

U.S. DEPARTMENT OF  
**ENERGY**

Office of  
**ENERGY EFFICIENCY &  
RENEWABLE ENERGY**

ADVANCED MATERIALS &  
MANUFACTURING  
TECHNOLOGIES OFFICE



# Day 1 Closing EES2 Workshop #8

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July 19, 2023



<https://microelectronics.slac.stanford.edu/amo-microelectronics>

# Overview (*also Tomorrow*)



- A. Revised Pledge Language (Discussion??)
- B. CHIPS innovation ecosystem and beyond 2027
- C. *Pledger # 50!! (to be unveiled tomorrow)*
- D. *Proposed Roadmap Chapters (> per Working Group)*
- E. *EES2 Secretariat Activities (Recruitment (we need YOU to help!), Redesigned webpage, Newsletter, Wikipedia, Book Club)*



# A. Time to Update the Pledge for Roadmap 2.0



## We the undersigned agree to cooperate

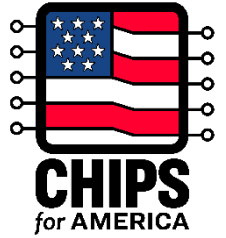
- To document and learn from the extraordinary record of microelectronics', including power electronics', energy efficiency such as increases greater than 1,000,000x in energy efficiency since the invention of the transistor nearly 75 years ago;
- To document and learn from microelectronics' past and forecasted future ability to enable all sectors of the economy to become more energy efficient and sustainable;
- To identify and publicize problems solved and opportunities offered by microelectronics' Energy Efficiency Scaling over 2 Decades (EES2);
- To publicize and identify sources to fund Version 1.0 (2022-2023) of the EES2 RD&D roadmap;
- To participate in Version 2.0 (2024-2025) of the AMMTO-led EES2 RD&D roadmap
- To explore formation of a partnership, perhaps "EES2 Allies" that enable the EES2 1000X efficiency goal by leading EES2 R&D Roadmapping after 2025 and by catalyzing the deployment of cost-effective technologies, including power electronics, needed to stay on the EES2 path of doubling microelectronics' energy efficiency every two years.

## We do this because

- Microelectronics' life-cycle energy use is rapidly becoming unsustainable as microelectronics demand begins to outpace continuing efficiency improvements due to burgeoning computing, communication, and electrification demands
- EES2 is a key organizing principle that aims to help meet new energy demands
- The EES2 is a technology leadership path that provides economic and other public benefits.

Version 1.0 of the EES2 Roadmap is near its end I suggest we Replace "participate in the AMMTO-led EES2 2022-2023 R&D Roadmap" with text in Red

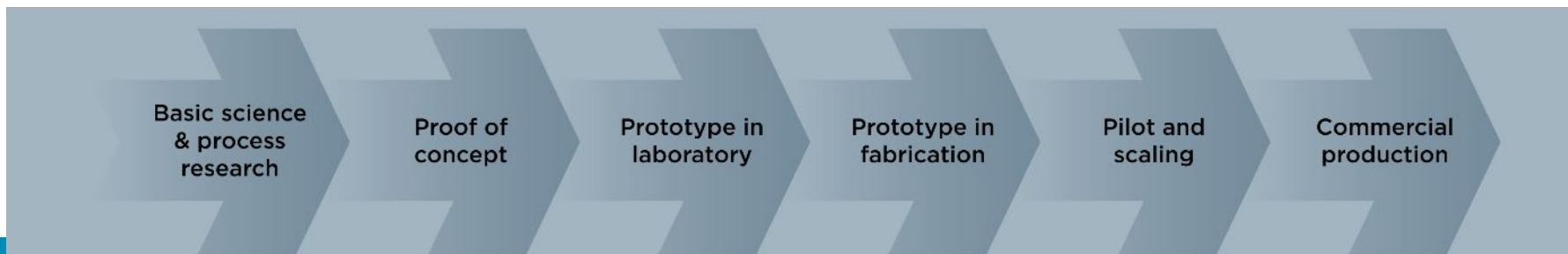
# B. Whole of Government (next 5 years)



Investment



Stages of Innovation



# AMMTO EES2 Microelectronics Lab Call Awardees

All Great Proposals from Lab Pledgers



ABA: Hopefully this  
Friday

\*Energy Efficiency Scaling Over 2 Decades: +1000-fold energy-efficiency over 20 years

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Thank you!

Q&A and Discussion