**NSF Broader Impacts Guide**

Developed by Dr. Lori Greene

legreene@uci.edu

Assistant Dean for Engineering Research Management

UCI Samueli School of Engineering

*NSF Broader Impacts Definition:* “the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.”

Please note that: “NSF’s mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.” These two components, (1) integration of research and education and (2) broadening participation, are important to NSF’s mission and need to be addressed as part of broader impacts.

**BROADER IMPACTS**

“Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to the project.”

Below is a general outline of a broader impacts plan with notes, ideas, and UCI resources; each section/idea does not need to be included in your plan. These are suggestions and your text should be customized for the needs of each proposal and what is customary for your discipline.

**1. Broader Impacts of the Proposed Research**

*Potential areas to highlight:*

* Impacts of the research to society, science/engineering generally, and your research area specifically. Examples include research that helps the environment, understanding/improving human health long term, developing a technique or method that enables future discoveries, influence policy, supports national security.
* Impact on or collaboration with industry, national laboratories, and non-profits. Examples include IP generation, material transfer, and partnerships.
* Research with international or global dimensions. Examples include research with a global impact and research with international partners.
* Cross-disciplinary research and perspectives. Examples include interdisciplinary research and training; developing a technique or method that enables breakthroughs across disciplines; converging ideas from divergent fields into a new area of research; and integrating in social sciences, humanities, and education research.
* Knowledge sharing and dissemination of research results and methods through papers, conferences, websites or other methods to broadly enhance scientific and technological understanding (should be consistent with data management plan).
* Engagement with stakeholders (e.g., policy makers, industry, city managers, concerned citizens).
* Research training of postdocs, graduate students, and undergraduate students. How many junior researchers does the project directly fund (this can also be under section 2. below) and how does this research influence the other research and training goals of your group, your department, and UCI?

**2. Integration of Research and Education**

Integrate your proposed research into activities in your department, School, UCI, the larger scientific community, and the general public.

*Potential areas to highlight:*

* Involve others (graduate students, undergraduate students, K-12 students, teachers, public) in your research by integrating concepts into curriculum, afterschool programs, and science centers; partnering with UCI and local programs for a field component or web outreach; developing or participating in the professional development of K-12 teachers.
* Bring the excitement of your research topics to help the education of others through presentations (e.g., museums, coffee shops), podcasts, social media, and new methods.
* Provide a platform for interdisciplinary training of junior researchers.
* Participate in multi- and interdisciplinary conferences, workshops, and research/training activities.
* Develop open source material or models that can be used by the larger scientific community. Share data sets in an open source format.
* Synthesize research results in formats understandable and useful for non-scientists. Provide information for policy formulation by Federal, State or local agencies.
* Support the development and dissemination of next-generation instrumentation, multi-user facilities, and other shared research and education materials through the integration of open-source platforms and social media.

**3. Outreach and Broadening the Participation of Underrepresented Groups**

Reach out beyond what is expected of you as a UCI professor (beyond required teaching) to influence the next generation of scientists and to broaden the participation of underrepresented groups [e.g., veterans, women in some fields, ethnic minorities (i.e., Native Americans/Alaskan Natives, Hispanic, African Americans, Pacific Islanders), person with disabilities, and veterans] in STEM.

*Potential areas to highlight:*

* Partner with the Office of Access and Inclusion (OAI) on the many activities and programs that they run. Contact: Dr. Sharnnia Artis, sartis@uci.edu
* Traditional K-12 outreach by doing classroom demonstrations, volunteering at afterschool programs, and participating in activities happening at UCI. Working with schools or organizations that serve underrepresented groups is a plus.
* Establish research and education collaborations with students and/or faculty who are members of underrepresented groups.
* Include students from underrepresented groups as participants in the proposed research and education activities or be involved with undergraduate and graduate student training activities on campus. Work directly with the Veterans Center or the Disability Center to target these groups.
* Make campus visits and presentations at institutions that serve underrepresented groups, such as Hispanic-Serving Institutions, Historically Black Colleges and Universities, Cal States, and community colleges.
* UCI is a Hispanic-Serving Institution, with over 26% of the undergraduate population identifying as Hispanic. Figure out a way to tap into this population, even if it is just with teaching.

**4. Education Goals, Timeline, and Education Assessment/Evaluation Plan**

As with your research plan, your education section of the broader impacts plan should be well thought out with an implementation plan that has stated goals and a timeline. It is also good to include activities that you have already done (similar to preliminary results) giving the reviewer the confidence that you are able to and will carry out the proposed work. The strongest proposals also have some sort of assessment/evaluation. If it is a small project, internal surveys are fine, or partner with OAI. Larger projects should include an assessor external to the project (e.g., UCI Teaching and Learning Research Center, Center for Educational Partnerships).