




VIRTUAL UPDATE
CONFERENCE ON
**EXPORT
CONTROLS
& POLICY**

Partnering to Address 21st Century
Export Control Challenges

BIS Microelectronics Industrial Base Assessments

DAVID BOYLAN
Defense Industrial Base Division
Office of Technology Evaluation




BIS 2021 | VIRTUAL UPDATE CONFERENCE:
EXPORT CONTROLS & POLICY

BIS Microelectronics Assessments

- **Executive Order 14017, Issued February 24, 2021**
 - Commerce 100-day report "identifying risks in the semiconductor manufacturing and advanced packaging supply chains and policy recommendations to address these risks"
 - Resulting report *Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth* released June 8, 2021



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100-Day Semiconductor Report: Development

- BIS and ITA partnership
- Significant contributions from EDA, NIST, and others in Commerce
- Coordination and consultation across the U.S. Government
- Major input from industry
 - 96 responses to the Notice of Inquiry published March 15, providing over 1,000 pages of comments on the semiconductor supply chain
 - <https://www.regulations.gov/document/BIS-2021-0011-0001/comment>
 - 24 speakers at a virtual forum held on April 8
 - <https://www.bis.doc.gov/Semiconductorforum>



100-Day Semiconductor Report: Key Findings

- **Design:** U.S. semiconductor design ecosystem is robust and world leading, but highly dependent on sales to China. Dependent on limited sources of IP, labor, and manufacturing.
- **Fabrication:** U.S. lacks sufficient capacity to produce semiconductors. Primarily reliant on Taiwan for leading edge logic chips and on Taiwan, South Korea, and China to meet demand for mature node chips.
- **ATP and Advanced Packaging:** U.S. is heavily reliant on foreign sources concentrated in Asia for ATP. Significant technological advances are possible in advanced packaging, but the U.S. lacks the materials ecosystem and cost-effective production that will support a robust advanced packaging sector. Massive Chinese investments threaten to upend the market.
- **Materials:** Semiconductor production requires hundreds of materials, each with their own supply chain challenges. Many of the gases and wet chemicals for semiconductors are produced in the United States, but foreign suppliers dominate the market for silicon wafers, photomasks, and photoresists.
- **Manufacturing Equipment:** The U.S. has a significant share of global production of most types of front-end semiconductor manufacturing equipment, with the notable exception of lithography equipment production, which is concentrated in the Netherlands and Japan. With limited semiconductor manufacturing occurring in the United States, these equipment manufacturers are heavily reliant on sales outside of the United States.



100-Day Semiconductor Report: Recommendations

- Promote investment, transparency and collaboration, in partnership with industry, to address the current shortage
- Fully fund the CHIPS for America provisions to promote long-term U.S. leadership
- Strengthen the domestic semiconductor manufacturing ecosystem
- Support SMEs and disadvantaged firms along the supply chain to enhance innovation
- Build a talent pipeline
- Work with allies and partners to build resilience
- Protect the U.S. technological advantage



Microelectronics Industrial Base: Next Steps for BIS

- Gather additional data to provide transparency to the supply chain
- Carry out more in-depth analysis of critical stages of the semiconductor production process
- Collaborate with other agencies to enable the U.S. Government to effectively partner with private industry to better support U.S. economic and national security