

# Increasing the CISE Community's Engagement in Broadening Participation in Computing (BPC)

<https://www.nsf.gov/cise/bpc>



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# Background: Ongoing CISE BPC Activities

Level	CISE Programmatics	BP Alliances							
pK-12	CSforAll								
UNDERGRAD	RED, CS+X								
	CRA-W: DREU, CREU Tapia, Grace Hopper								
GRAD	Research (6369) GRF (110) NSF Research Traineeships								
	CRA Grad Cohort & Career Mentoring Workshops, CMD-IT URM Mentoring Workshop								
NEW PROFESSORS	CRII, CAREER								
	CRA Mentoring Workshops, CMD-IT URM Mentoring Workshop								



## CISE BP Strategic Plan

“It will take more than good intentions or business as usual, however, to reverse longstanding underrepresentation. **It will take committed, focused, and sustained efforts on the part of ~~many~~ in the computing community.”**

**ALMOST EVERYONE**

[https://www.nsf.gov/cise/oad/cise\\_bp.jsp](https://www.nsf.gov/cise/oad/cise_bp.jsp)



## CISE BP Strategic Plan

“CISE will address BP programmatically both through focused activities and through **the inclusion of BP efforts as an accepted and expected part of its research and education award portfolios.**”

[https://www.nsf.gov/cise/oad/cise\\_bp.jsp](https://www.nsf.gov/cise/oad/cise_bp.jsp)



NSF 17-110

## Dear Colleague Letter: Pursuing Meaningful Actions in Support of Broadening Participation in Computing (BPC)

- FY18 Pilot: plans for meaningful BPC **required**:
  - Expeditions
  - Frontiers (Cyber-Physical Systems, Secure & Trustworthy Cyberspace)
- Intention to **expand the pilot** in future



## Types of Activities Seen in BPC Pilot (to Date)

- Outreach to K-12 students
- Recruitment of students from underrepresented populations
- Speaking at campus-based student groups on research and/or STEM careers
- Sponsoring students from underrepresented groups to attend research conferences



# Pilot Approach



BPC requirement added to some → many → most submissions.

Medium and Large proposals in the CISE Core programs are:

- **Encouraged** to include a BPC plan at time of submission, and
- **Required** to have an approved BPC plan **at the time of award.**





## Guiding Principles for BPC Effort

- BPC requires **culture change** in colleges/universities, departments, classes, research groups, professional organizations & K-12
- Culture change begins with **enhanced exposure** to BPC throughout the CISE community
- PI engagement must be **tailored to individuals and organizations** as appropriate





## Components of BPC effort

**Requirements:** Encourage → Require meaningful BPC activity in an expanding set of CISE Programs

**Support:** Provide resources and support for PIs

**Close the loop:** Require reporting of BP outcomes in annual reports; evaluate and assess



# Multiple Approaches to BPC Requirement




## Elements of a BPC Plan



- A well-reasoned and sound rationale
- Anticipated impacts
- Demonstration of adequate resources and qualifications to meet the needs and goals of the plan
- A well-defined mechanism for assessment/evaluation



## Strategies/Actions

 **PI Focused:** PI assistance, Program Officer and Reviewer preparation

**Infrastructure Focused:** Development of infrastructure to support widespread engagement, as well as institutional and systemic change



# PI Assistance

Examples of activities of different types

- Outreach "upstream" to underrepresented groups (UG, K-12)
- Helping develop/implement departmental plans
- Develop ongoing collaboration with MSI faculty and students
- Get involved with institutional inclusiveness efforts
- Join collective impact activities



# Program Officer and Reviewer Training

- Socialize with CISE PDs
- Coordinate with Division Directors during recommendation process
- Host CISE BPC Showcase at NSF (Fall 2018)
- Hold BPC panels to review BPC Plans (feedback to program officers, reviewers & proposers) **before regular review panels**
- Briefings for regular review panels



## Strategies/Actions

**Individual Focused:** PI assistance, Program Officer and Reviewer preparation

**Infrastructure Focused:** Development of infrastructure to support widespread engagement, as well as institutional and systemic change





## BPCNet Online Resource Portal (1/1/19)

- Developed and curated by CRA (M. Hall, N. Amato) and NCWIT (L. Sanders, D. Richardson)
- Best & promising practices ( evidence-based)
- Programs-in-a-box, not just *What* but *How*
- Dissemination for BPC Alliances, NSF-supported projects, etc.



## Collective Impact Resources

- Leverage existing efforts & the efficacy of collective action
- Share infrastructure (e.g. experience, training, venues, course frameworks, assessments/evaluation)
- Expand the reach of existing efforts
- Pilots coming soon



## Collective Activity Example 1: ACM-W



- Start or support an ACM-W student chapter, “*Successful chapters have champions!*” (<https://women.acm.org/chapter/>)



- Host or contribute to an ACM-W Celebration of Women in Computing (<https://women.acm.org/category/celebrations/>)



## Collective Activity Example 2: CSTA



- Support local chapter by hosting meetings, providing PD, assisting in outreach
- Launch a new chapter in partnership with local teachers
- Write articles for member newsletters or CSTA Voice
- Create unique experiences (lab visits or demos) for teachers and their students

## Collective Activity Example 3: DREU and CREU



DREU (Distributed Research Experience for Undergraduates) – PIs could be DREU mentors (for students from or outside of their university or they could send undergrads from their university to experience being advised by a UGC mentor



CREU (Collaborative Research Experiences for Undergraduates) – In a pilot, PIs could form teams of UGC students from nearby schools.



## Collective Activity Example 3: (cont.)

CREU and DREU students are more likely to consider grad school and more competitive when they apply as compared to CS undergrads in general or CS undergrads with other kinds of REUs



## Collective Activity Example 4: ECEP



ECEP ( Expanding Computing Education Pathways) promotes state-level CS education reform to increase the number & diversity of students in computing.

PIs could work with state-level leadership in ECEP states to

- Develop realistic strategies to address BPC
- Connect with local and national CS education and BPC projects
- Assist research at ECEP-related programs (gather data, pilot interventions, or help disseminate findings)





# Potential Collective Activities Abound



CMD-IT ♦ CMD-IT ♦ NCWIT's Aspirations IT ♦ SACNAS ♦ AISES ♦ 4H ♦ Girls Scouts ♦ NCWIT'S Extension Services ♦ Boys and Girls Club ♦ LS-AMP Projects ♦ AGEP Projects ♦ ECS and AP CS Principles Teacher Professional Development ♦ Boy Scouts ♦ NSF INCLUDES Projects ♦ AIHEC ♦ AnitaA.org ♦ Grace Hopper Celebration of Women in Computing ♦ Tapia Celebration of Diversity in Computing ♦ CRA-W's Discipline-Specific Workshops ♦



# Alignment of Department/University Activities

- Developing collective engagement activities at the department level
  - ❖ Extend department's BP activities
  - ❖ Connect with university level programs (e.g. LSAMP, AGEP)
- Exchange information, successes and challenges through BPCNet



## Strategies/Actions

**PI Focused:** PI assistance, Program Officer and Reviewer preparation

**Infrastructure Focused:** Development of infrastructure to support widespread engagement, as well as institutional and systemic change

**Common Communication Plan**



## Common Communication Plan

- CISE BPC Landing Page - [www.nsf.gov/cise/bpc](http://www.nsf.gov/cise/bpc)
- Resource collection (CRA, NCWIT)
- Series of workshops, including at Snowbird
- Outreach via articles: CACM, CCC Blogs, etc.
- Opportunities at NSF Days, PI Meetings, Reviewers/Panels



## What do we expect?

- More and better structured activities for BPC in proposals
  - ❖ Education and engagement of wider community (reviewers/proposers)
  - ❖ Increased awareness among CISE PDs
  - ❖ More impactful BP outcomes on awards
- Percolation of demand for BP to department head/deans



# Broadening Participation Working Group



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