



U.S. DEPARTMENT OF  
**ENERGY**

Office of  
Science

# Webinar for FOA: Isotope R&D and Production – Reaching a New Energy Sciences Workforce (DOE IP-RENEW)

DE-FOA-0002928

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***(he/him/his)***

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# Office of Science Statement of Commitment

The DOE Office of Science (SC) microsite on Diversity, Equity & Inclusion is posted on the SC website.

The entirety of the statement can be found at:

<https://science.osti.gov/sc-2/research-and-conduct-policies/diversity-equity-and-inclusion/>

“The DOE Office of Science (SC) is fully committed to fostering safe, diverse, equitable, and inclusive work, research, and funding environments that value mutual respect and personal integrity. Effective stewardship and promotion of diverse and inclusive workplaces that value and celebrate a diversity of people, ideas, cultures, and educational backgrounds is foundational to delivering on the SC mission. The scientific community engaged in SC-sponsored activities is expected to be respectful, ethical, and professional.

The DOE SC does not tolerate discrimination or harassment of any kind, including sexual or non-sexual harassment, bullying, intimidation, violence, threats of violence, retaliation, or other disruptive behavior in the federal workplace, including DOE field site offices, or at national laboratories, scientific user facilities, academic institutions, other institutions that we fund, or other locations where activities that we support are carried out...”

- Specifics of the DOE Isotope Program RENEW FOA
- Q&A / open discussion

# Reaching a New Energy Sciences Workforce (RENEW)

FY 2022 Awards: \$32M across 6 Programs; 7 FY 2023 FOAs totaling \$56M

*Building foundations through undergraduate and graduate training opportunities for students and institutions historically underrepresented in the SC research portfolio*



- SC conducted outreach and listening sessions in FY21-22 on barriers to participation in SC opportunities to inform FY 2022 FOAs



- *FY 2022 FOAs are piloting models of support that directly address barriers to participation in SC supported fields of research; Models will be evaluated*



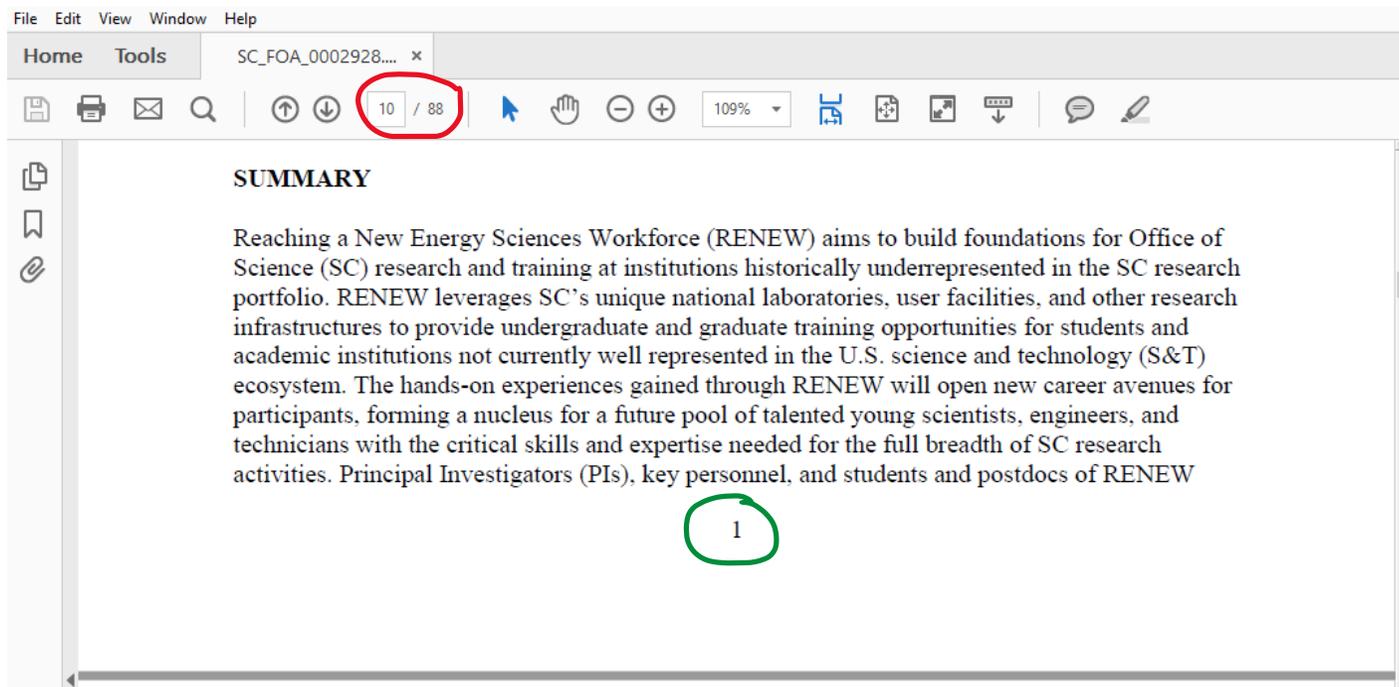
- FY 2023 doubles investment and commitment to advance discovery and innovation by increasing the diversity of individuals and institutions supported

# Commitment, Encouragement, and Transparency

- DOE IP is committed to fostering the development of the next generation workforce.
- There are many scientific disciplines that are integral components to the field of isotope production. Just because an institution doesn't currently have a production capability should not eliminate them from participating in competitive R&D and engaging in workforce development.
- While regulations prohibit discussions that might be perceived as providing a competitive advantage, the DOE IP is happy to answer questions regarding nuanced language or intent in the FOA, as well as general responsiveness of an idea to the solicitation. Other questions will be considered and answered to the fullest extent possible.

# Getting Started

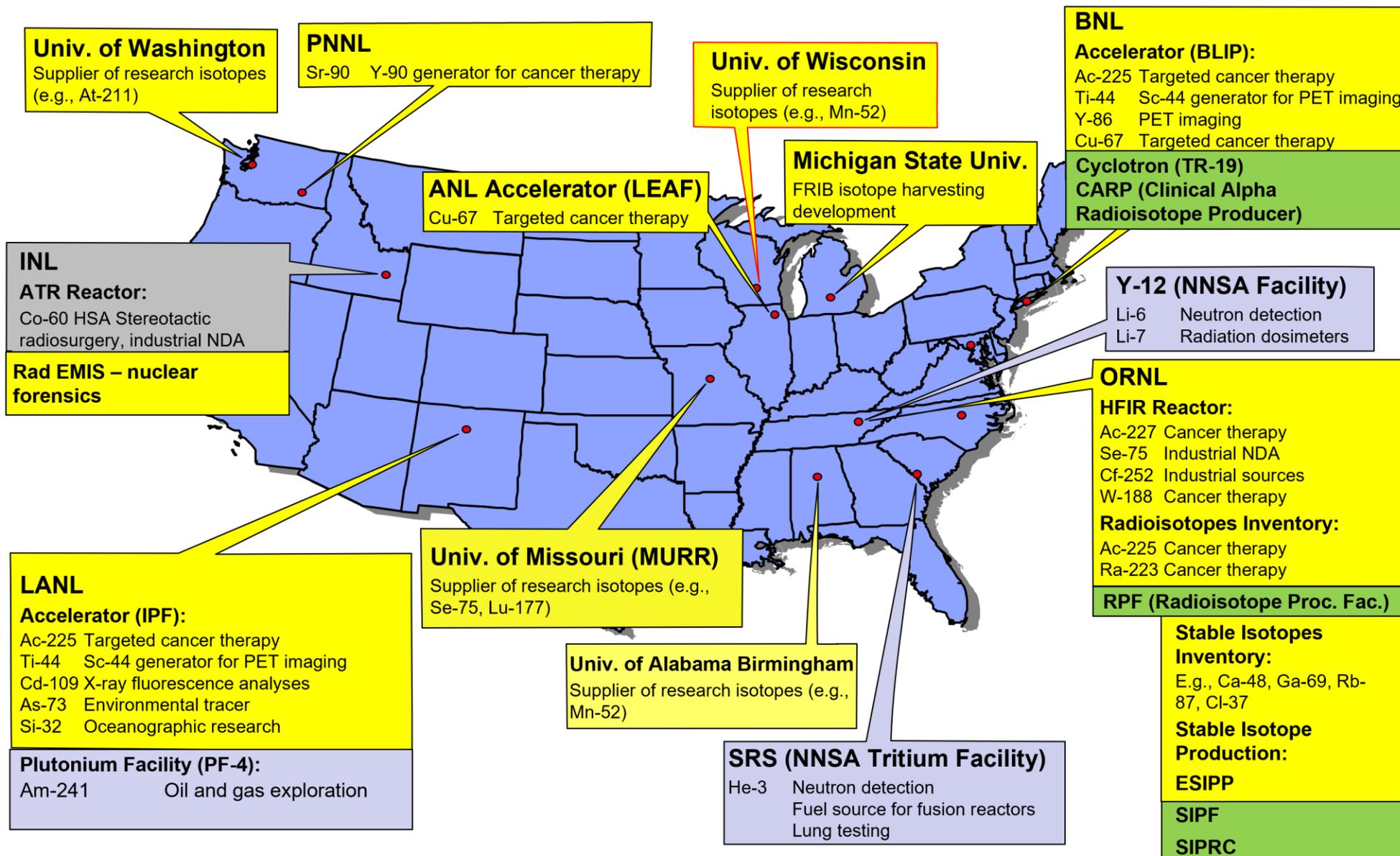
- There are multiple RENEW FOAs that were released on January 6<sup>th</sup> as part of the SC RENEW Initiative.
  - Please ensure you are looking at FOA 2928 which has the title, *Isotope R&D and Production – Reaching a New Energy Sciences Workforce (DOE IP-RENEW)*
- When looking at the FOA, I'll be referring to page numbers.



# Eligibility and Teaming

- MSIs should team with either a DOE/NNSA National Lab or a UIN site (more on this later)
  - 5-year awards
  - Multi-institutional teams (not including the DOE IP production site), applied for as a prime applicant with subawards, is limited to a request of no more than \$1,000,000 per year.
  - A single-institutional team (not including the DOE IP production site) is limited to a request of no more than \$500,000 per year.
  - DOE IP FOA budgets are total funds (direct costs + indirect costs)
- **MSIs must be the lead or “prime” applicant**
  - Who can be a subaward recipient?
- Why teaming?
  - DOE/NNSA National Lab or a UIN sites can act as a resource in training, research, and development efforts
    - Affords a more enriching training experience for the students as they benefit from mentorship from multiple scientists and begin to develop career-long relationships
    - These sites have unique facilities and expertise

# DOE IP Production Sites



# Accelerator Facilities

## Brookhaven National Laboratory Brookhaven Linac Isotope Producer (BLIP)

- BLIP beam line directs 200 MeV protons with up to 160  $\mu\text{A}$  intensity to targets; parasitic operation with nuclear physics programs for more cost-effective isotope production.



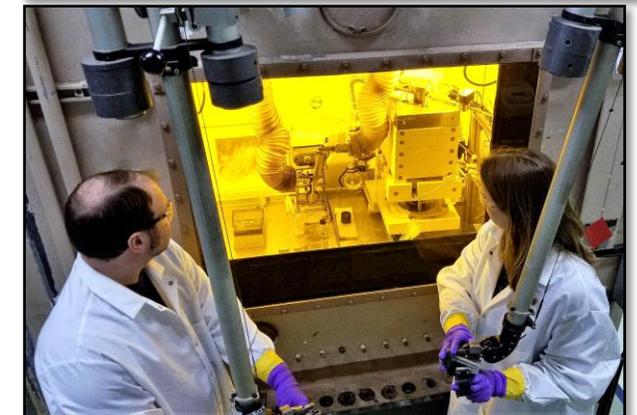
## Los Alamos National Laboratory Isotope Production Facility (IPF)

- Diversion of 100 MeV protons with up to 380  $\mu\text{A}$  intensity to target station.
- Irradiates targets while LANSCE operates for NNSA.



## Argonne National Laboratory Low Energy Accelerator Leaf Facility (LEAF)

- 50 MeV/25 kW electron linear accelerator
- Newest addition to program
- Responsive to NSAC recommendation





## Idaho National Laboratory Advanced Test Reactor (ATR)

- Office of Nuclear Energy is steward
- High Specific Activity Co-60 for medical applications
- Developing Ir-192 for industrial radiography



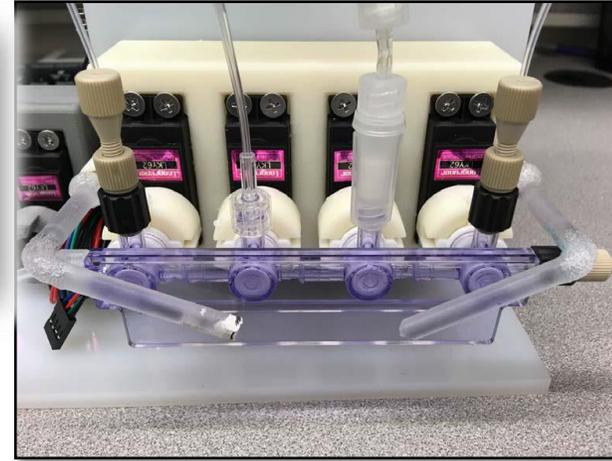
## Oak Ridge National Laboratory High Flux Isotope Reactor (HFIR)

- Office of Basic Energy Science is steward
- Radiochemical Engineering Development Center (REDC) – extensive processing capabilities

# Other Isotope Program Sites

## Y-12 National Security Complex

- Li-6 (neutron detection)
- Li-7 (dosimeters)



## Pacific Northwest National Laboratory

- Radiochemical Processing Laboratory
- Process Automation

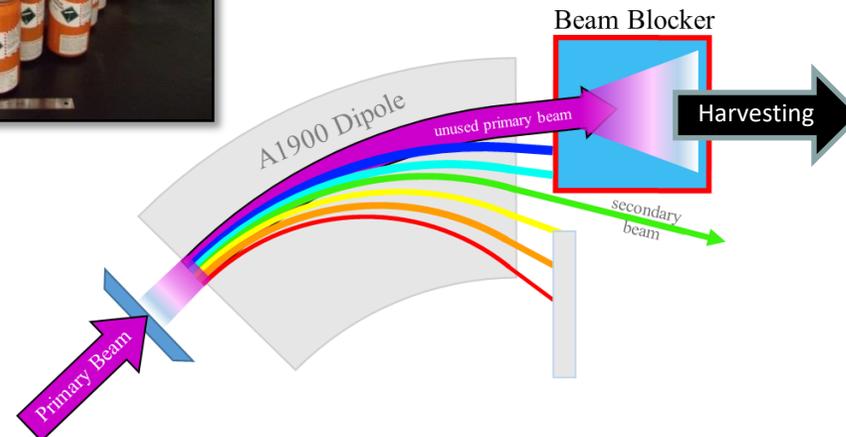
## Savannah River Site (SRS)

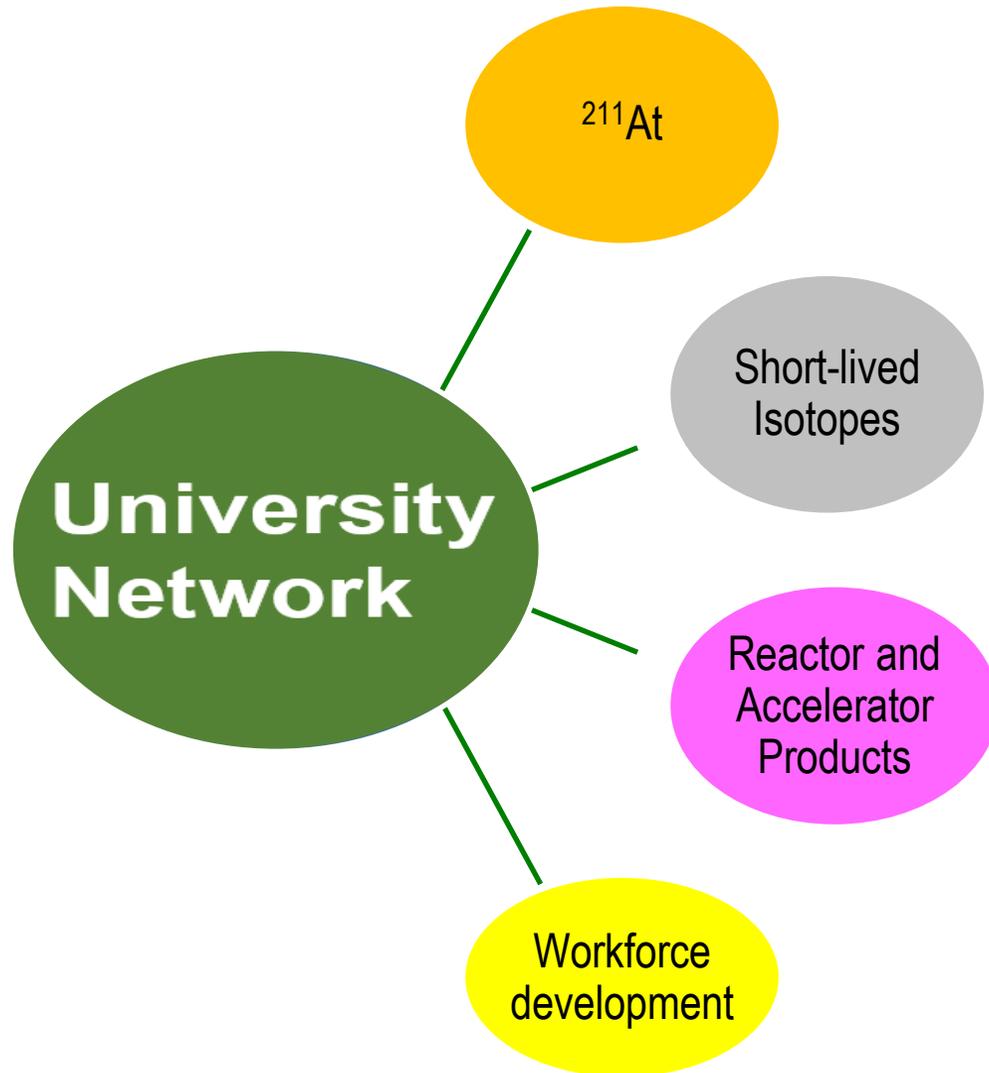
- He-3 extraction from NNSA tritium
- Developing new sources of He-3



## Facility for Rare Isotope Beams (FRIB)

- New accelerator for the study of nuclear structure and astrophysics
- Implementing isotope harvesting capabilities





- Unique capabilities and expertise
- Cost-effective
- R&D on isotope production
- Boutique isotope production
- Workforce development
- Regional networks
  - Example: At-211
    - 7.2-hour half-life
    - Therapeutic  $\alpha$ -emitting isotope
  - 250 university, hospital and research facility cyclotrons in the U.S. are capable of isotope production
  - Only 5 with potential to produce At-211 and all are academic sites

## UIN Members

- **Univ. of Alabama, Univ. of Missouri, Univ. of Washington and Univ. of Wisconsin currently produce isotopes for the DOE Isotope Program**

# Points of Contact and Questions of Eligibility

- *Question: Where can we find a list of DOE IP Points of Contact at DOE/NNSA National Laboratories and UIN sites?*
  - <https://science.osti.gov/-/media/Isotope-Research-Development-and-Production/pdf/DOE-IP-Isotope-Production-Site-Contact-List.pdf>
- For eligibility purposes please pay attention to the references on pages 5 & 6. “MSIs are understood broadly to include, but not be limited to, Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), Tribally Controlled Colleges and Universities (TCCUs), Asian American Native American and Pacific Islander Serving Institutions (AANAPISIs), and Alaska Native and Native Hawaiian Serving Institutions. The US Department of Education maintains records of institutions eligible for recognition as MSIs at: <https://www2.ed.gov/about/offices/list/ope/idades/eligibility.html>. For the purposes of this FOA, institutions marked in the most recent eligibility matrix as either being eligible to receive funding or as receiving funding will be considered an MSI. These resources are not an exhaustive list. ”

# DOE IP's RENEW Framework

- Read pages 1-10 for a general overview of what the solicitation is seeking
  - *Question: The FOA mentions training for undergraduate and/or graduate students. Does DOE IP expect us to engage in both?*
    - Answer: It is up to the applicant to propose a training program.
  - *Question: Is our application more competitive if we include both?*
    - Answer: Not necessarily.
- Pages 1-10 also describe specifics regarding allowable costs/categories for budget items and more detail is provided in a specific budget section on pages 6 and 7.
  - **If an item is not listed, please contact me, type your question, or ask in the Q&A session.**
- Work scope should be based on a model where teams of institutions will be responsible for student recruitment, developing collaborative networks in support of trainees' proposed experiences, organizing virtual and/or in-person onboarding workshops and regular meetings for trainees and mentors, establishing peer support groups for students, training for mentors, and trainee career advancement assistance as well as research and isotope production experiences within the DOE Isotope Program during the academic year and summer recesses.

# DOE IP's Vision

- DOE IP's RENEW is envisioned to combine coursework available at educationally appropriate levels specifically focusing on aspects of physics, chemistry, and materials science & engineering as well as other relevant Science, Technology, Engineering, and Mathematics (STEM) fields that underpin isotope production with research experience to provide an important foundation on which participants can build. Pairing the above with summer opportunities for participants to travel to DOE IP production sites, like the highly specialized facilities and resources at the DOE/NNSA National Laboratories, exposes students to the career opportunities inherent to isotope science. All research activities should explore innovative approaches to isotope production and processing involving, but not limited to any of the following related research competencies: advanced manufacturing, artificial intelligence and machine learning, and robotics.
- The DOE IP expects that an inclusive environment be fostered at all sites where work is funded. Therefore, if a student is unable to conduct off-campus research, alternative plans should be developed to accommodate this and ensure an equal quality experience is available.

# Specifics of the DOE IP RENEW FOA

- Pre-applications are due on February 21<sup>st</sup>
- DOE IP will respond with a statement that either encourages or discourages a full submission no later than February 22<sup>nd</sup>
- Full proposals based on encouraged pre-applications are due no later than March 31<sup>st</sup>
  - **Note: submissions have a time deadline as well as a date deadline**
- The table of contents is hyperlinked & a convenient way to navigate the document
- Pages *i-iii* contain updates and reminders – these pages are not filler *please read*
- Pages 15-26 discuss the sections, their formatting and the appendices that should be included in the application (including PIER plans)
  - **Pay careful attention to page limits**
  - **Have your Sponsored Research Officer read the top of page 18**
- Pages 27-28 discuss the merit review criteria
- Page 29 discusses Program Policy Factors

# Promoting Inclusive and Equitable Research (PIER) Plans

*Beginning in FY 2023, Office of Science solicitations requires that applicants submit a plan for **Promoting Inclusive and Equitable Research, or PIER Plan**, along with their research proposals.*

- *This is a requirement for proposals submitted to all Office of Science solicitations, as well as invited proposals from the DOE national laboratories.*

*PIER Plans are limited to 3 pages and should describe the activities and strategies that investigators and research personnel will incorporate to promote diversity, equity, inclusion, and accessibility in their research projects.*

- *The complexity and detail of a PIER Plan is expected to increase with the size of the research team and the number of personnel to be supported.*
- *The PIER Plans are to be evaluated under a new merit review criterion as part of the peer review process.*

*Additional information and FAQs: <https://science.osti.gov/grants/Applicant-and-Awardee-Resources/PIER-Plans>*

Office (FOA linked)	Total Funding	Award Size and Duration	Eligibility (Lead/Partner)	Deadlines
<a href="#">Advanced Scientific Computing Research</a>	\$10M	\$50K - \$500K per institution per year; \$1.5M total per year for multi-institution teams; 3-year awards	<b>Lead:</b> All institutions, including DOE National Labs <b>Partner:</b> All institutions, including DOE National Labs <b>Pre-Applications:</b> Limited to 3 per institution	Pre-Application: February 21 Pre-Application Response: March 14 Application: April 18
<a href="#">Basic Energy Sciences</a>	\$10M	\$500K - \$750K per year; 3-year awards	<b>Lead:</b> non-R1 MSI <b>Coordinating Partner:</b> 1 DOE National Lab or 1 R1 MSI <b>Other Partners (optional):</b> non-R1 MSIs <b>Pre-Applications:</b> Limited to 1 per PI; 3 per institution	Pre-Application: February 21 Pre-Application Response: March 24 Application: May 2
<a href="#">Biological and Environmental Research</a>	\$6M	Up to \$800K total award; 3-year awards	<b>Lead:</b> non-R1 MSI <b>Coordinating Partner:</b> BRC and/or DOE National Lab <b>Other Partners (optional):</b> additional BRC and/or DOE National Lab <b>Pre-Applications:</b> Limited to 1 per PI; 3 per institution	Pre-Application: February 21 Pre-Application Response: March 8 Application: April 25
<a href="#">Fusion Energy Sciences</a>	\$6M	\$200K - \$500K per year; 3-year awards	<b>Lead:</b> non-R1 or MSI <b>Partner:</b> all institutions, including DOE National Labs <b>Pre-Applications:</b> Limited 1 per PI, no institutional limit	Pre-Application: February 20 Pre-Application Response: February 27 Application: April 10
<a href="#">High Energy Physics</a>	\$8M	\$50K - \$500K per year; 3-year awards	<b>Lead:</b> All institutions, including DOE National Labs <b>Partner:</b> DOE National Lab, SC User Facility, R1, MSI or HBCU <b>Pre-Applications:</b> Limited 1 per PI; 3 per institution	Letter of Intent: February 21 Application: March 31
<a href="#">Nuclear Physics</a>	\$6M	\$10K - \$500K per year; 2-5 year awards	<b>Lead:</b> All institutions, including DOE National Labs <b>Partner:</b> All institutions, including DOE National Labs <b>Pre-Applications:</b> Unlimited	Pre-Application: February 20 Pre-Application Response: March 6 Application: April 17
<a href="#">Isotope R&amp;D and Production</a>	\$10M	\$100K-\$500K for MSI & single partner per year; \$100K-\$1M for MSI & multiple partners per year; 5-year awards	<b>Lead:</b> MSI (must be lead/prime) <b>Partner:</b> DOE IP production facility (required subaward). Other Partner (optional): DOE National Lab, SC User Facility, R1, R1 MSI, non-R1 MSI also possible. <b>Pre-Applications:</b> Unlimited	Pre-Application: February 21 Pre-Application Response: February 22 Application: March 31