Welcome! We appreciate your spending time with us this afternoon exploring the mysteries, challenges and opportunities for developing broader impacts programs. You are most likely here because you will be seeking funding from the National Science Foundation and other funders who have a mandated mission to achieve societal benefits along with their scientific research mission.

**Effective, fundable BI plans require care and thought.** The goal of my presentation is to provide a framework to help you think about how you want to go about broadening the impact of your research. With this in mind, you will be prepared to listen in an informed way to the our panelists and engage with the organizational representatives at the fair.
I am going to cover three main topics:

**First**, we will be thinking about your broader impacts work in terms of a **BI legacy**, that is having a societal impact comparable to the impact that you hope to make in your field of research.

**Then** we will look at how to approach **planning BI activities**, how to integrate your interests and goals with NSF’s goals and criteria

**Lastly** I will share some tips for **writing a competitive BI Statement**
To begin, let’s look at NSF’s definition of Broader impacts: “Broader Impacts (BI) is defined as encompassing the ability to benefit society and contribute to achievement of specific, desired societal outcomes.”

Of course society benefits from the production of new knowledge through research. But, beyond that, Broader Impacts efforts aim at broadening the impact of your research beyond your research area. The phrase “specific, desired societal outcomes” is designed to distinguish between the societal benefits from activities that are directly focused on specific societal needs and problems and the benefits to society that you expect to accrue from your research.
NSF has identified five broad areas of societal benefit to invest in. We will hear about activities in a number of these areas from our panelists.

1. **Advancing discovery and understanding while promoting teaching, training, and learning**
   e.g. Integrating research into teaching. – expected

2. **Broadening participation of under-represented groups in STEM.**
   This is essential for the development of a scientifically literate public and a technologically competent workforce and is very important to NSF
   e.g., Partnering with community colleges
NSF’s five key areas for improvement

3. Enhancing infrastructure for research and education
e.g. Expanding partnerships between academia and industry

4. Broadening dissemination of research findings
e.g. Expert testimony before Congress
Sharing research data.

5. Benefitting society as a whole
e.g., Interpreting findings for public policy makers
NSF has conceptualized three basic approaches to accomplishing broader impacts that integrate our research and our BI activities. Some kinds of research lend themselves more naturally to one kind or another.

“Through the research itself” This might be research that has potential to lead to breakthrough in certain industries. Citizen science is another example.

“Through activities that are directly related to specific research projects” Common activities are providing research experiences to undergrads and high school students, and integrating your research into your teaching.

“Through activities that are supported by, but are complementary to, the project” This could be running a workshop for high school teachers on your research topic, but at a conceptual level. This can be appropriate for science involving difficult concepts.
Now we have discussed what NSF means by broadening the impact of research. We know what areas of societal benefit NSF want to invest in. And, depending on what kind of science we do, we understand that there are several approaches to integrating our research and our BI activities. But you do not yet have a framework for thinking about your specific situation.

Just as you set a research goal and design each research project as step towards the goal, you can design your BI activities in a strategic fashion to achieve the forward movement you desire. Take some time to think carefully about the impact you want to make with your broader impacts work and set specific goals to achieve it. Without goals, you may do good work, but it will not have the scalable, sustainable impact that might be achievable, your BI legacy.
Begin to explore possible ideas by considering two simple questions that will help you explore possible audiences.

**Who else can use your findings?** Such as:
- Students and researchers in related disciplines
- Government policy makers

**Who else could benefit from learning about your process or findings?**
Such as:
- Participants in out-of-school activities
- General publics

**Who outside your field could you engage with in conducting BI activities?**
Is there a Science Education researcher who might want to collaborate?
In the next stage, start generating and exploring ideas. People do many kinds of BI activities. In order to create a plan that fits you there are seven directives you need to follow:

1. **Make it personally meaningful**
   - Are there particular social outcomes you are passionate about or particular audiences you would like to reach? Are you already active in this area?

2. **Make it professionally meaningful**
   - Can the idea to make a real contribution, break new ground in addressing a need? thereby establishing you as an influencer in that area? Is there a skill that you would like to learn, like talking to the media?

Then, narrow down your options:

3. **Make sure your ideas are tightly aligned with NSF priorities**
   - Look at NSF wide priorities and the priorities of the Directorates you are seeking funding from. These can vary. Overall, Broadening Participation and Broadening Dissemination are being most strongly emphasized, a trend that will likely continue.
Now assess each idea in terms of feasibility.

4. Does your idea for a project fit your research and capabilities
   Realistically, how much time, personnel, and budget can you to devote to Broader Impacts activities?
   Do you or members of your lab have any unique skills or unique resources that could be used to make the project special?

5. Explore how well your project aligns with the mutual goals of you and your partners
   Have you ensured that the project is mutually beneficial, not a one-way benefit to your lab? This is extremely important when partnering in the community. You will not achieve growth or sustainability without meeting the needs of your partnering organization.

6. Is adequate infrastructure available?
   Does your idea alignment with the priorities of your department or College? Will they support your BI work?
   Look for existing university offices and programs with whom to partner.

7. Is the impact you want to make measurable? (Not always essential)
   You have specific measurable goals and a plan to measure outcomes
Plan to build a BI Legacy

- BI Plan must have impact, longer-term
- BI Plan must be fundable

There is an iterative path to take between meaningfulness and feasibility. Apply the feasibility criteria to your idea and if it doesn’t ring true on each point, go back to the idea generation stage. You do not have time or resources to waste. A carefully designed BI plan will help you achieve your goals efficiently and effectively.

Once you have identified meaningful and feasible ideas for BI activities, revisit the big picture. A BI Legacy is a powerful thing. A strong BI legacy will support future requests for funding for your research and continuing your BI work.

You can build a BI Legacy through developing BI plans that aim for longer term, significant impacts with potential for sustainability. Impact and sustainability are closely linked. In order to have longer term impact, BI activities must build and develop over a number of years.
We will now switch gears and share commonly received advice from BI practitioners. Many are common sense but can get lost in the fray.

**Focus on a few BI areas** Do what is meaningful to you. It is better to do a good job in one or two areas.

**Don’t reinvent the wheel:**
Collaborate with institutional or community programs – but add your “signature,” something special you bring to the project.

**Use and cite best practices for program design.** But, If you are doing something creative and original, build on current research results.

**Establish a track record of BI work** even before you apply for NSF funding as evidence of your capabilities and commitment. Collaborate to gain experience. Think of the outcomes of your early BI activities as pilot data,
More good advice:

**Remember synergy** – Very important to integrate BI with your research, hands on or conceptually

**Consider the potential for sustainability or dissemination** – how many people will be impacted? Will the excitement generated lead to the project snowballing and taking on a life of its own? That is a BI Legacy!

**Consider evaluation/assessment** – use best practices and existing tools for measures of impact or learning outcomes. Get help from professionals or collaborate with an expert, but don’t go overboard. Evaluation is not research. You are looking at the program implementation and outcomes, not generalizable new knowledge.
Here are some key points to keep in mind when writing the BI Statement:

**Demonstrate return on investment** - Emphasize the value of the broader impacts in terms of the societal benefit

**Present a timeline and measurable outcomes**

**Describe the experience of the team but don’t rest on your laurels**

**Document support for the project** in your budget, from your Dean, and your community partners
Potential red flags for NSF reviewers

• Bi and research not well-integrated
• Disjointed activities, weak impact
• Feasibility not demonstrated
• Evaluation plan not integrated

• Here are some things to watch out for – don’t get dinged!

• Bi and research not well-integrated - Principal Investigator (PI) proposed BI activities that benefit their field of research or other fields, but with minimal societal benefit

• A scattershot approach – You propose disjointed activities that will make a weak impact

• There are insufficient details to establish the feasibility of what you propose to do

• Evaluation plan appears tacked on and does not measure outcomes that relate to goals.
Resources

Visit our Broader Impacts page for information and how-to resources. 
https://www.umass.edu/research/proposals/develop-proposal/broader-impacts

Thank you!

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