Introduction
Engagement is an essential component of the College of Science’s (COS) academic mission, both within local and global contexts. Strategic and collaborative partnerships with K-12, higher education, government organizations, communities, and corporations are central to addressing the persistent scientific challenges and developing the science-based solutions and innovations of tomorrow. Through engagement the College of Science also strives to increase the scientific literacy of K-12 students and the number of post-secondary students studying the sciences at Purdue.

In Purdue’s COS engagement is defined as collaborative work done by mutually committed partners (K-12, higher education, government organizations, communities, and corporations) in order to educate the public and address issues of mutual interest. Engagement simultaneously serves the needs of COS partners and enhances the research, teaching, and recruiting missions of the College. Engagement activities have intellectual merit and broad impact.

Engagement constituencies
- Corporations
- Government
- Higher education
- K-12
- Local, national, and global community
- Mass media (interviews, articles, documentaries, books, electronic, educational displays)

Important features for engagement work
- Diversity
- Documentation and benchmarking of impact, reports, scholarship
- Funding
- Recruitment
- Scientific literacy
- Science self-efficacy

Responses to Charge Questions
1. Should the College increase the portfolio and/or the level of engagement activities it supports? How would their success be measured?

The COS is and should continue to be a leader in engagement. The COS currently addresses many of the appropriate engagement areas. Increases should occur in the level of excellence
and amount of effort put into engagement work by faculty, staff, and students. A key to increasing the level and effort in engagement is to provide incentives for faculty, staff, and students to do this work. Incentives include more requirements for engagement in promotion documents and annual reviews and rewards for excellence in engagement work. Additionally, collaboration between faculty in multiple areas and collaboration between faculty and staff will increase the level of engagement work in the COS. Data and narratives should be collected to monitor growth and success of engagement activities under the following categories: national and international areas of excellence in engagement, partnerships, emerging areas of engagement, student success, impact on diversity, and scholarly products. Areas for engagement work include:

- Community events
- Corporate programs and partnerships
- K-12 programs and partnerships
- Project ideas for Purdue courses

2. What role should engagement activities play in the Purdue student experience?

The student educational experience should include opportunities to work on engagement activities. These opportunities can come through course projects, service learning courses, Learning Beyond the Classroom, study abroad, community events, partnering on existing work, and club-sponsored programs. Students who participate in engagement activities are more engaged in departmental work, more likely to be retained, and are highly sought after by employers. Awareness of university wide programs and support of programs in science-related areas like water quality or energy would allow students to work in groups that have significant impact on communities.

3. How might the College help faculty identify and incorporate engagement activities into grant proposals?

The primary way to help faculty incorporate engagement into research and grant proposals is to provide a menu of items that could be used for this purpose along with examples of effective engagement work from other research and grant-funded activities. The menu items and examples need to include measurable outcomes. The COS K-12 Outreach is an example of a program that can be used to strengthen the broader impacts of grant proposals. Regular opportunities to share example engagement activities should take place. Sharing can happen at department meetings, faculty orientation meetings, and at existing University-wide engagement workshops. A scholarship of engagement workshop specifically for the COS would provide a platform for this information to be shared between faculty, K-12 coordinators, and other interested staff.

4. How might the College better engage industry and companies in ways that benefit the research, teaching, and engagement missions?
The College of Science has experts who can help address issues to benefit industry and companies. As a mutually beneficial partnership, collaborations with industry should allow the COS to:

- Solve problems that impact society
- Gain insight into the strategic direction of specific industries
- Have access to expensive proprietary materials/compounds as well as specialized equipment
- Have access to student internship/employment opportunities
- Add industry experts - to dialogue with faculty and students
- Apply for federal/state funds which require corporate collaborations

5. What role could engagement activities have in recruiting and retaining a diverse community of faculty, students, and staff in the College of Science?

The College of Science has great aspirations for recruiting and retaining a diverse community of faculty, staff, and students. Along with these aspirations come challenges that need to be addressed. Participation in conferences and events targeted for women and underrepresented people would support recruitment efforts. Emphasizing Purdue’s commitment to engagement should be an asset toward the recruitment and retention of a diverse community. Communicating a clear vision for success along with a commitment to policies and programs to support faculty, staff, and students focused on the needs of a diverse community will help the College of Science be more successful. In addition to creating a climate of success for a diverse community on campus, the COS should partner with Purdue cultural centers, the Diversity Resource Office, and stakeholders in the Greater Lafayette region to help the region be a place where a diverse community can feel welcome, inclusive, and successful. Important areas for consideration include:

- A menu of items that promote diversity
- Community resources that help underrepresented people feel at home at Purdue and in Greater Lafayette
- Educational programs
- Mentorship programs for faculty, staff, and students
- Motivation for faculty and staff to engage in diversity work
- Mutually beneficial partnerships with 1890 institutions
- Student scholarship programs

6. How can COS consistently document and benchmark engagement work?

The College of Science has a significant history of using its human, intellectual, and fiscal resources to address issues and improve the prosperity and quality of life for people in Indiana and around the globe. Documentation occurs through the College of Science Engagement Report, but this report likely reflects about 50% of the work in engagement. As mentioned in #1, benchmarking should include data and narratives on national and international areas of
excellence in engagement, partnerships, emerging areas of engagement, student success, impact on diversity, and scholarly products. Clearly articulated benchmarks and a centralized reporting system are needed to collect information on engagement work. Additionally important is sharing information about the work done in engagement by the COS. Faculty, staff, and students should know about engagement work done in COS so that the effectiveness of the work can grow and new partnerships can be formed. Sharing engagement work outside of Purdue helps local, national, and international communities understand Purdue’s impact. Requiring this information in promotion documents and annual reviews for faculty, staff, and graduate students would improve the quality of information available.

**Suggested Action Items**

- Provide a COS-specific workshop on scholarship of engagement
- Provide training for faculty, staff, students, and promotion committee members on the importance of engagement and how to identify excellence in engagement
- Communicate accomplishments of faculty, staff, and students both within CoS and externally to the rest of the university
- Develop a system for more comprehensive reporting of engagement work
- Provide incentives and awards for excellence in engagement work, especially scholarship of engagement
- Pursue national and international recognition for students, faculty members, and staff members in all phases of our land grant mission
- Explore opportunities to further engage undergraduate and graduate students
- Create engagement committees in each department
  - A representative from each department attends a college level committee
- Departmental and College programs to fund engagement work (similar to department funds for professional growth)
- Find faculty who have experience with effective engagement work to put together the menu of broader impact engagement opportunities
- Departments are responsible for providing an environment that is welcoming and inclusive to a diverse community
- Include engagement activities in promotion and annual review documents in a standard way
  - Which constituencies were involved and what important features were addressed
  - Would it help if faculty were not required to check one of the boxes for research, teaching, or engagement?
  - Everyone should be accountable to all areas: research, teaching, and engagement
- Strengthen the P–14 and Science/Technology/Engineering/Mathematics (STEM) education pipeline to support student recruitment
o Help high school teachers understand the “rigor” of math and science at Purdue University.

o Link with the Purdue Polytech High School in Indianapolis

o Get teachers to come to Purdue during the summer so the upper level math and science courses taught in high school are better aligned with Purdue courses
  ▪ Target the teachers from low socioeconomic status areas and urban areas

- Engage the public in a discussion of the science we do and the technology utilized by our industry stakeholders

- Engage faculty members, staff members, and students in developing joint agendas and building teams focused on addressing emerging issues at community, state, national, and global levels

- Engage stakeholders and partners across the University, in industry, and in government and non-governmental organizations in addressing priority issues

- Recruit retired faculty to help current faculty to get involved in policy and activities that would improve accomplishments in engagement

- Provide scholarships for in-state, underrepresented students

- Improve transfer rate from Ivy Tech and regional campuses to COS