

Microelectronics Research for Energy Innovation

Title VI: Misc. Science and Technology Provisions
Division B: Research & Innovation
H.R. 4521, the America COMPETES Act

Representative Paul Tonko (D-NY) introduced **H.R. 6291, the Microelectronics Research for Energy Innovation Act** on December 14, 2021 on behalf of himself and Representative Jake Ellzey (R-TX).

The *Microelectronics Research for Energy Innovation Act* (Micro Act) directs the Secretary of Energy to carry out a crosscutting initiative in microelectronics research and development (R&D). This would include research activities aimed at driving progress in the scientific areas underpinning microelectronics, as well as a mechanism for supporting large-scale efforts focused on addressing specific challenges.

The impetus for this legislation lays in the need to authorize the Department of Energy's (DOE) role in the broader microelectronics R&D enterprise. DOE's unique technical expertise and user facilities, as well as the external research community that engages regularly with the Department, render it well-positioned to accelerate transformational research in microelectronics that are essential to meeting future mission needs and bolstering the competitiveness of the domestic microelectronics industry. Research supported under the new initiative would leverage the Department's assets to focus on a broad array of topics including materials science, plasma sciences, fabrication, device architecture, energy efficient computing, and grid optimization, among many others.

The bill also authorizes the establishment of up to four Microelectronics Science Research Centers (MSRCs). These large-scale centers would conduct mission-driven research to address foundational challenges in the design, development, and fabrication of microelectronics. The MSRCs would be multi-institutional endeavors involving National Laboratories, universities, and private sector partners, and will seek to advance high-impact research, facilitate technology transfer, and generate new intellectual property. They would also contribute to the future microelectronics workforce through student engagement, technical training programs, and public outreach.

The Micro Act would complement the *Creating Helpful Incentives to Produce Semiconductors Act* (CHIPS Act). The CHIPS Act, which was enacted into law in late 2020, includes authorization of a new National Semiconductor Technology Center (NSTC) focused on research and prototyping of advanced semiconductor concepts in partnership with the private sector. The MSRCs mentioned above would accelerate early-stage research that could then feed into the NSTC, which would focus on more downstream technology development. The Micro Act includes language directing DOE to ensure that the MSRCs are coordinated with the NSTC, as well as other microelectronics research activities occurring both within and outside of the Federal Government, to prevent duplication of activities.