Sandia-NMT FY24 Informational Meeting

NMT Team:

Ron Baker (Campus Executive)

Adele Doser (Campus Partnership Manager)

Josh Martinez (Technical Business Dev. Specialist)

Angela Meyer (Admin Support)
For more than 70 years, Sandia has delivered essential science and technology to address the nation’s most challenging security issues.

**PURPOSE**
Render exceptional service in the national interest

**VISION**
On behalf of our nation, we anticipate and solve the most challenging problems that threaten security in the 21st century.

**MISSION**
Our unique mission responsibilities in nuclear weapons create a foundation from which we leverage capabilities, enabling us to solve complex national security problems.
NUCLEAR DETERRENCE
Supports Sandia’s primary mission to ensure that the U.S. nuclear arsenal is safe, secure, and reliable and can fully support our nation’s nuclear deterrence policy.

GLOBAL SECURITY
Develops and implements innovative engineering solutions to anticipate and counter the emergence, proliferation, and use of weapons of mass destruction.

NATIONAL SECURITY PROGRAMS
Provides systems, science, technology, and expertise in support of national security objectives.

ENERGY & HOMELAND SECURITY
Secures the nation’s critical infrastructures and the environment against attacks, threats, and climate change by performing world-class research and development.

ADVANCED SCIENCE & TECHNOLOGY
Delivers use-inspired basic research that combines foundational science and science-based engineering to solve the nation’s greatest security challenges today and in the future.
Laboratory-Directed Research & Development (LDRD)

LDRD is one of the primary ways research collaborations are seeded between Sandia and university partners.
### MISSION CAMPAIGNS

These two Strategic Initiatives provide strong avenues to impact.

#### Mission Campaigns

<table>
<thead>
<tr>
<th>Mission Campaign</th>
<th>Description</th>
<th>Duration</th>
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<tbody>
<tr>
<td>Autonomy for Hypersonics (A4H)</td>
<td>(FY18-FY24)</td>
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<tr>
<td>Resilient Agile Deterrence (RAD)</td>
<td>(FY18-FY24)</td>
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<tr>
<td>Science and Technology Advancing Resilience for Contested Space (STARCS)</td>
<td>(FY20-FY26)</td>
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<tr>
<td>Assured Survivability and Agility with Pulsed Power (ASAP)</td>
<td>(FY21-FY26)</td>
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<tr>
<td>Resilient Energy Systems (RES)</td>
<td>(FY21-FY27)</td>
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Mission Campaigns provide an agile, intentional process to bridge science, technology & engineering R&D to mission application impact. They are integrated, multi-disciplinary portfolios of LDRD-funded projects focused on addressing current and future national security needs. (up to $40M over 5-7 years)

### GRAND CHALLENGES

Grand Challenges represent Sandia’s largest investment in a single discretionary R&D project. They seek the boldest national security-relevant outcomes, create enduring cross-disciplinary teams, and generate differentiating strategic capabilities. (up to $5M/year for up to 3 years)

#### Grand Challenges

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<thead>
<tr>
<th>Challenge</th>
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<tr>
<td>Computational Approaches for Predicting Shared Interactions of Infectious Diseases (CAPSIID)</td>
<td>(FY24-FY26)</td>
<td></td>
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<tr>
<td>Climate Impact, Dynamically Trace Attribution (CLDERA)</td>
<td>(FY21-FY24)</td>
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<tr>
<td>Beyond Fingerprinting</td>
<td>(FY21-FY24)</td>
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<tr>
<td>Thermal Protection System (TPS) Materials</td>
<td>(FY22-FY25)</td>
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<tr>
<td>Radiation-hardened Edge Processing Systems (RAD-EDGE)</td>
<td>(FY22-FY25)</td>
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Enable current and future national security missions

- **Mission Agility** – Enabling agile responses to national security challenges.
- **Technical Vitality** – Advancing the frontiers of science, technology, and engineering relevant to the Labs’ missions.
- **Workforce Development** – Attracting, developing, and retaining tomorrow’s technical workforce.

Maintain investments across all stages of R&D

- **Discovery** – Study of fundamental aspects of phenomena and of observable facts.
- **Applied** – Systematic study to gain knowledge or understanding necessary to determine the means by which a recognized and specific need may be met.
- **Development** – Application of knowledge or understanding directed toward the production of useful materials, devices, and systems or methods.
Funding can be used to support faculty research, student research assistants, project-related travel, and certain purchases if necessary.

**SANDIA LDRD PROPOSALS**
- Driven by Sandia PIs
- Facilitate connections between Sandia and academia
- Seed projects (as opposed to maintain) collaborations

Sandia PIs are responsible for submitting proposals for funding, but can collaborate with faculty on the proposal to gather information on the potential collaboration.

**UNIVERSITY COLLABORATIONS**
- Can be funded through the core project
- Can be funded through supplemental funding managed by Sandia University Partnerships Network portfolio

Communicating project needs and purchases early will enable Sandia to determine allowability.

U.S. citizenship is preferred for faculty and is expected for students working on Sandia LDRDs.
Submitting faculty interests and ideas to connect with call significantly enhance the likelihood of proposal success, especially for supplemental university funding. Information is available to Sandia PIs for other program calls.

Funding runs from October 1 (or as soon as contract is completed) to September 30.
RESEARCH FOUNDATIONS (RF)
Conduct fundamental/discovery and use -inspired research in disciplines germane to national security mission needs.

MISSION FOUNDATIONS (MF)
Conduct applied research in areas directly relevant to current and anticipated missions.

STRATEGIC INITIATIVES (SI)
Bridge or advance science, technology, and engineering to meet mission demands. The research is strategic, involves cross-collaboration, and is directed by the CRO Fellows, or Labs-directed.

~450 LDRD PROJECTS
44% NEW PROJECTS
56% SECOND/THIRD-YEAR PROJECTS

$235M FY23 LDRD PROGRAM BUDGET
Sandia University Partnerships Network (SUPN)

SUPN Goals:

• Cultivate Strategic & Enduring Institutional Relationships
• Build & Grow Impacts of Research Collaborations
• Stimulate Workforce Development
• Fuel the Talent Pipeline
• Sandia and NMT have a long history of successful collaborations with Sandia funding numerous research projects each year

• Foci in Advanced Instrumentation, Space Systems, Cyber Security, Infrastructure Resilience, Biology, Energetics, and Artificial Intelligence.

• 23 joint publications in 2021-2023 calendar years

• Student research institutes in the area of cyber security and atmospheric research

• In FY23, Sandia funded $960K in research contracts at NMT, including 4 Alliance LDRDs (~$300K)

• Approximately 320 NMT alumni currently work at Sandia

• 8 Sandians serve on NMT advisory boards

• 7 Sandians hold university affiliations with NMT
Further Information


• POCs:
  • Ron Baker (rmbaker@sandia.gov), campus executive
  • Adele Doser (abdoser@sandia.gov), campus partnership manager
Acknowledgements

Special thanks to Natalie Pitcher, Nadine Miner, Angela Meyer, and Michael Green for these slides
Questions?
### Alliance Partners
- GA Tech
- Purdue
- TX A&M
- Univ CA - Berkeley
- Univ IL
- Univ of NM
- Univ of TX - Austin

### National/Regional Partners
- AL A&M*
- AZ State^
- Carnegie Mellon
- Cornell
- FL A&M*
- NM Tech^
- NM State^  
- NC A&T*
- NC State
- Norfolk State*
- Prairie View A&M*
- Stanford
- Univ of CA - Davis#
- Univ of CA – LA
- Univ of CO - Boulder
- Univ of FL
- Univ of MI
- Univ of TX - El Paso^  
- Univ of WA#
- Univ of WI

### Recruiting Only
- Brigham Young Univ
- CA Poly San Luis Obispo
- CA State East Bay^#  
- Caltech
- Las Positas College^  
- Missouri S&T
- MIT
- OK State
- San Jose State^#  
- Univ of AZ^  
- Univ of Central FL^  
- Univ of MN#
- Univ of Southern CA
- Univ of UT
- Univ CA Davis San Ramon

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**Securing Top Academic Research & Talent with HBCUs**

1 May be program/line partners  
* Historically Black College & University (HBCU)  
^ Hispanic Serving Institution (HSI)  
# Asian American & Native American Pacific Islander Serving Institution (AANAPISI)
Committed Campus Executive is paramount to success
Deputy Campus Executives help connect more broadly

Dedicated LDRD investments at all Alliance and National/Regional Partners to seed collaborations
*(does not include LDRD or program investments made outside of the CRO program)*
- Alliance Partner funding of ~$1M/school
- National/Regional Partner funding of ~$300K/school

Support from the Academic Programs team
- External joint proposal support
- Connections to Corporate Partners (Legal, Procurement, Tech Transfer, LDRD, Prime Contract, ...)

Talent Acquisition support
- Recruiting Specialist and Line Recruiting Lead
- Recruiting Team

Alliance Partners receive additional resources
- Campus Partnership Manager
- Partnership Development staff
- On-campus events and activities
Stimulate innovation through strategic academic relationships while growing the talent pipeline and increasing workforce development opportunities.

CULTIVATE STRATEGIC AND ENDURING INSITUTIONAL RELATIONSHIPS
- Establish university engagement guidelines and best practices
- Facilitate research contracting and university memberships

BUILD AND GROW IMPACTS OF RESEARCH COLLABORATIONS
- Develop university networks and joint research opportunities
- Capitalize on research seed funding

STIMULATE WORKFORCE DEVELOPMENT
- Enable faculty exchanges/faculty loans/joint appointments
- Leverage university networks and research consortiums

FUEL THE TALENT PIPELINE
- Maximize student and educational outreach events
- Recruit high-caliber, diverse candidates through targeted development initiatives
- Cultivate the pipeline in critical skills areas
<table>
<thead>
<tr>
<th>PI Org</th>
<th>New/Continuing</th>
<th>Title</th>
<th>Investment Area/ Focus Area</th>
<th>University Collaborator</th>
<th>Sandia PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>06771</td>
<td>NEW</td>
<td>High Fidelity Surface Interacting Explosion Models</td>
<td>Global Security</td>
<td>Mike Hargather</td>
<td>Mark Woods</td>
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<tr>
<td>01353</td>
<td>Continuing</td>
<td>Past, present, and future trends of global lightning with the USNDS space-based sensor constellation</td>
<td>Global Security</td>
<td>Richard Sonnenfeld</td>
<td>Julia Tilles</td>
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<tr>
<td>05345</td>
<td>Continuing</td>
<td>Sandia Wide Aperture Radar Magnifique (SWARM)</td>
<td>National Security Programs</td>
<td>Aly El-Osery</td>
<td>Hung Loui and David Olson</td>
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</table>

**NEW (ACORN)**

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<tr>
<td>Understanding competitive adsorption between water, volatile organic compounds, and UiO-66 using ab initio molecular dynamics</td>
<td>E&amp;HS</td>
<td>Deep Chouduri</td>
<td>Scott Bobbitt</td>
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Partnering with Sandia

• Sandia LDRD funding is not a grant, but a research contract with defined deliverables. The funding is managed by Sandia, and expectations vary by project.

• These projects are expected to develop collaborative research relationships, and not merely enable independent research by both institutions.

• Universities are expected to invoice projects in a timely manner, and adhere to agreed terms and conditions outlined in the contracts.

• Sandia may share some levels of sensitive information with universities, so please discuss Sandia project information before release and properly acknowledge collaborative work.

• University accomplishments and project results must be received by the end of August each year to be included in Annual Reports.
• Restrictions on university supplemental funding
  • Work is an enhancement to or an extension of the work proposed for core LDRD project.
  • Core project milestones can still be met if not funded.
  • Work is not attached to a Mission Campaign, Grand Challenge, or Exploratory Express project.
  • Total funding for purchases and contracts do not exceed 40% of the total LDRD funding.

• Selection criteria for university supplemental funding
  • Aligns with university’s strategic focus areas.
  • Seeds and grows collaborations.
  • Builds strategic research partnerships.
  • Enhances Sandia’s talent pipeline.

• Supplemental funding accomplishments and outcomes
  • Technical outcomes of the project.
  • Joint presentations and publications.
  • Student intern and post doc hires.
  • Follow on funding received.
SANDIA’S WORKFORCE IS GROWING

Staff has grown by over 5,000 since 2011 to meet all mission needs

15,941
EMPLOYEES

14,034
New Mexico

1,907
California
SANDIA IS A FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTER (FFRDC) MANAGED AND OPERATED BY

National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc.

Government owned, contractor operated

FFRDCs are long-term strategic partners to the federal government, operating in the public interest with objectivity and independence and maintaining core competencies in missions of national significance.
OUR MULTIMISSION ROLE HAS EXPANDED OVER THE DECADES

1950s
NUCLEAR WEAPONS ENGINEERING AND TESTING
Arms race

1960s
NW STOCKPILE DIVERSITY AND BUILD-UP
Cuban missile crisis & Vietnam War

1970s
NW + ENERGY: MULTIPROGRAM LABORATORY
Energy crisis

1980s
DOE MULTIPROGRAM + MISSILE DEFENSE AND OTHER DoD WORK
End of Cold War

1990s
DOE MULTIPROGRAM + DoD, ECONOMIC COMPETITIVENESS
Stockpile stewardship

2000s
EXPANDED NATIONAL SECURITY ROLE POST 9/11
Broader national security

Today
MULTIMISSION LAB: LEPs CYBER, BIO, SPACE, TERRORISM
Evolving national security challenges