

# Office of Science Update

DOE/NSF Nuclear Science Advisory Committee Meeting

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U.S. DEPARTMENT OF  
**ENERGY**

Office of  
Science

[Energy.gov/science](https://www.energy.gov/science)

# FY 2025 Request for the Office of Science

**Requests \$8,583M (+\$343M; 4.2% increase over FY 2024 appropriation) with increased investments in Administration priorities to include:**

- Artificial Intelligence (+\$93M; \$259M)
- Fusion Innovation Research Engine (FIRE) Collaboratives (+\$15M; \$60M)
- Reaching a New Energy Sciences Workforce (RENEW) (+\$69M; \$120M)
- Funding for Accelerated, Inclusive Research (FAIR) (+\$32M; \$64M)
- Climate Initiative (\$20M)
- Microelectronics (+\$22M; \$95M)
- SC Energy Earthshots (+\$95M; \$115M)

# FY 2025 Request: Labs, Facility Operations, and Projects

## ◆ *Operations of the SC-stewarded national laboratories*

- Upgrade core laboratory infrastructure, i.e. utilities and laboratory workspace through ongoing SLI infrastructure projects and General Plant Projects (+\$32M; \$50M)
- Reduce backlog of deferred maintenance and improve obsolete infrastructure at SC national laboratories
- Continue the Laboratory Operations Apprenticeship Program (+\$2M; \$5M)

## ◆ *Facility operations*

- Supported at ~88.3% optimal funding levels
- SC Facilities “rebaselined” to show full costs of operations, including impacts of inflation, staffing costs, telework/remote capabilities, enhanced maintenance activities, etc.

## ◆ *Line-item construction and MIE projects*

- Continue ongoing scientific user facility upgrade construction projects
- Continue to support ongoing infrastructure projects

# Office of Science FY 2025 Budget Status

	FY24 Enacted	FY 25 Request	% Change from FY 24	House Mark	% Change from FY 24	Senate Mark	% Change from FY24
<b>Office of Science, Total</b>	<b>8,240</b>	<b>8,583</b>	<b>4.16</b>	<b>8,390</b>	<b>1.82</b>	<b>8,600</b>	<b>4.37</b>
<b>Basic Energy Sciences</b>	2,626	2,582	-1.78	2,617	-0.38	2,563	-2.44
<b>High Energy Physics</b>	1,200	1,231	2.50	1,219	1.50	1,230	2.50
<b>Advanced Sci. Computing Research</b>	1,016	1,153	13.39	1,105	8.76	1,152	13.39
<b>Biological and Environmental Research</b>	900	946	5.11	850	-5.56	930	3.33
<b>Fusion Energy Sciences</b>	790	844	6.84	825	4.43	825	4.43
<b>Nuclear Physics</b>	804	833	3.61	830	3.23	850	5.72
<b>Isotope R&amp;D</b>	130	184	41.54	170	30.77	168	29.23
<b>Accelerator R&amp;D</b>	29	31	6.90	30	3.45	31	6.90
<b>Scientific Laboratories Infrastructure</b>	288	295	2.43	280	-2.78	275	-4.51
<b>Scientific Program Direction</b>	227	246	8.37	238	4.85	246	8.37
<b>Safeguards and Security</b>	190	195	2.63	195	2.63	190	0.00
<b>Workforce Dev. for Teachers &amp; Scientists</b>	29	31	6.90	30	3.45	31	6.90

# FY 2025 House Mark Highlights

## ***Funds SC at \$8,390M, +\$150M over FY 2024 Enacted, -\$193M below FY 2025 Request***

- \$245M for QIS research; \$15M for research in support of the Quantum User Expansion for Science and Technology program (QUEST); \$20M for testbeds to integrate high performance computing and quantum (flat with the Request)
- \$20M for Energy Earthshots (\$95M below the Request)
- \$40M for FIRE Collaboratives (\$20M below the Request)
- Supports expansion of microelectronics research, including Microelectronics Science Research Centers
- No funding for RENEW or FAIR initiatives
- Directs establishment of a Carbon Sequestration Research and Geologic Computational Science Initiative
- Most constructions projects funded at or near the Request

# FY 2025 Senate Mark Highlights

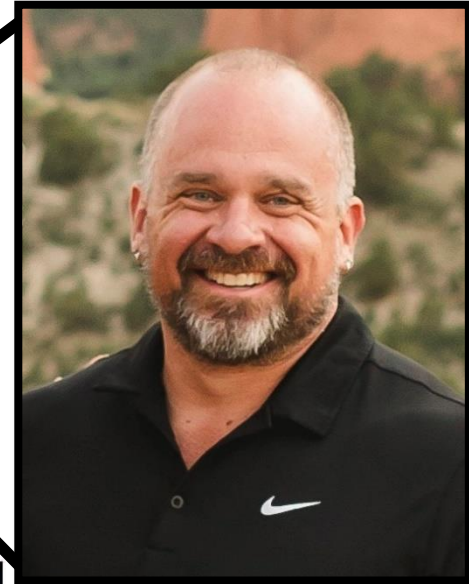
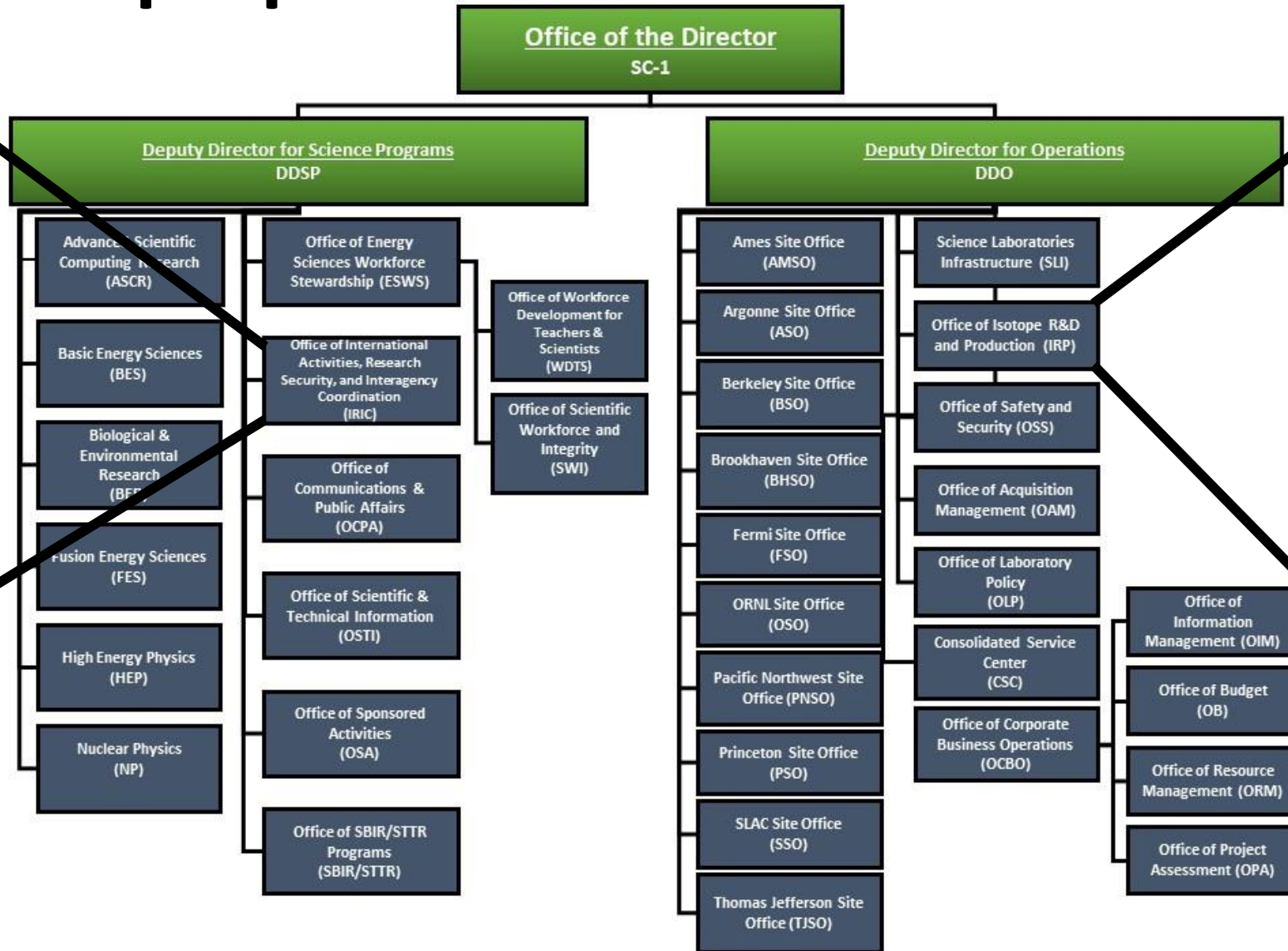
## ***Funds SC at \$8,600M, +\$360M over FY 2024 Enacted, +\$17M over FY 2025 Request***

- \$160M for Artificial Intelligence/Machine Learning research and \$100M for Frontiers in Artificial Intelligence for Science, Security and Technology (FASST) (~flat with Request)
- Not less than \$265M for QIS research, including five National QIS Research Centers (\$15M below the Request)
- \$60M for Energy Earthshots (\$55M below the Request)
- \$110M for microelectronics (\$15M over the Request)
- Not less than \$45M for FIRE Collaboratives (\$15M below the Request)
- Supports RENEW and FAIR initiatives
- \$25M to establish a Carbon Sequestration Research and Geologic Computational Science Initiative and \$10M for atmospheric methane removal research
- Most constructions projects funded at or near the Request

# SC Leadership Updates



**Sarah Staton**  
 Director, Office of International Activities, Research Security, and Interagency Coordination



**Chris C. Landers**  
 Director, Office of Isotope R&D and Production



# Frontiers in Artificial Intelligence for Science, Security, and Technology (FASST)

- The speed and scale at which AI is developing requires investment in a strategic capability to meet DOE mission needs of national security, energy security, and scientific discovery that will support sustained economic prosperity for the nation for decades to come
- A focused approach is needed to
  - Prevent the United States from losing its competitive scientific edge and ability to maintain our national and economic security
  - Catalyze a diverse and competitive innovation AI ecosystem
  - Build technical expertise necessary to govern AI
  - Attract and train a talented workforce.

<https://www.energy.gov/fasst>

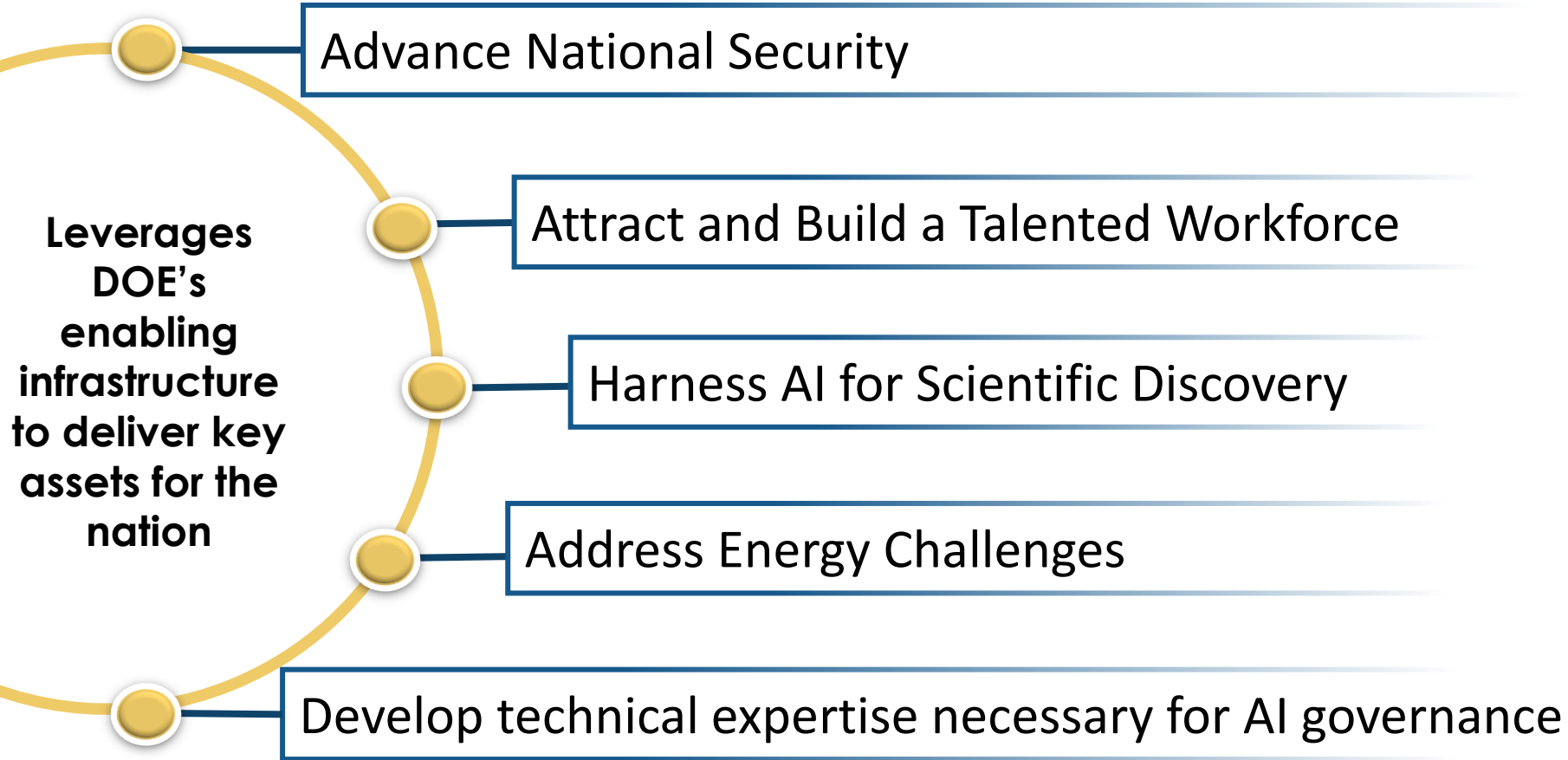


FASST will build the world's most powerful integrated scientific AI systems through four key interconnected pillars:

- AI-Ready Data
- Frontier-Scale AI Computing Infrastructure and Platforms
- Safe, Secure, and Trustworthy AI Models and Systems
- AI Applications

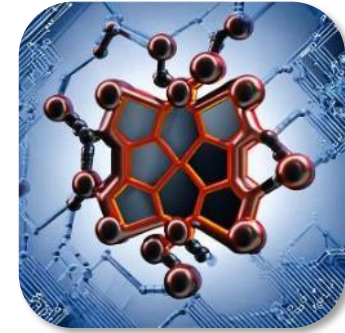


# DOE has unique capabilities to achieve FASST goals



# FASST cuts across all SC core science areas

- **AI for Science** - accelerating innovation through scientific AI foundation models trained on highly-curated scientific datasets
- **AI Hardware Innovation** - new AI algorithms and hardware co-design to improve energy efficiency by >100x
- **AI for User Facilities** - optimized, autonomous experiments with real-time data analysis and AI-enabled real-time control of accelerators & detectors to improve operational efficiency
- **Trustworthy AI systems** - storage and archival tools for FAIR (findable, accessible, interoperable, and reusable) data and privacy-preserving algorithms to enable science using proprietary and sensitive data
- **A Diverse AI Workforce** - leverage DOE's technical workforce to integrate AI across the science research community



Real-time analysis of atomic microscopy data



Digital twins and system analysis for soils



Theory-aware AI global experiment control

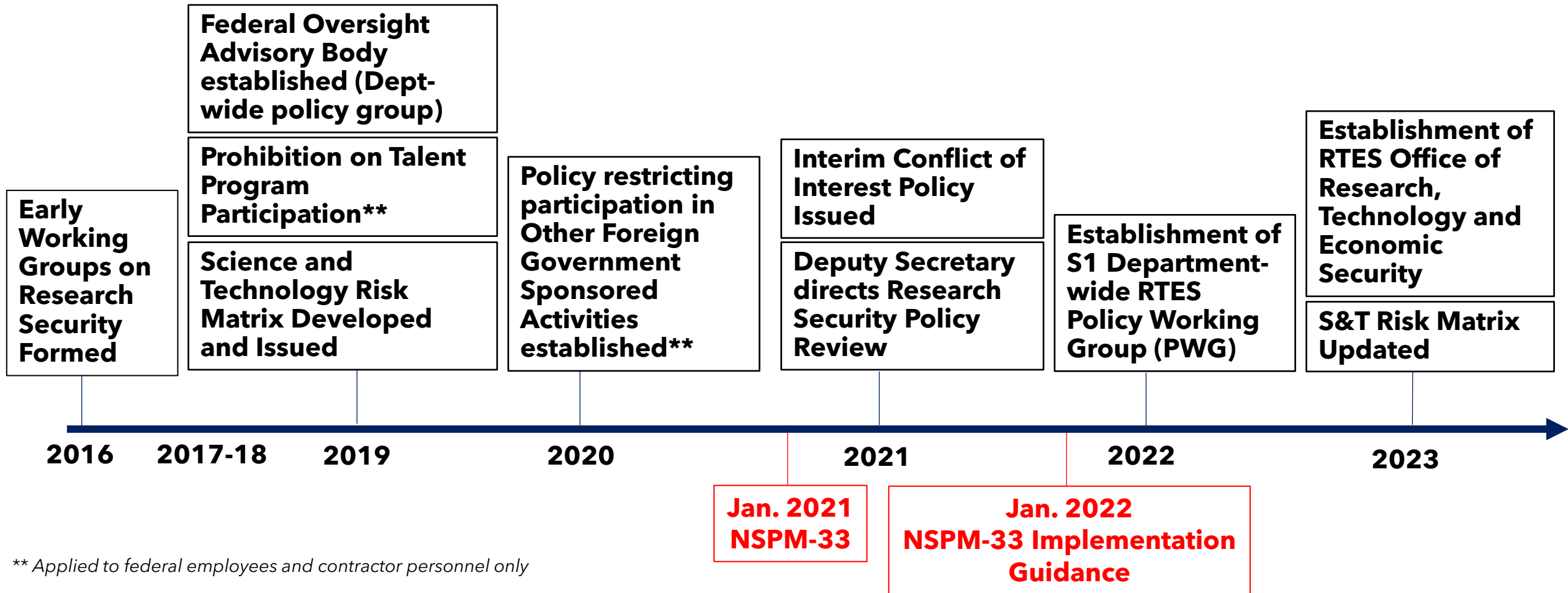
[https://www.energy.gov/sites/default/files/2024-07/FASST%20Handout%20%281%29\\_0.pdf](https://www.energy.gov/sites/default/files/2024-07/FASST%20Handout%20%281%29_0.pdf)

# Research Security at DOE: An Evolving Landscape

- Given DOE's broad mission space, the **research, technology, and economic security (RTES)** policies need to address a wide range of risk levels, and our implementation must be risk-based.
- As RTES policies are developed, DOE and National Labs ensure balance to...
  - Continue to attract and retain the best and brightest;
  - Promote principled international collaborations, which are most beneficial to all when they are:
    - **Built upon** openness, transparency, parity of intellectual and financial contributions, and mutual respect of IP rights
    - **Driven by** scientist-to-scientist ties and scientific community interest
    - **Promoting** US competitiveness and discovery of the 'best science'



# Evolution of Research, Technology, and Economic Security (RTES) at DOE



\*\* Applied to federal employees and contractor personnel only

# DOE Financial Assistance (FA)

- RTES Policy Working Group (PWG)
  - **Function:** Address RTES policy development and consistency with interagency processes (e.g. related to NSPM-33 implementation)
    - Includes financial assistance and laboratory policy
  - The PWG is working to update DOE FA policies, such as:
    - Discussing adoption of the NSF-stewarded common forms
    - COI/COC NOPR was released in the Federal Register (closed 8/19)
- Office of Research, Technology and Economic Security (RTES Office)
  - **Function:** Provide consistency and support for due diligence reviews and risk mitigation in DOE FA and loan activities
  - Office of Science is working closely with the RTES Office to ensure that its due diligence reviews maintain transparency and do not create undue burden on the community



# Primary RTES Office Functions

## Due Diligence, Liaison & Assessment

- Conduct or facilitate due diligence reviews, in coordination with other internal reviews
- Develop comprehensive risk assessment frameworks
- Review FOAs and awards to ensure the appropriate RTES measures are in place

## Information Sharing (Internal)

- Resource to program offices on RTES
- Foster cross-office information sharing through program RTES POCs
- Train offices on how to identify, communicate, and mitigate security risks

## Communications & Outreach (External)

Conduct outreach with the broader scientific community on RTES topics

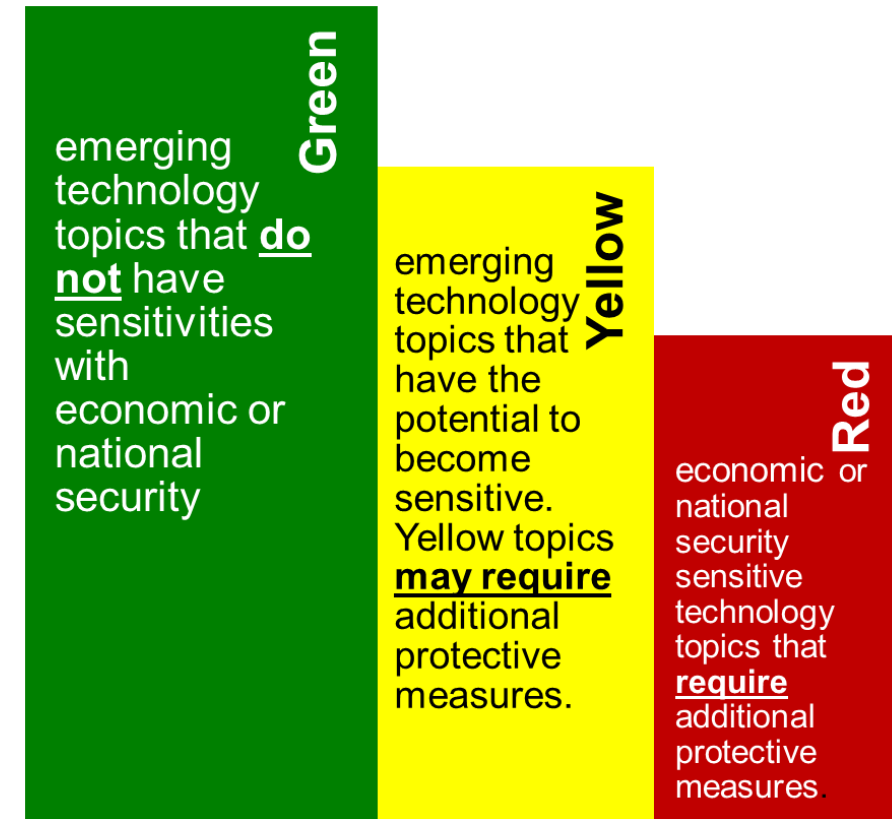


# Office of Science Financial Assistance

- The Office of Science (SC):
  - Continues to recommend universal disclosure (sources of support, positions and appointments)
  - Continues to recommend the use of SciENCv to reduce administrative burden by allowing the use of digital persistent identifiers
  - Has already announced the acceptance of interagency common formats for current and pending support and bio-sketches
- SC strongly supports recent actions emerging from its interagency partners:
  - DoD and NIH Decision Matrices, NSF TRUST Framework
  - Continued development of the NSF SECURE Center
- DOE and SC will look to these achievements and related policies as we continue to consider our approach to financial assistance

# DOE Laboratory Policy

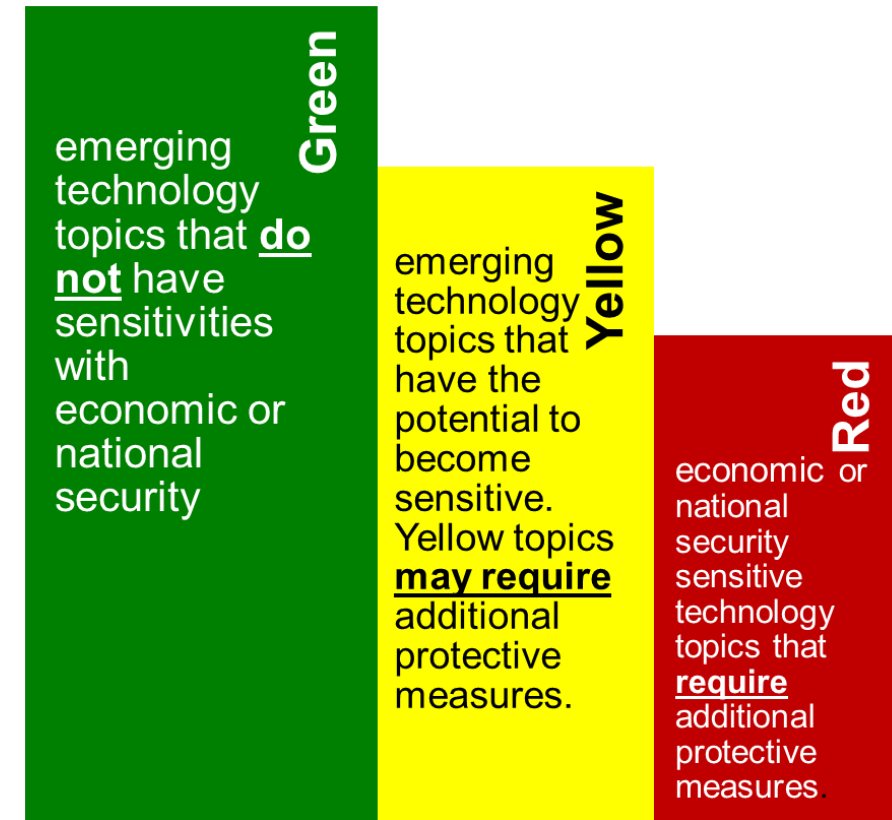
- DOE uses its Science and Technology Risk Matrix to manage risks at National Laboratories associated with critical and emerging technologies that do not otherwise have control mechanisms
- **Applies only to:**
  - Countries of Concern (China, Russia, Iran, North Korea)
  - Guidance and management of certain activities at national laboratories (e.g., foreign engagements, CRADAs/SPPs, official travel, foreign national access)



# DOE Laboratory Policy

- **Recent Matrix Developments:**

- DOE updated the Matrix in 2023 and will continue to do so annually to ensure consistency with major scientific and technological developments.
  - An unlimited distribution S&T Risk Matrix has been developed and disseminated to the national laboratories, university partners, and sister science funding agencies.
- In addition, DOE is working to update implementing Orders related to RTES policy to meet WH and statutory requirements while addressing gaps identified by the Department.



# Interagency and Community Engagement

*It is essential that DOE coordinates its research security policy with the interagency, and in my role, I am making it a priority to increase engagement with the research community.*

- Continuing to participate as co-chair on the National Science and Technology Council (NSTC) Subcommittee on Research Security.
- Continuing to engage with like-minded allies and partners through State Department-led efforts through activities such as the MCD.
- Increasing public-facing engagements with leaders and membership of organizations such as FDP, COGR, AAU, and APLU, as well as with the AANHPI research community.
  - Engage in meaningful ways that demonstrate our commitment to hearing all voices.

**THANK YOU!**

