CHIPS ACT OVERVIEW

David Isaacs
Vice President, Government Affairs
THE CHALLENGES FACING U.S. SEMICONDUCTOR SUPPLY CHAINS

1. U.S. SHARE OF CHIP MANUFACTURING IS ERODING WHILE ASIA'S HAS GROWN TO 77% OF GLOBAL CAPACITY DUE TO GOVERNMENT INVESTMENT

U.S. share of global semiconductor manufacturing capacity has declined from 37% in 1990 to 12% today.

Cost to build and operate a fab in the US 25-50% more expensive than alternative locations abroad due to the lack of government incentives.

2. FEDERAL SEMICONDUCTOR RESEARCH FUNDING NOT KEEPING PACE WITH NEEDS

Federal R&D investments are not keeping pace with the needs for research in advanced technologies such as Quantum Computing, Artificial Intelligence, Autonomous Systems, Space & Hypersonics, and Cyber Security.
GLOBAL GOVERNMENT INCENTIVES FOR SEMICONDUCTOR RESEARCH, MANUFACTURING & DESIGN

KOREA
- K-Belt Semi Strategy
  - By 2030
    - ~$55-65 billion
    - Up to 50% R&D tax credit

INDIA
- Production Linked Incentive Scheme
  - By 2027
    - ~$10 billion
    - 20 domestic fabless champions with turnover of $200M in 5 yrs

JAPAN
- Japan Revitalization Strategy
  - By 2027
    - ~$8 billion
    - Build a R&D Consortium for beyond 2nm

EU
- EU Chips Act
  - By 2030
    - $43 billion from EU funds and member states
    - Increase EU capacity to 20%

CHINA
- 14th Five-Year Plan
  - By 2025
    - ~$100 billion to chip funds
    - 10-yr corporate income tax exemptions worth $20 billion

CHINESE TAIPEI
- Wafer Design & Semiconductor R&D Plan
  - Since 2018
    - $750 million annually for R&D
    - Up to 50% R&D grants for pre-competitive R&D
## U.S. CHIPS & SCIENCE ACT OF 2022

Creating Helpful Incentives for Producing Semiconductors for America

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>Program Subtotal</th>
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<tbody>
<tr>
<td><strong>Semiconductor Manufacturing Incentives</strong></td>
<td>$39 billion over 5 years (Includes $2B for legacy semiconductors)</td>
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<tr>
<td>Department of Commerce</td>
<td></td>
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<tr>
<td><strong>Semiconductor Research Programs</strong></td>
<td>$11 billion over 5 years</td>
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<tr>
<td>Department of Commerce</td>
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<tr>
<td><strong>Workforce Development</strong></td>
<td>$0.2 billion over 5 years</td>
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<tr>
<td>National Science Foundation</td>
<td></td>
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<tr>
<td><strong>CHIPS Defense Fund</strong></td>
<td>$2 billion over 5 years</td>
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<tr>
<td>Department of Defense</td>
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<tr>
<td><strong>International Technology Security Fund</strong></td>
<td>$0.5 billion over 5 years</td>
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<tr>
<td>Department of State</td>
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| Appropriated Total                          | **$52.7B**                                           |

### Advanced Manufacturing Investment Tax Credit

- **OVERVIEW**
  - 25% investment tax credit for “advanced manufacturing facility”:
    - semiconductor manufacturing
    - semiconductor manufacturing equipment
  - Election for payment against tax
  - Subject to recapture for material expansions in countries of concern
  - Timing – property placed in service after 12/31/2022 and for which construction begins prior to 1/1/2027

| CBO Revenue Estimate                        | **$24.3B**                                           |
CHIPS ACT IMPLEMENTATION

Eligibility
- Semiconductor manufacturing/research/packaging, and semiconductor equipment and materials
- Construction, expansion, or modernization
- Located in the U.S., and not a re-location

Conditions
- Restrictions on use of funding – permissible uses of funds, no stock buybacks or payment of dividends
- Clawback – missed project deadlines, certain expansions of facilities in China or other countries of concern for 10 years (exception for facilities that produce legacy semiconductors)

Considerations for Awards
- Address gaps and vulnerabilities in supply chain
- Address national security needs
- Address needs of key customers – critical industries
- Jobs and community investment
- Workforce development
- Commercial viability of projects

Other/Questions
- Timing for issuance of incentives
- Weighting of factors
- Mix of projects – fabs, equipment, materials
- Amounts of awards
- Interaction with Advanced Manufacturing Investment Credit
- Environmental review and permitting (NEPA, etc.)
RESEARCH PROGRAM APPROPRIATIONS

National Semiconductor Technology Center
- Structured as public-private consortium in coordination with DOE and NSF
- Work with DOL & universities to expand post-secondary education

National Advanced Packaging Manufacturing Program
- Coordinate with NSTC and Manufacturing USA Institutes
- Funding merged with NSTC after first year

National Network for Microelectronics R&D
- Implemented by the Dept. of Defense to transition R&D innovations into workable technologies
- DoD Commons program may fulfill this requirement

Manufacturing USA Institutes
- Establish up to 3 centers to research automation of semiconductor machinery, advanced ATP capabilities, and the development/deployment of skills training

No appropriations for DOE research in CHIPS
CHIPS IMPLEMENTATION – BIDEN PRIORITIES

Executive Order 14080 (8/25/22) outlines admin objectives, direction, and strategy

- Protect taxpayer dollars
- Meet economic & national security needs
- Generate benefits for a broad range of stakeholders & communities
- CHIPS Implementation Steering Council
  Co-Chairs: National Economic Director Deese, National Security Advisor Sullivan, Acting OSTP Director Nelson
  13 additional members from the administration
- Ensure long-term leadership in the sector
- Catalyze private sector investment
- Strengthen & expand regional manufacturing and innovation clusters