

Network of STEM Education Centers (NSEC):

The network for supporting the transformation of undergraduate STEM education

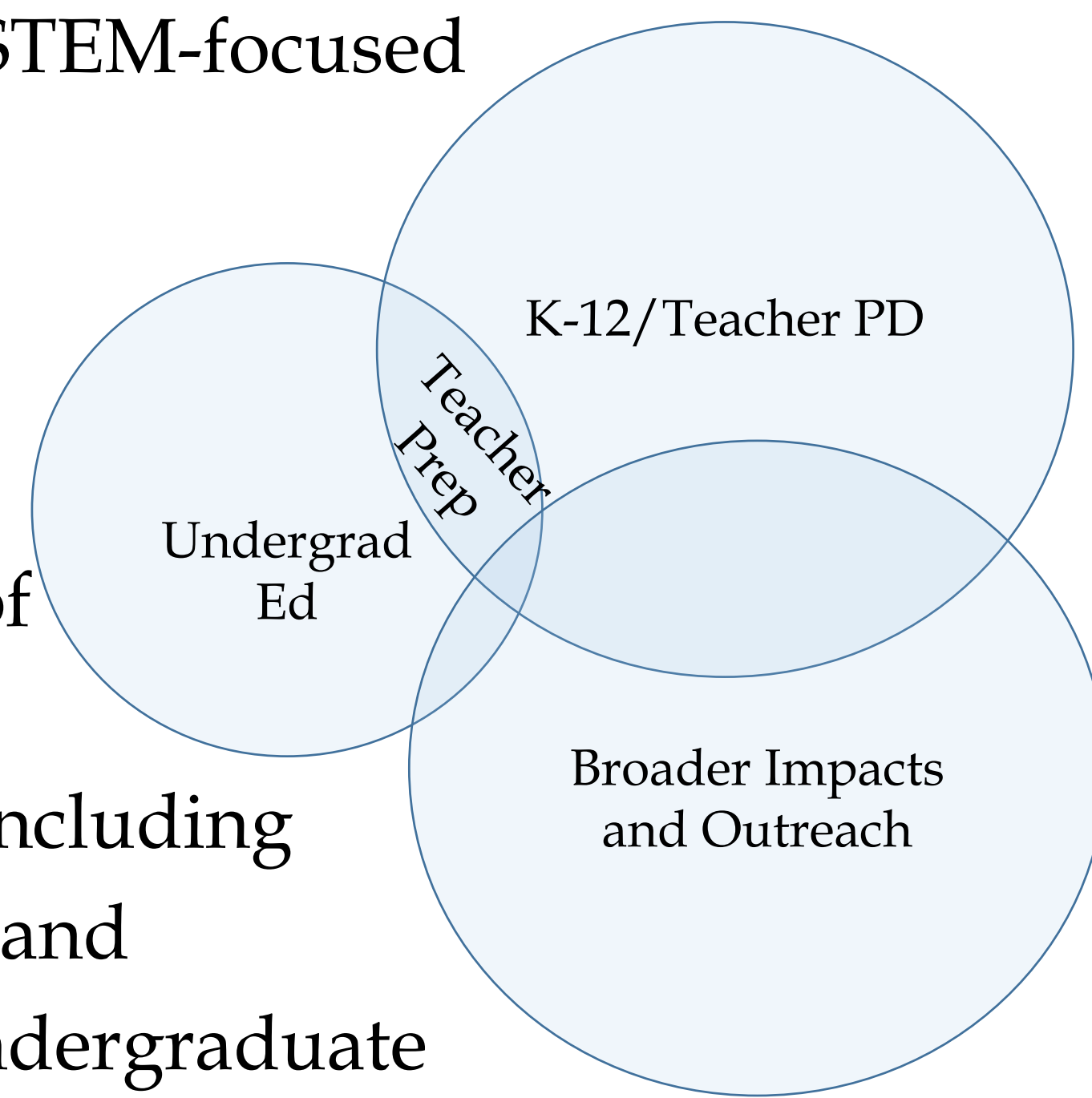
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Addressing calls from the White House (Olson & Riordan, 2012) and National Academies (Singer et al., 2012), we are building a national network that provides capacity for multi-institutional / nationwide approaches to transform undergraduate STEM education within colleges and universities. This network currently links 135 STEM Education Centers (SEC) at 114 institutions (from 226 SECs at 169 institutions identified to date). SECs are often housed within Colleges of Science or under the Provost, and they serve as the campus hub for improving the STEM learning experience for students, broadening participation in STEM, understanding teaching and learning, broadening the impact of campus research, and supporting national and regional scale improvement in STEM education.

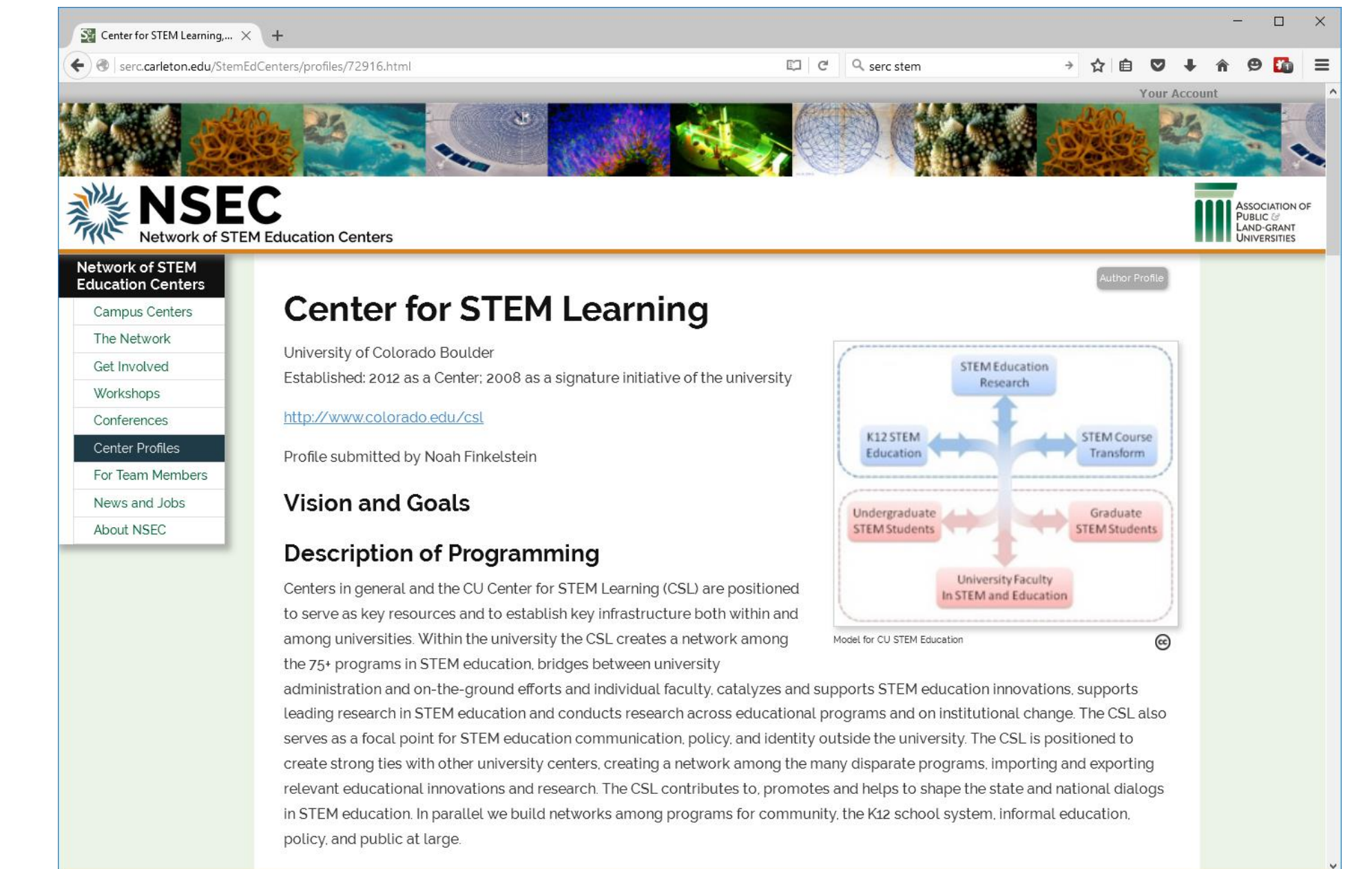
A variety of STEM Education Centers (SECs)

- Hubs of campus efforts leading transformation of undergraduate STEM education
- Include SECs and Centers for Teaching and Learning (CTL) w/STEM-focused programs
- Large variety in the structure and identity of SECs
- Overlapping goals of improving undergraduate ed, including teacher preparation and connection of the undergraduate experience with K-12, community efforts, and broader impacts

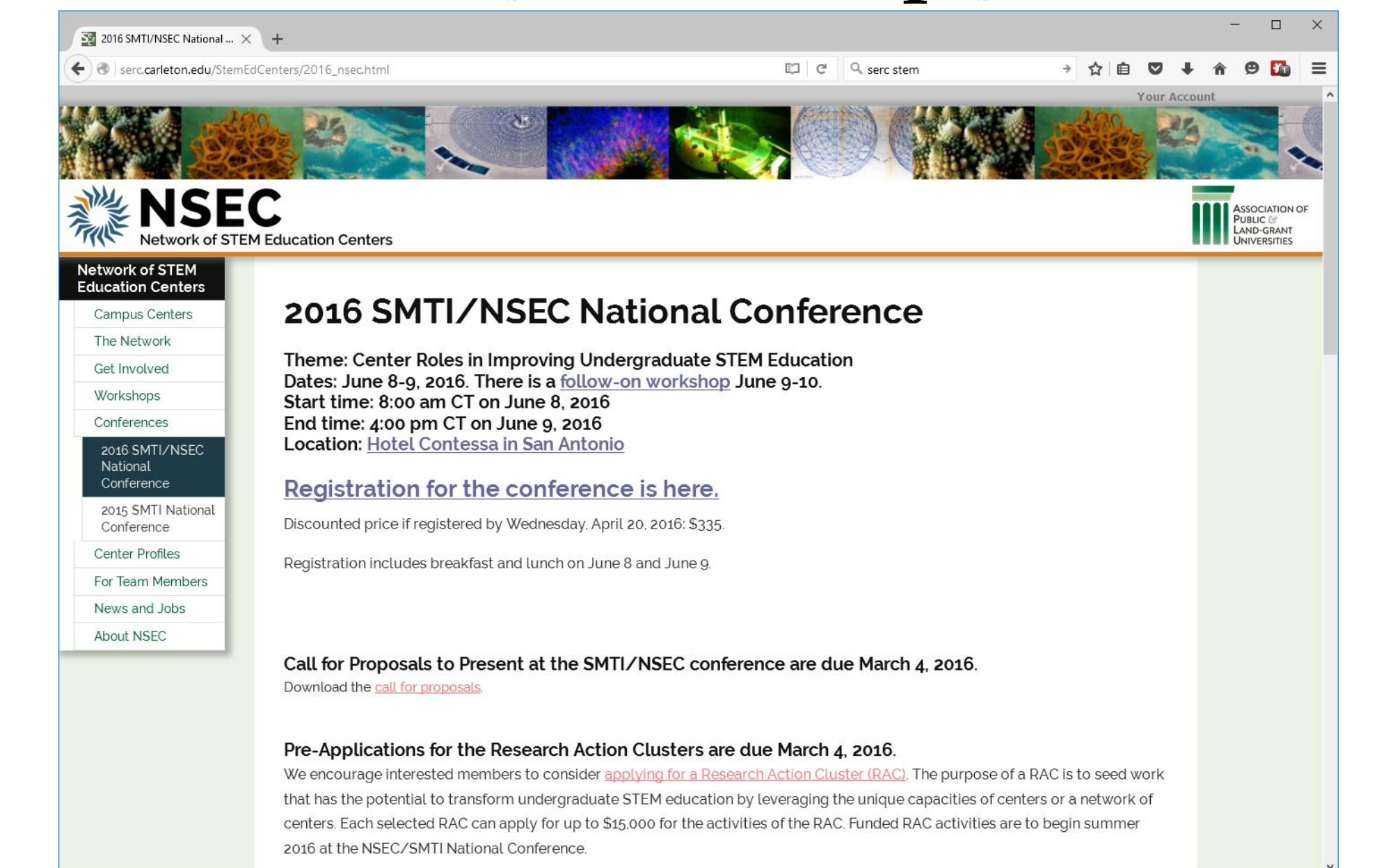


| A Network serving: | |
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| Individual Centers | Funders/ Policymakers |
| <p>Institutionalization (administrator buy-in via evidence of center impacts; legitimize efforts as part of NSEC; making the case for the value add of centers)</p> <p>Data / Evidence on Outcomes</p> <p>Access to Funding streams (funders network; collaborative proposals)</p> <p>Supporting Transformation (e.g. site visits; sharing strategies, resources, models, tools, and assessments)</p> <p>Finding community, networking, and sharing approaches</p> <p>Professional Development of center directors and staff</p> <p>National Platform/ Discussion (Directory of experts; cross institutional work/ research action clusters/ working groups)</p> | <p>To solve big, hard, national challenges - Serve advisory role to inform current national discussion in STEM education, identify next generation transformation, and advise funding priorities for these challenges</p> <p>Dissemination, adoption, and adaptation (scalability) within an institution and across institutions</p> <p>One-stop shop. Access to knowledge hubs within a campus and across institutions (directory of people and practices)</p> <p>Learning about what works in cross institutional efforts, how to scale, and how networks form</p> |
| University Administrators | |
| <p>Institutional Recognition</p> <ul style="list-style-type: none"> • Showcasing of individual campuses at NSEC sites / events • Campuses point to membership as commitment to quality <p>Data / Evidence on Outcomes</p> <ul style="list-style-type: none"> • Resources for documenting impacts of transformations • Models and Tools for campus-wide analytics | <p>Funding</p> <ul style="list-style-type: none"> • Access funding for centers • Models from other centers for new revenue streams/ models <p>Capacity Building for Student Success</p> <ul style="list-style-type: none"> • NSEC provides access to a knowledge network; how interventions are working in multiple institutional contexts, across disciplines and departments |

Center profiles (98 and growing!)



Conferences/ Workshops/ Seed Grants



A Toolkit for Centers

A starter kit, including organization charts, budgets, communication materials, and model programs in a STEM Education Innovation Database.

Research Questions

- How do SECs and CTLs operate on their campuses?
- What research or programmatic challenges in STEM education do these centers currently address? What evidence is there that these centers are effectively doing this?
- What research challenges in STEM education are these centers uniquely (or strongly) capable of addressing? How can they function as levers of cultural change at the institutional level? Lead researchers on center impacts are Gabriela Weaver and Deborah Carlisle.
- How can we effectively design and evaluate a STEM education network? Lead researcher Bruce Goldstein.

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