

Strategies for Supporting a More Diverse Community: Thoughts from DOE-NP

Paul Sorensen
RHIC&AGS Users' Meeting (6/08/2022)



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Motivation

The composition of our community does not reflect the gender, racial, and ethnic diversity of the US population.

For example, in 2019, out of 88 DOE-NP-supported students receiving Ph.D.'s, only 5% were Black or Hispanic; nearly a factor of 7 below representation in the US population. Women remain underrepresented by a factor of 2-3.

This is unacceptable for several reasons:

1. In an ever more competitive world, exclusion of large swaths of the U.S. population from participation in our research disadvantages the U.S.
2. Frustration and lack of respect felt by many members of our community hinders productivity, creates challenges to retention, and is a negative outcome in its own right
3. Continued impacts of historical injustices become ever more intolerable to our community

DEI is a continually growing priority in NP, SC, and DOE

What can the Office of Nuclear Physics Do?

Three broad areas of focus:

1. Ensuring fairness and supporting diversity through NP practices: in reviews, decision making, funding opportunities, etc.
2. Leading, advocating, encouraging.
3. Investing resources (\$) in new and existing programs to mitigate barriers to diversity.

I will give a brief update on the first and third categories

Fairness in NP practices:

Funding decisions are made based on 1) peer-review in response to specific **review criteria** and 2) **program policy factors**. Criteria and PPF are published in the relevant funding opportunity announcements (FOA).

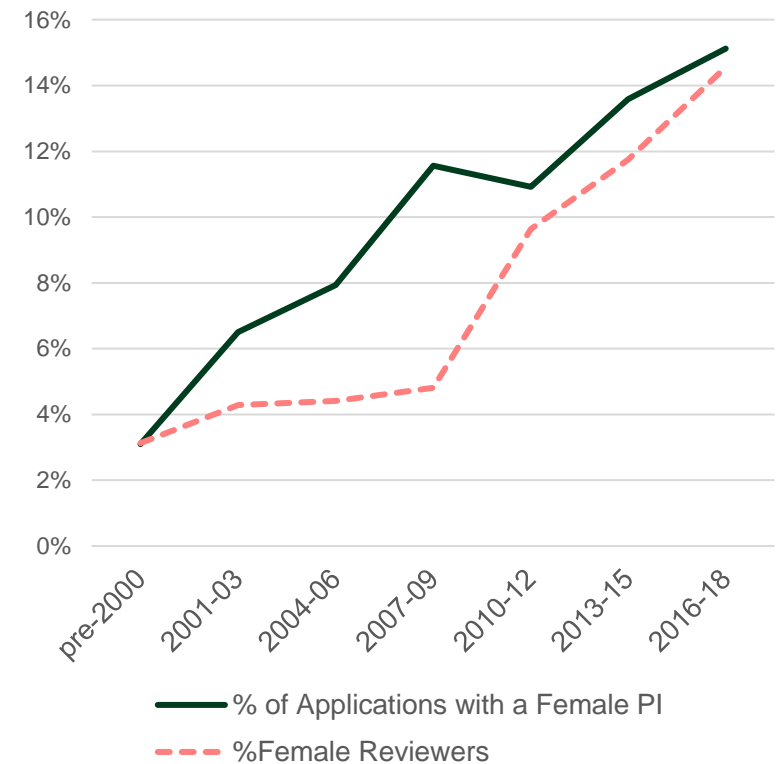
Improvements can be made in

- 1) selection of reviewers
- 2) conduct of reviews and application of criteria and PPF
- 3) design of the criteria and PPF

NP seeks diversity in reviewers and attempts to emphasize the importance of recognizing and mitigating biases (**a work in progress and recognized area for improvement**).

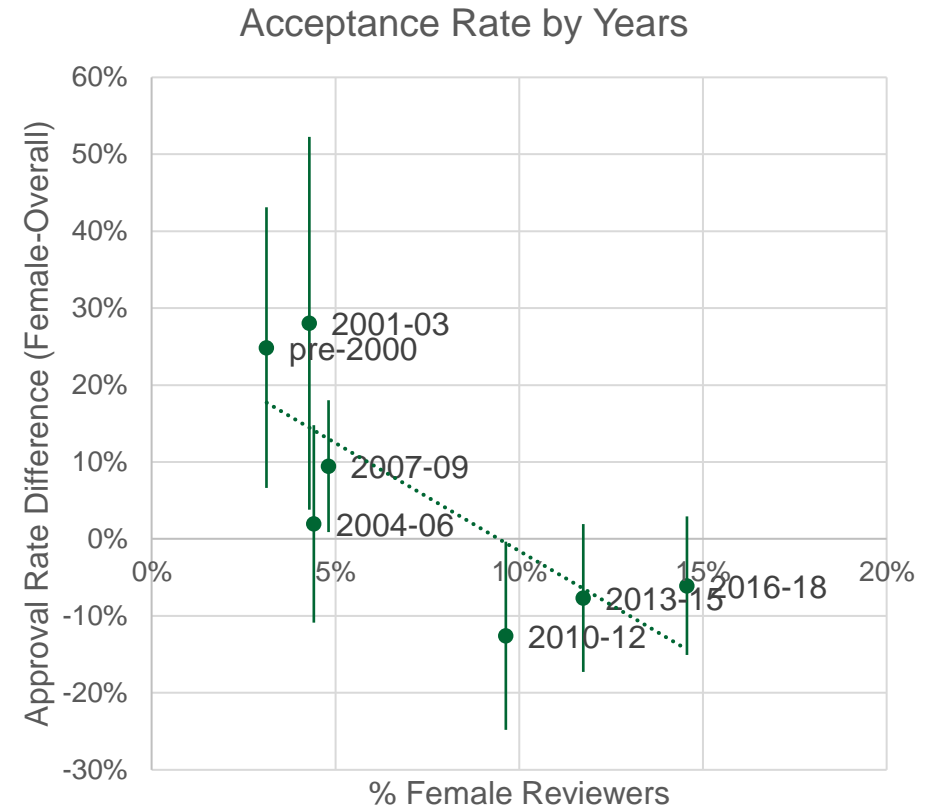
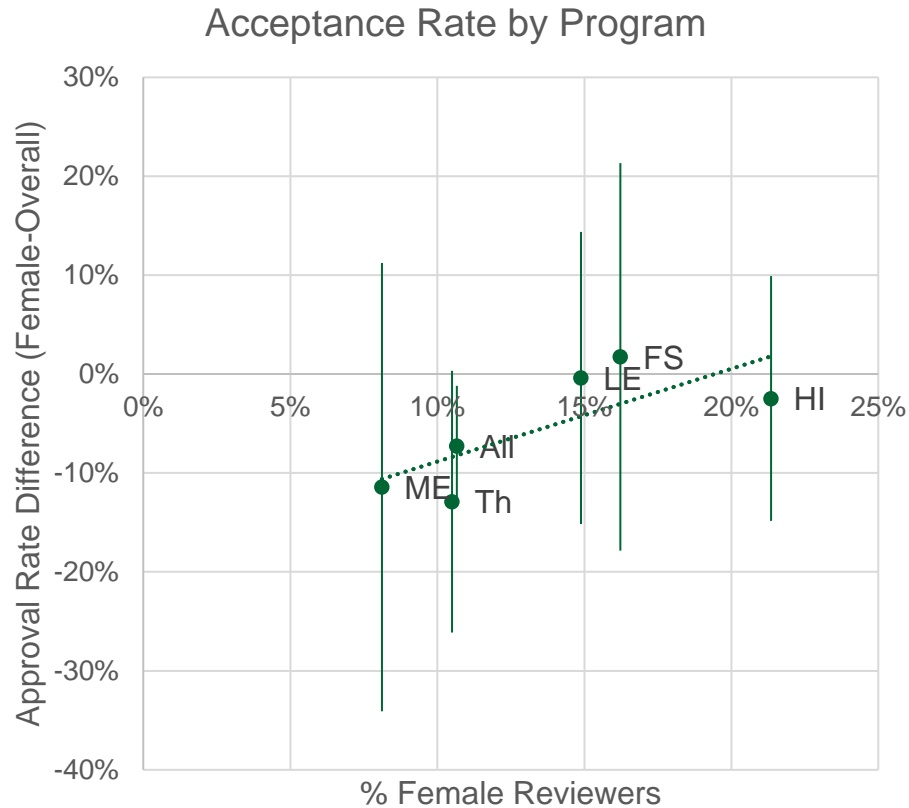
How are we doing? In a recent study of the gender composition of applicants and reviewers: **We found that the % of review requests going to females now roughly corresponds with the makeup of the NP community.**

Applications and Review Requests



Results from an internal NP study (based on 11000 records analyzed one at a time) of the gender of researchers either applying for funding or receiving a review request.

Approval Rate vs % of Female Reviewers



The observed approval rate for female applicants is within statistical fluctuations of the overall approval rate.

No clear evidence found for a correlation between the % of female reviewers and the acceptance rate of proposals from female applicants. We remain committed however to maintaining diversity on our panels and reviewer pool.

Discussion of Merit Review Criteria

Merit Review Criteria (from FY21 open FOA)

Applications will be subjected to scientific merit review (peer review) and will be evaluated against the following criteria as found in 10 CFR 605.10 (d), the Office of Science Financial Assistance Program Rule.

- Scientific and/or Technical Merit of the Project;
- Appropriateness of the Proposed Method or Approach;
- Competency of Applicant's Personnel and Adequacy of Proposed Resources; and
- Reasonableness and Appropriateness of the Proposed Budget.

Program Policy Factors

The Selection Official may consider any of the following program policy factors in making the selection, listed in no order of significance:

- Availability of funds
- Relevance of the proposed activity to SC priorities
- Ensuring an appropriate balance of activities within SC programs
- Performance under current awards, if applicable
- Commitment to sharing the results and products of research
- Promoting principal investigators not previously supported by SC
- Promoting the diversity of supported investigators and researchers
- Promoting the diversity of institutions receiving awards
- Participation with multi-institutional teams in accordance with program priorities identified and incorporated in Section I of this FOA

PPFs allow the program manager to weigh the importance of diversity, but the **criteria have not included prompts for relevant input**. *Is the applicant a good mentor? Good at creating a welcoming environment? Are they toxic, dangerous to their students, and damaging to the community?* This is relevant to how well an applicant can advance the mission of NP.

Inclusion of a prompt on “past DEI performance” in the merit review criteria is under consideration for the next FOA (Oct 1st). Final wording is in the works. NP will be seeking input on these topics and applicants should address them in their proposals where appropriate (See the next FOA).

Mitigating Barriers to Diversity

No matter how egalitarian your review process, if a community doesn't know you exist or doesn't have the time or resources to envision participating, you won't sustain diversity. NP is taking steps to direct resources to mitigate barriers that negatively impact diversity in the community -> **2021 NP Pilot Program: Research Traineeships to Broaden and Diversify NP**

This pilot triggered a broader program in the Office of Science (RENEW) and in FY22 Congress provided \$30M. NP used its \$3M RENEW funding in FY22 to fund a second phase of proposals from pilot. Planning for NP-RENEW in FY23 is under way.

SC/DOE Initiatives	FY21 Enacted	FY22 Enacted	FY23 PR
Quantum Information Sciences (QIS)	13,347	10,866	10,866
Artificial Intelligence and Machine Learning (AI)	4,000	4,000	8,000
Microelectronics	-	518	518
Strategic Accelerator Science and Technology Initiative	-	1,037	-
Reaching a New Energy Sciences Workforce (RENEW)	-	3,000	6,000
Funding for Accelerated, Inclusive Research (FAIR)	-	-	2,000
Accelerate Innovations in Emerging Technologies	-	-	4,000

Inception of the Pilot Program

Leverage existing infrastructure; Enable and encourage research groups from National Labs and Universities to work with MSIs and provide training and **mentorship for undergraduates**.

Create **extended duration** traineeships to provide financial and mentoring support during the summer and academic year (may extend for up to one “gap” year).

The program is designed to remove barriers to graduate school and to help fulfill several key recommendations of the recent AIP TEAM-UP Report:

- Increase a **sense of belonging**
- Facilitate the development of a **physics identity**, and
- Provide support to **help students advance academically while earning money**

We tried to remain flexible to allow the community to develop programs that suit their situations.

Interest exceeded expectations by a factor of 2-3. 36 proposals were evaluated on their potential to broaden and diversify the community (reaching underserved communities). Faculty-to-faculty engagement was an important criteria. 18 proposals were funded (~\$6.5M).

Current NP Traineeship/RENEW Activities

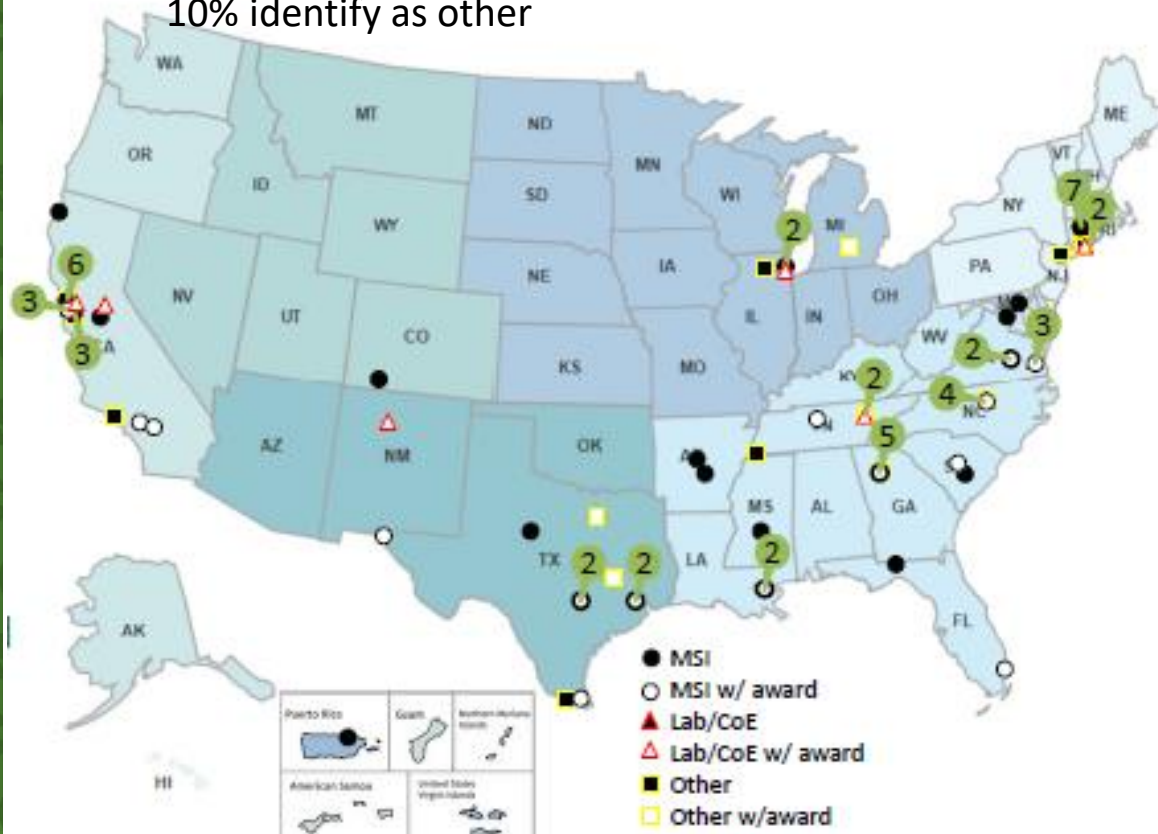
Program funds 110 Trainees who are building familiarity with our field and community:

40% identify as Hispanic

40% identify as Black or African American

10% identify as White

10% identify as other



NP traineeship award recipients include:

- 18 MSIs,
- 10 other colleges/universities,
- 5 DOE laboratories

MSI award recipient distinctions:

- 9 Hispanic Serving Institutions (HSIs),
- 8 HBCUs,
- 5 Asian American, Native American, and Pacific Islander Serving Institutions (AANAPISI),
- 1 Predominantly Black Institution (PBI)

All other institutions on the map are involved in the traineeship program as recruitment sites (38), Co-Is (9), members of INSIGHT (8), and/or hosts (7)

Outline of Our Strategy

2021: Pilot program focusing on paid, long-term, research traineeships with an emphasis on faculty-to-faculty engagement (\$2.85M).

2022: Second phase of the pilot expanding to more sites (\$3.6M).

2023: NP is drafting a RENEW FOA (we anticipate \$6M of funding). We plan to accept new, renewal, and supplemental applications. In addition to aspects already covered within the pilot, we envision an enhanced focus on

- Ensuring the program is sustainable (increased resources?)

- Encouraging retention (expanding beyond undergrad, long-term mentoring?)

- Building up capabilities at MSIs (junior or senior level fellow positions?)

- Engaging MSIs in joint research ventures, beyond student recruitment (what research capabilities might serve the community best?)

As always, input from the community is highly valued: we need your participation, innovation, engagement, and creativity.

Finally

A common refrain - *“this is a societal problem”* - we are part of society. It’s not beyond anyone's reach to make a difference.

If half of the NP pilot trainees go on to receive a Ph.D. in nuclear physics, that would erase the underrepresentation of Blacks and Hispanics receiving nuclear physics Ph.D.s in that year.

Thanks to the applicants, the reviewers, and those who provided ideas and input, the pilot has so far been very successful: 110 trainees. \$30M of funding in FY22 to implement RENEW across SC. Expected to double in FY23.

To the community; think big. Our energy and inspiration are needed to continue the progress. We are particularly concerned with retention, sustainability, building or expanding capabilities at MSIs and exploring new mechanisms to best serve the goal of broadening and diversifying our community.

Thank you