



# Building Engineering Networks for Inclusive Culture, Equity, and Retention (BE NICER)

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Senior Associate Dean*

*She/her/hers*



**PennState**  
College of Engineering

# Our Mission **IMPACT**

Excellence

Equity

**Our Cornerstones**

Social Mobility

Sustainability



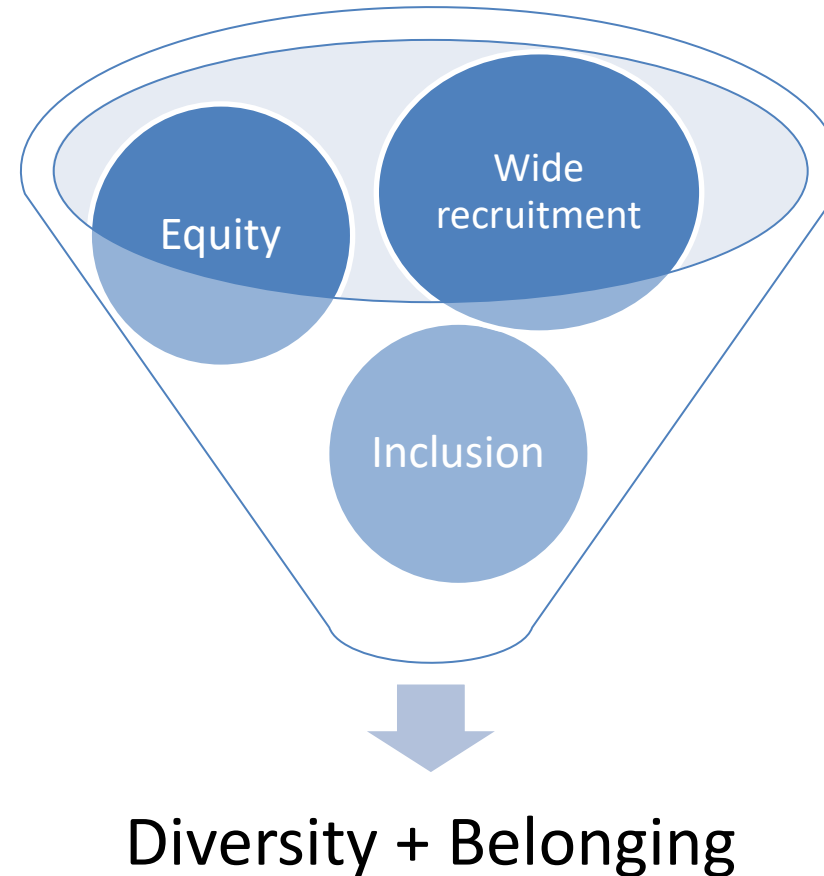
**PennState**  
College of Engineering

# Why start with Equity and Inclusion?

## College of Engineering Strategic Plan GOAL 1:

*Grow a pervasive, welcoming, equitable and inclusive culture and climate throughout the College's students, faculty and staff that exemplifies the Penn State values.*

**Diversity and Belonging should be outcomes of equitable and inclusive policies and practices.**





# Overarching Equity Actions apply to all stakeholders

## Engage

Engage Community Members in Equity Action Projects

Continuous Equity Action Process

## Deepen

Deepen knowledge and Leadership of Equity Related Issues

Education, Training, and Professional Development

## Retain and Advance

Retain and Advance Community Members Equitably

Responsive to needs of diverse constituents and supporting access to advancement

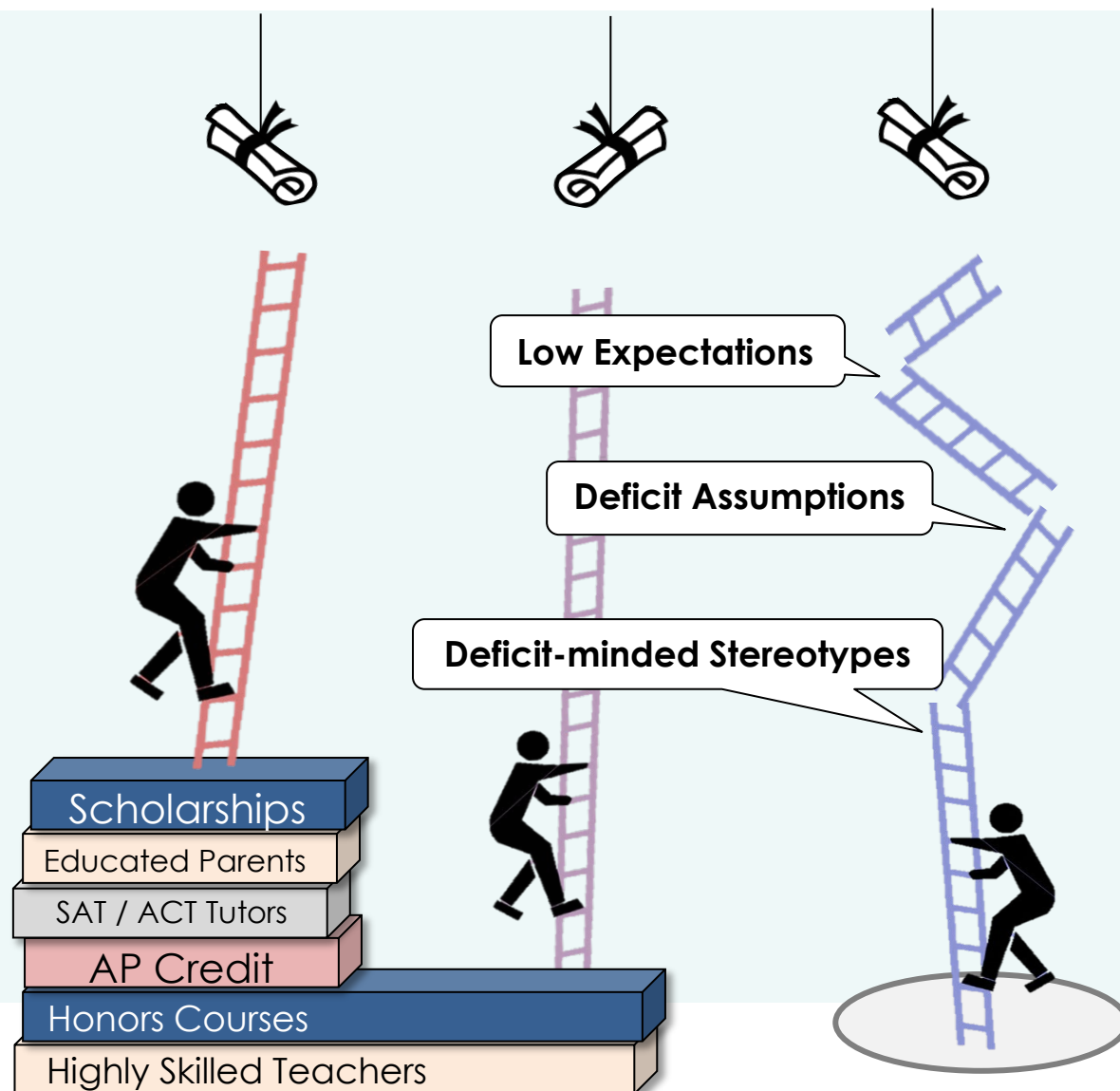
## Recruit

Recruit people who contribute to and advance Diversity, Equity, Inclusion Efforts in all programs

Developing a culture that uses continuous holistic process to prepare, invite, admit or hire



# Fix the broken ladders







## Activating Diversity, Equity, Inclusion, and Belonging in COE

### Program Management

- Undergraduate Scholarships
- Fundraising for Equity Programs and Scholarships
- Strategic Plan Goal 1: Equity Action Plan
- Center for Engineering Outreach and Inclusion
- College Faculty Search

### Center for Engineering Outreach and Inclusion

- Equity Grants and Research
- International Engineering
- Multicultural Engineering
- P-12 Curriculum Development
- Student Engagement
- Student Research and Graduate Equity
- Student Transitions and Pre-College
- Women in Engineering

# Inclusive Academic Community

Developing  
a Vision

People

Penn State Values

Practices

Policies

Pedagogy





## Center for Engineering Outreach and Inclusion

- **Equity Grants, Equity Research, and Broader Impacts Consultation**
- International Engineering Program
- **Multi-Cultural Engineering Program**
- **P-12 Curriculum Development**
- **Student Engagement**
- **Student Research and Graduate Equity**
- **Student Transitions and Pre-College Programs**
- **Women in Engineering Program**



# Student Transitions and Pre-College Program Objectives

1. To **support** and **facilitate student success** for all undergraduate Penn State students transitioning from commonwealth campuses and outside institutions to the College of Engineering at University Park.
2. To **collaborate** with commonwealth campus leaders who support College of Engineering students as they **transition** to campuses outside of University Park where they will complete a college of engineering degree.
3. To **broaden participation** and **build pathways** to engineering for P-12 learners through academic excellence to enhance college readiness, foster inclusion, critical engagement, and innovation.
  - Commonwealth Engineering Scholars = Change of Campus Students
  - Military-Affiliated Students, Veteran Students, Active-Duty Service Members, Dependents of Veterans
  - Transfer Students



Inspiring  
Change.  
Impacting  
Tomorrow.

## Tracy Peterson

Advisor: American Indian Science and Engineering Society (AISES), Society of Hispanic Professional Engineers (SHPE), Indigenous Peoples' Student Association (IPSA)

- Past Chair, Staff Advisory Council – Equity and Inclusion
- Chair, Indigenous Faculty and Staff Alliance
- Member, Institutes of Energy and the Environment DEI Committee



# MEP “WHY” | PROGRAM OBJECTIVES



Lauren Griggs



Aaron Mattingly-Daniels



Creating a welcoming, family environment that celebrates culture and inclusion



Improve the recruitment and retention of racially and ethnically minoritized students in the College of Engineering



Develop students both academically and professionally and through engagement in impactful leadership opportunities

Graduation rate for Summer Bridge Students = 68%



# WEP is a pivotal element in consistently high undergraduate retention and graduation rates.



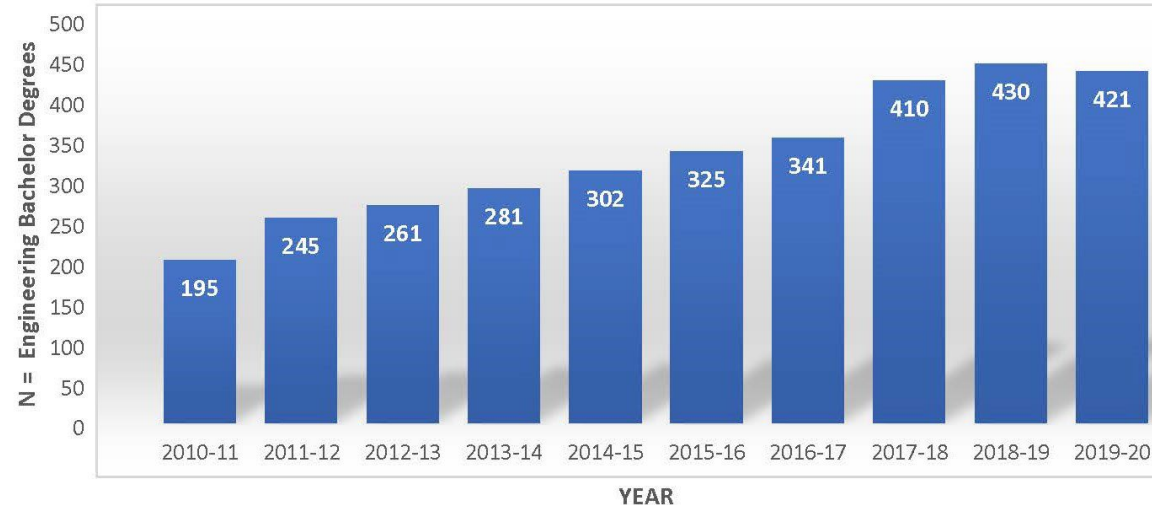
**National Recipient:**  
2022 Presidential  
Award for Excellence in  
Science, Mathematics,  
and Engineering  
Mentoring (PAESMEM)

3 WEP interventions  
Graduation Rate =70%



Penn State Women in Engineering Program was selected as recipient of the **2019 WEPAN “Women in Engineering Program Initiative Award”** recognizing *“outstanding initiative that serves as a model for other institutions to increase recruitment and retention of women in engineering.”*

**2011-2020 Bachelor's Degrees Awarded  
to Female Engineers and Computer Scientists  
at Penn State**



Roy, J., & Yoder, B. L. (2020). By the numbers. *American Society for Engineering Education*, 13-52. Retrieved from <https://ira.asee.org/wp-content/uploads/2019/07/2018-Engineering-by-Numbers-Engineering-Statistics-UPDATED-15-July-2019.pdf>



**Penn State College of Engineering  
Alumnae**

The number of Bachelor's degrees  
awarded to Penn State female  
engineers increased 116% from  
2011 to 2020.



# Building Engineering Equity Infrastructure

- Center for Engineering Outreach and Inclusion
- Departmental DEI Leaders & Committees – Community of Practice
- Departmental Mentorship Activities
- Engineering Faculty Council – Faculty Equity and Inclusion Committee
- Staff Advisory Committee -- Inclusive Leadership in Equity, Allyship, and Diversity (ILEAD)
- Leonhard Center Workshops – Big10+++ Curriculum Workshop on ABET DEI Criteria
- Faculty Ombudspersons
- Faculty Affinity Groups





# Advancing Master's Program Scholars

**“Strengthening Pathways for the Domestic Graduate Engineering Workforce and Future Professoriate: Increasing Access to Engineering Master’s Programs”**

- NSF S-STEM program
- Engagement process that develops faculty mentors and student community
- Leadership team
  - PI: Julio Urbina
  - Co-Is: Catherine Berdanier, Reginald Hamilton, Tonya Peeples
  - Eval: Cathy Cohan





# E&I: College-Level Faculty Search

- **Departmental search committee representation**
  - Resulted in a diverse pool
  - Identified candidates for departments
- **Five hires in first two cycles**
  - Chris Dancy: IME/CS
  - Donald Ebeigbe: EE
  - Tahira Reid Smith: ME
  - Romulo Goes: EE
  - Daniel Whisler: EDI
- **Third cycle underway**
- **Sharing rubrics with other searches**



Dancy



Ebeigbe



Reid



Meira-Goes



Whisler



# Accomplishments

- Socializing a vision for Inclusive Academic Community
- Rebuilding the Center for Engineering Outreach and Inclusion Team
- Obtaining a A. James Clark Scholar Program at Penn State
- Developing the Equity Action Plan
- College Level Faculty Search Outcomes
- Building COE DEI Infrastructure – Dept, EFC, Diversity Roundtable
- Getting the ASEE Deans Diversity Recognition Program Bronze-level Designation



*Engineering Summer Bridge 2022*



# Eddie Bernice Johnson NSF INCLUDES Aspire Alliance

- Aims to cultivate a diverse and inclusive national science, technology, engineering and mathematics (STEM) faculty that thrives within inclusive organizational practices and cultures, leading to high underrepresented group retention along STEM career pathways.
- Cooperatively led by the Association of Public and Land-grant Universities (APLU), the University of Wisconsin Madison, the University of Georgia, Iowa State University, the University of California, Los Angeles, and the University of Texas at El Paso

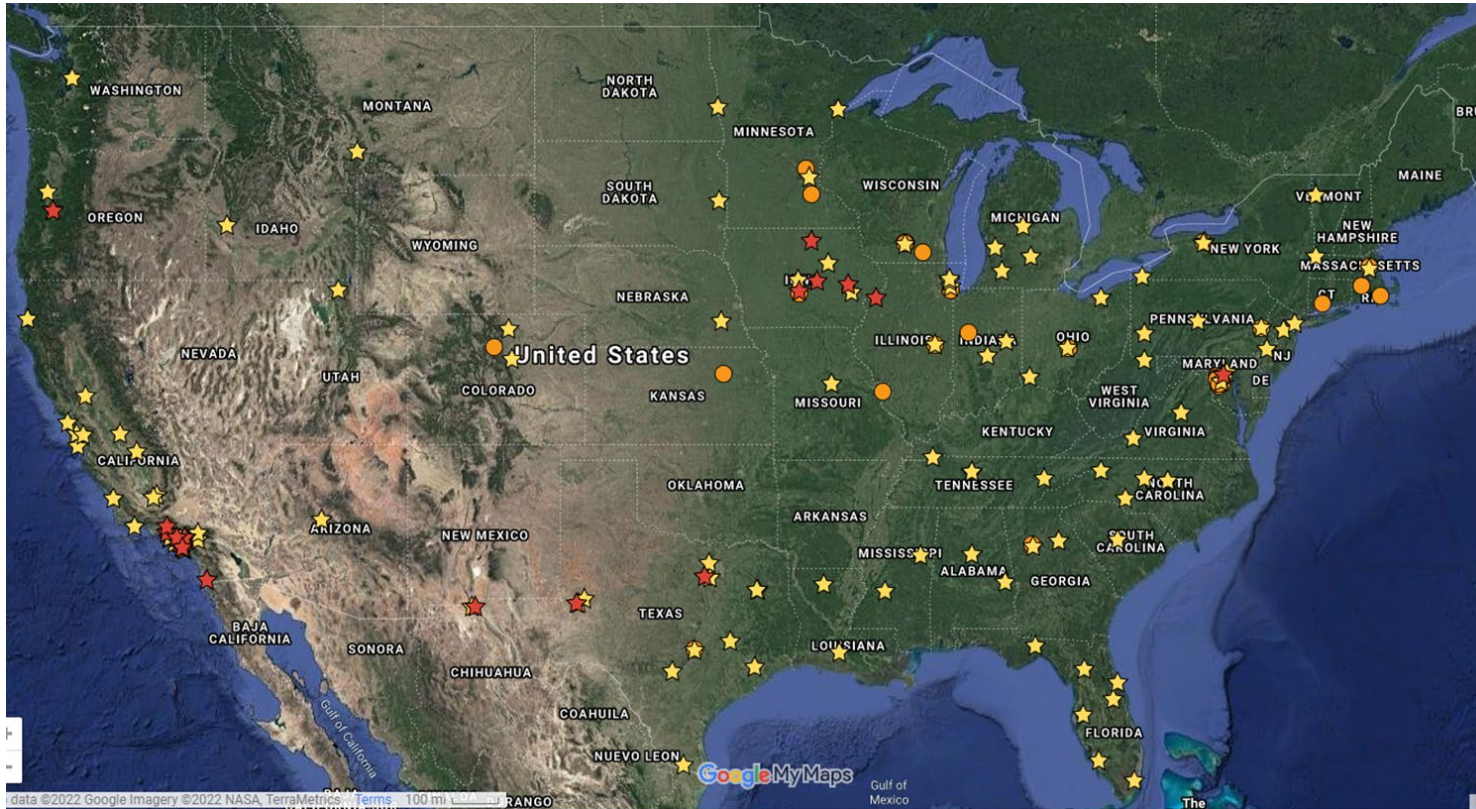


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# ADDITIONAL PARTNERS

## Aspire Organizational Partners as of January 2022



- ★ 19 2-year colleges (red stars)
- ★ 108 4-year colleges (yellow stars)
- 58 other organizational partners such as disciplinary societies and new ADVANCE and RCN partners (orange circles)

We have added **175** colleges, universities, disciplinary societies, and other organizations across **40** states (including DC) to the national network.

# ASPIRE'S FOUR GOALS

## GOAL 1 INCLUSIVE



Deepen the preparation of all STEM faculty to be inclusive and effective in their undergraduate teaching, research mentoring, and advising

## GOAL 2 DIVERSE



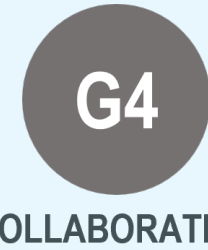
Diversify the faculty through effective recruitment, hiring, and retention of URG STEM faculty via institutional transformation in practices, policies, and resources

## GOAL 3 CULTURE



Foster institutional cultures that recognize and value inclusivity and diversity broadly, and in the context of STEM faculty work specifically

## GOAL 4 COLLABORATION



Building collaborative infrastructure with a focus on equitable, inclusive shared leadership





Discovery. Diversity. Distinction.

# Kindling Inter-University Networks for Diverse (KIND) Engineering Faculty Advancement



## ASPIRE

THE NATIONAL ALLIANCE FOR  
INCLUSIVE & DIVERSE STEM FACULTY

## EBJ NSF INCLUDES ASPIRE ALLIANCE

## ICHANGE NETWORK

[WWW.ASPIREALLIANCE.ORG](http://WWW.ASPIREALLIANCE.ORG)



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# Change Levers & Activities within the IChange Process



## Deep Dive Into Data

Self-Assessment  
Policy/Practice Audit

KIND Data Dashboards

Climate/Satisfaction  
Data

Focus Groups and other  
qualitative data



## Identify Areas for Change

Look for patterns that  
raise questions

Dig deep to determine  
root causes (5 whys)

Reconsider  
assumptions about  
excellence, contribution,  
and disciplinary  
advancement



## Engage the Community

Create opportunities for  
input

Pilot new approaches at  
the local level

Seek feedback on  
proposed solutions and  
processes



## Balance Institutional Objectives with Local Action & Accountability

Ensure local buy-in by  
allowing units to set own  
strategies

Enhance strategies by  
clearly articulating  
overall goals

Consider strategies to  
that might intervene in  
key disciplinary  
dilemmas



## Continuous Learning and Improvement Cycles

Identify measures and  
metrics to help assess  
success

Consider leading and  
lagging indicators

Review of strategies  
and outcomes after  
each activity

## Words of Advice

*For recruitment, retention and success of BIPOC community members, prioritize inclusive practices -- “how work is done” to address how the organization “feels” to stakeholders.*





## Words of Advice

*Use restorative spaces for change leaders to seek support and build trusting relationships.*



## Words of Advice

*Be clear about your institutional change goals and communicate them widely. Encourage experimentation and adaptation across units to enhance goal alignment and disciplinary discretion.*





# Thank You

