President’s Executive Order 14017 Semiconductor supply chain report and recommendations

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Key risks across the semiconductor supply chain

Segment-specific risks:

1. Design
   - Large R&D outlays
   - Access to foundries
2. Fabrication
   - Declining US production capacity
   - Reliance on geographically concentrated sources
3. Assembly, testing and packaging
   - Lack of US capacity
   - Lack of materials and capabilities
   - Non-commercial demand is insufficient to sustain investment
4. Materials
   - Variety of materials required
   - Dependence on foreign sourcing
   - Safety, availability and transport of chemicals
5. Equipment
   - Dependence on foreign sales
   - Shortage of equipment for smaller wafer sizes

Cross-cutting risks:

- Fragile supply chains
- Malicious supply chain disruptions
- Use of obsolete and generations-old semiconductors and related challenges for continued profitability of companies in the supply chain
- Customer concentration and geopolitical factors
- Electronics production network effects
- Human capital gaps
- IP theft
- Challenges in capturing the benefits of innovation and aligning private and public interests

Source: Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth, White House report on 100-day reviews under Executive Order 14017, June 2021.

Opportunities to strengthen resilience and competitiveness

- Create pathways to support **well-paying domestic semiconductor jobs** across the supply chain by building on our existing innovation capacity and the enormous talents and skills of our workers and researchers. The semiconductor industry provides employment opportunities at all levels, from scientists and engineers to manufacturing workers
- Maintain and advance U.S. **leadership in semiconductor technologies** through R&D of new materials, processes, and applications, and bridge the gap between R&D and commercialization
- Enhance **international engagement and cooperation** on semiconductor-related issues. The most advanced technology links in the semiconductor supply chain are concentrated among our allies and partners, creating an opportunity to forge a cooperative approach to address shared concerns including supply chain vulnerabilities
- Anchor semiconductor technology and production by **driving domestic US demand for semiconductors** via investment in the next generation of technologies as called for in the AJP; semiconductors are the linchpin of key infrastructure projects such as high-speed broadband infrastructure, electric vehicles, electric grid resilience, and power generation modernization
- Meet **resource-sustainable production needs** through next-generation semiconductor facilities at home that consume clean, emissions free energy sources and include water treatment facilities.

Source: Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth, White House report on 100-day reviews under Executive Order 14017, June 2021.

Key recommendations

1. Promote investment, transparency, and collaboration to address the semiconductor shortage through partnerships with industry
2. Fund the CHIPS provisions in the Fiscal Year (FY) 2021 National Defense Authorization Act (NDAA)
3. Strengthen the domestic semiconductor manufacturing ecosystem with incentives to support both upstream and downstream industries
4. Support small and mid-sized businesses, particularly manufacturers, to move from lab to fab and to market
5. Build a diverse and accessible talent pipeline for jobs across scientific, engineering, and technical domains
6. Engage with allies and partners on semiconductor supply chain resilience
7. Protect US technological advantage in semiconductor manufacturing and advanced packaging

Source: Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth, White House report on 100-day reviews under Executive Order 14017, June 2021.