Washington preps wider effort to boost semiconductor supply

Although billions in chip subsidies are already wending their way through Congress, lawmakers face pressure to broaden their onshoring push.

To many observers, the $52 billion in semiconductor subsidies poised to pass this Congress represent the most aggressive effort to boost U.S. industry in a generation.

But to the tech and electronic industries, the CHIPS for America Act—legislation funded as part of the U.S. Innovation and Competition Act, which passed the Senate last month—is only a good start.

“I do think it’s an excellent piece of legislation,” Dario Gil, the senior vice president and director of research at IBM, told the Senate Commerce Committee at a Thursday hearing on supply-chain resilience. “I think the consideration that we should have is, how do we have a sustained effort throughout the decade?”

John Miller, the senior vice president of policy and general counsel at the Information Technology Industry Council, a high-tech lobbying group, struck a similar tone.

“It’s a long game,” Miller told senators on Thursday. “It’s not just drafting a bill and giving [the Commerce Department] or anyone else a pile of money. It’s really having a sustained strategy to follow through on these programs that hold so much promise.”

The global supply chain for semiconductors, the complicated computer chips found in everything from smartphones and toasters to cars and ballistic missiles, is among the most complex in the world. And the U.S. is far from the center of it—while cutting-edge chips are often designed by U.S. firms, nearly all of those chips are made overseas, mostly in Taiwan and South Korea. America accounts for just 12 percent of global semiconductor capacity, largely in the form of older, “legacy” chips with few uses in advanced products.

This system used to function well, with U.S. businesses leveraging their advantages in software and design while taking advantage of cheaper labor and permitting costs abroad. But the twin disruptions of the COVID-19 pandemic and rising tension between the U.S. and China caused a fragmented supply chain to crack, sparking a global chip shortage that's expected to worsen. In response, governments around the world began exploring efforts to boost domestic production of the crucial chips.

The Biden administration has made strengthening the semiconductor supply chain a priority, issuing a 100-day review in June that zeroed in on problems posed by a lack of chips. That same month, the Senate passed $52 billion in "emergency" appropriations for the CHIPS Act, including $39 billion for companies to build semiconductor factories within U.S. borders and over $10 billion in research for advanced chips. The House has yet to decide on a course of action, but it's expected to support some level of chip subsidies.

Senate Commerce Chair Maria Cantwell noted how unusual it is for Washington to put its thumb so firmly on the scale of a major global industry.

"I'm not sure 20 years ago we would've had the same hearing," said the Democrat from Washington state. "But the world has changed, supply chains have changed and are changing, and we have to look forward to how the United States stays competitive here."

Much of Washington's effort moving forward will be focused on streamlining conversations between companies within the chip supply chain, which rarely share in-depth information and are often surprised by disruptions.

But more funding is also almost certainly on the table—not only for research and STEM education, but also in the form of additional direct subsidies.

The CHIPS Act allocates $2.5 billion in fiscal 2022 for an advanced packaging program meant to research the best ways to assemble tiny chips into functional integrated circuits. But John Mitchell, the president of electronics-industry association IPC International, is already pushing Washington to pump more subsidies into chip packaging and the manufacture of related electronics like printed circuit boards.

"This $2.5 billion is significant and critically important ... [b]ut realistically, it's a down-payment," Mitchell told *National Journal* in an email. "Two or three times this amount and a long-term

commitment will be necessary to build up U.S. capabilities. The U.S. is that far behind the foreign competition."

In order to bring chip manufacturing home, Mitchell said, an additional $10 to $15 billion in subsidies will be needed to shore up the electronics supply chain over the next decade. He suggested the U.S. Innovation and Competition Act fails to prioritize those investments by not including the industry as one of 10 key focus areas delineated in the bill.

"The government undercuts its own efforts when it fails to acknowledge the importance of electronics manufacturing," he said.

The push to further expand Washington's role in the high-tech ecosystem comes as senators admit major gaps in their knowledge. Cantwell repeatedly asked panelists how the government can collect and distribute more detailed information on a sprawling and opaque semiconductor supply chain.

Willy Shih, a professor at Harvard Business School and an expert in international supply chains, said much of Washington's semiconductor push "reflects a lack of grounding in the reality of how the physical supply chain is structured, and who does what and how it's physically deployed."

Shih pointed to the Senate's decision to earmark some of the chip subsidies for the production of "legacy" semiconductors—older chips important to automobile manufacturing that may become obsolete soon after their factories are completed.

"That story is not going to have a happy ending," he said. "What's going to happen is, by the time they get built, there's going to be overcapacity. And the guys who built it are going to lose money."

Shih agreed with Mitchell and other lobbyists that onshoring semiconductor production will require Washington to subsidize related industries as well.

"Even if we bought all the automated packaging equipment from Asia and brought it to the U.S. and installed it, you would still have to buy the package materials from there. Or you'd have to buy ceramic chip capacitors, or lithography masks from there," he said. "It's more than just bringing the semiconductor foundry. You have to bring the whole supply chain."

But unlike the lobbyists, Shih questioned the wisdom of expanding subsidies to cover the broader chip ecosystem—particularly if all that onshoring doesn't lead to lower manufacturing costs.