

**Before the
DEPARTMENT OF COMMERCE
Washington, DC 20230**

In the Matter of)	
)	
Incentives, Infrastructure, and Research and)	Docket No. 220119-0024
Development Needs to Support a Strong)	
Domestic Semiconductor Industry)	
)	

**COMMENTS OF
USTELECOM—THE BROADBAND ASSOCIATION**

USTelecom – The Broadband Association (“USTelecom”)¹ submits these comments in response the Department of Commerce’s (“Department”) request for information in the above-captioned proceeding.² USTelecom is encouraged by the Department’s readiness to take concrete steps to incentivize a strong domestic semiconductor industry. For reasons addressed in these comments and explained further in USTelecom’s white paper *Semiconductor Supply Chain Resiliency* (“Attachment A”),³ the United States urgently needs to increase manufacturing capacity for semiconductors, while the private sector mitigates short-term impacts.

USTelecom presently chairs the Communications Sector Coordinating Council (“CSCC”) and co-chairs the Department of Homeland Security (“DHS”) Information Communications Technology (“ICT”) Supply Chain Risk Management (“SCRM”) Task Force. Supply chain

¹ USTelecom is the premier trade association representing service providers and suppliers for the telecom industry. Its diverse member base ranges from large publicly traded communications corporations to small companies and cooperatives—all providing advanced communications services to both urban and rural markets.

² *Incentives, Infrastructure, and Research and Development Needs to Support a Strong Domestic Semiconductor Industry*, Docket No. 220119-0024, 87 FR 3497 (rel. Jan. 24 2022) (hereinafter “Semiconductor Industry RFI”).

³ USTelecom, *Semiconductor Supply Chain Resiliency* (2021), <https://www.ustelecom.org/research/semiconductor-supply-chain-resiliency>.

availability in the context of the ICT sector can impact broader considerations of national and economic security, especially given the transformational effects of the COVID-19 pandemic on society's need for digital connectivity.

Semiconductors have enabled broadband providers and other ICT industries to sustain our economy and keep Americans connected during the global pandemic. The associated growth in internet traffic—and with it, society's need for semiconductors—will only expand going forward, as the willingness of people and institutions to rely upon digital connectivity is here to stay. More recently, geopolitical events in Ukraine have demonstrated the unpredictability of global supply chains. We welcome this opportunity to identify opportunities for the U.S. government to support a strong domestic semiconductor industry.

I. USTELECOM SUPPORTS INCENTIVE PROGRAMS TO INCREASE U.S. MANUFACTURING CAPACITY FOR SEMICONDUCTORS AND SECURE LONG-TERM SUPPLY

The United States urgently needs to increase manufacturing capacity for semiconductors, and USTelecom supports the Department's proposed incentive programs to restore U.S. leadership in this important space. The current global supply of semiconductors has become significantly imbalanced, in large part due to a disparity in government incentives programs, which give other countries an advantage over the United States.⁴ U.S. incentive programs are important for diversifying and securing long-term supply.

⁴ “[T]he ten-year total cost of ownership of a new fab located in the US is approximately 30% higher than in Taiwan, South Korea, or Singapore, and 37% to 50% higher than in China—an enormous gap considering that the ten-year cost of a state-of-the-art fab, including both initial investment and annual operating costs, ranges between \$10 billion and \$40 billion, depending on the type of product. As much as 40% to 70% of that cost differential is directly attributable to government incentives.” Antonio Varas, Raj Varadarajan, Jimmy Goodrich & Falan Yinug, Boston Consulting Group, *Government Incentives and US Competitiveness in Semiconductor Manufacturing* (2020), <https://www.semiconductors.org/wp->

There is no time for the Department to lose after Congress has deliberated for over a year on funding. As the Department has observed, “[o]ver the past several years, the U.S. position in the global semiconductor industry has faced numerous challenges. In 2019, the United States accounted for 11 percent of global semiconductor fabrication capacity, down from 13 percent in 2015 and continuing a long-term decline from around 40 percent in 1990.”⁵ Since 2001, supplier diversity for leading-edge semiconductors has decreased radically, from 30 companies to only three companies: TSMC (Taiwan), Samsung (South Korea), and Intel (United States).⁶ The excessive concentration of suppliers of key materials, ranging from silicon wafers and specialty chemicals to rare earth minerals used for chip manufacturing, can pose long-term strategic risks to U.S. leadership and innovation.

It is critical that the United States invest in U.S.-based manufacturing, R&D, and innovation as laid out in the CHIPS Act.⁷ Both parties in Congress and the Administration have supported the strategy embedded in the legislation, which calls for investment in semiconductor manufacturing facilities and R&D. And it is important for the U.S. to follow through on investment tax credits for U.S. semiconductor manufacturer investments and equipment purchases. Put simply, policymakers agree that the United States can no longer rely on such a

content/uploads/2020/09/Government-Incentives-and-US-Competitiveness-in-Semiconductor-Manufacturing-Sep-2020.pdf.

⁵ Semiconductor Industry RFI at 3497.

⁶ Bank of America, Global Research, Global Semiconductors: Semiconductor Primer 2020, at 4 (Dec. 7, 2020).

⁷ National Defense Authorization Act for Fiscal Year 2021, Pub. L. 116-283, Title XCIX Creating Helpful Incentives to Produce Semiconductors in America (hereinafter “CHIPS Act”).

high concentration of chip supply coming from a limited set of suppliers in unpredictable regions of the world.

At the same time, policymakers must appreciate that increased semiconductor manufacturing in the United States will not happen overnight. Whether it is semiconductors or other electronics that power American broadband networks, as companies invest their own capital, and seek to leverage that capital with federal infrastructure spending, they must rely on the marketplace as it exists today. Thus, while it is essential that efforts are made to augment semiconductor production in the U.S., which USTelecom fully supports, it is also critical that broadband deployment proceed with all due haste in the near-term based on the current marketplace.⁸

II. GOVERNMENT FUNDING SHOULD INCENTIVIZE BOTH LEADING EDGE AND LEGACY SEMICONDUCTORS

USTelecom supports funding for both leading edge and legacy semiconductors as envisioned by the proposal for CHIPS Act funding. The combination of the global COVID-19 pandemic and recent geopolitical events such as the Russian invasion of Ukraine demonstrate the unpredictability of global supply chains. Therefore, it is essential that the United States ensure the supply of leading and legacy semiconductors American industries need.

Leading edge semiconductors are important given the increased technical and capital risk associated with leading edge innovation. A recent BCG report found that “the cost of developing the process technology for a new leading-node has gone up by an average of 40% with each node introduced in the last two decades, from approximately \$100 million to \$140 million for the 180

⁸ See e.g. Comments of USTelecom at 34-36, Department of Commerce (Feb. 4, 2022), available at <https://www.ustelecom.org/wp-content/uploads/2022/02/NTIA-BEAD-comments-as-filed.pdf>.

nm node in 1999-2000 to the estimated \$4 billion to \$5 billion cost of the new 3 nm node planned for rollout starting in late 2022.”⁹

Legacy chips are likewise important for many industries in the communications and IT sectors. For example, they are used in Internet of Things (IoT) devices and many other kinds of devices. While private investments have been aimed at development of machinery and processes to manufacture leading edge chips, there is insufficient investment in equipment to manufacture legacy semiconductors still widely used throughout the economy. The U.S. government should help facilitate U.S. industry having the necessary equipment to manufacture both new chips and legacy nodes, particularly equipment used to produce legacy nodes that are not being manufactured anymore.

III. THE DEMAND FOR SEMICONDUCTORS IN OTHER INDUSTRIES SHOULD NOT COME AT THE EXPENSE OF THE ESSENTIAL NEEDS OF BROADBAND PROVIDERS AND THE CONTINUED TECHNOLOGICAL LEADERSHIP AND ECONOMIC SECURITY OF THE UNITED STATES

While USTelecom strongly supports the incentives in the CHIPS Act, we wish to underscore that the government should not intercede in the market to redirect current production to favor any one industry as this would be counterproductive and create further supply chain disruptions.

The automotive industry has proposed that the United States government direct some funding directly to automakers.¹⁰ Auto industry leaders argue that their proposal is crucial to

⁹ Raj Varadarajan, Ramiro Palma, and Antonio Varas, Boston Consulting Group, *Establishing Leadership in Advanced Logic Technology* (2021), <https://www.bcg.com/publications/2021/establishing-leadership-in-advanced-logic-technology>.

¹⁰ Mark Ludwikowski and William Sjoberg, *Semiconductor Shortage And The U.S. Auto Industry* (June 22, 2021), <https://www.reuters.com/legal/legalindustry/semiconductor-shortage-us-auto-industry-2021-06-22>.

increase production of electric vehicles and therefore align with the widespread goal to cut emissions from the transportation sector. In this context, preferential treatment would amount to undue market interference and would directly constrain supply. While a significant economic contributor, auto industry interests should not be prioritized ahead of the demand for semiconductors in communications, in defense, in the financial sector, and in all of the sectors that comprise critical infrastructure.

The demand for semiconductors in the automobile industry should not come at the expense of the essential needs of broadband providers and the continued technological leadership and economic security of the United States. Semiconductors have enabled broadband providers and other ICT industries to sustain our economy and keep Americans connected during the COVID-19 pandemic. The United States government should avoid advancing any policies that favor the needs of specific industries, as such treatment would have various unintended consequences. Though the auto industry has been impacted by the semiconductor shortage, policy measures such as inventory set-asides and mandatory allocation of chip supplies, distort and potentially harm market forces that determine chip allocation today. Set-asides for automakers would also potentially put at risk the needs of sectors crucial to U.S. innovation and economic growth, such as broadband services and the nation's communications infrastructure.

IV. DEFINED PACKAGING IS INCREASINGLY IMPORTANT AND DEMONSTRATES THE NEED FOR PUBLIC-PRIVATE PARTNERSHIP

USTelecom agrees with the Department that “[a]dvanced packaging and heterogeneous integration present a significant opportunity for innovation, leading to better yields, lower costs, greater functionality, reuse of intellectual property blocks enabling accelerated design iterations

and customization, and improved energy efficiency.”¹¹ The National Semiconductor Technology Center (“NSTC”) should work closely with industry on a wide range of matters, from R&D and prototyping to high volume manufacturing.

V. THE U.S. GOVERNMENT SHOULD PLAN FOR WORKFORCE EXPANSION AND INCENTIVIZE STEM EDUCATION

There is a significant concern that a shortage of workers is coming due to semiconductor fab expansions. As such, the Department of Commerce should ensure grant proposals include plans for workforce expansion. The CHIPS Act acknowledges the importance of “secured commitments from regional educational and training entities and institutions of higher education to provide workforce training, including programming for training and job placement of economically disadvantaged individuals.”¹² These considerations should be included in evaluations for funding.

The need for experts in semiconductor manufacturing is part of the broader need for STEM training and education. The communications sector, for example, is vitally dependent on innovators and a STEM workforce. Ensuring the United States maintains and secures its place as a global leader in technology requires a forward-looking vision that goes beyond immediate returns on investment. The U.S. government should look for ways to enhance the STEM talent pool and support educational programs that equip the next generation of experts to sustain the economic security of the United States.

¹¹ Semiconductor Industry RFI at 3498.

¹² CHIPS Act § 9902(a)(2)(B)(ii)(III).

VI. CONCLUSION

USTelecom appreciates this opportunity to comment on how the Department can support a strong domestic semiconductor industry. We look forward to remaining engaged with the Department on this matter of critical importance to national and economic security.

Respectfully submitted,

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