest in critical supply chains where the private market has failed to allocate sufficient capital.

Sept. 23 Biden blog recommending CHIPS funding by Congress

- Focused on resilient supply chains



Congress of the United States
Washington, DC 20515

October 21, 2021

The Honorable Nancy Pelosi
Speaker of the House
U.S. House of Representatives
H-222, U.S. Capitol
Washington, D.C. 20515

The Honorable Kevin McCarthy
Minority Leader
U.S. House of Representatives
H-204, The Capitol
Washington, D.C. 20515

Dear Speaker Pelosi and Minority Leader McCarthy:

The **ongoing semiconductor shortage is hurting the automotive industry**, American workers, and our nation's competitiveness by the hour. We write to express the continued bipartisan urgent need for Congress to act swiftly to pass funding for the *Creating Helpful Incentives for the Production of Semiconductors (CHIPS) for America Act* that would specifically support at least \$2 billion for the automotive industry. An industry that is uniquely experiencing a grim outlook—for production and jobs—for the remainder of the year, as well as the years ahead, due to the prolonged global semiconductor shortage.

Oct. 21 House Letter to Speaker Pelosi

- Bipartisan group of 41 House members send letter encouraging CHIPS funding
- Mounting pressure to appropriate CHIPS funding
- Focuses on chip shortage impact on the auto industry

Maintaining the Need

- As legislation is building momentum, GM is indicating assembly plants won't be idle
- Could this derail CHIPS funding?

SUBSCRIBE NOW
\$1 for 6 Months

The Detroit News

News
Sports
Autos
[Business]
Michigan
Life + Home
Entertainment
Opinion
Obituaries
⌵

GM

Chip shortage not idling any GM plants come Nov. 1

Kalea Hall The Detroit News
Published 1:08 p.m. ET Oct. 22, 2021 | Updated 3:18 p.m. ET Oct. 22, 2021

View Comments






Detroit — General Motors Co. will take its Silao, Mexico, truck plant down next week, but expects no plants to be down from the global chip shortage come Nov. 1.

GM first started taking down plants in February as the effects of the shortage started to show. Throughout the year, the Detroit automaker has tried to protect its most profitable products — trucks and full-size SUVs — as it idled plants.

The Silao plant where the Chevrolet Silverado 1500 and GMC Sierra 1500 are built will be down the week of Oct. 25 but production is expected to return Nov. 1.



Summary: Ups and Down

- \$B for semiconductor research being considered by Congress
- SIA* constantly advocates for semiconductor research funding from congress
- SRC is regularly visiting program offices
 - Positioned well for MAPT+ Manufacturing USA Institute, possibly helping with others
- It'll be a wild ride before government funding is decided





More info:

David.Henshall@src.org