Successful Grant Writing Strategies

Sally Bond

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Proposal Coordination

Office of the Vice President for Research and Partnerships

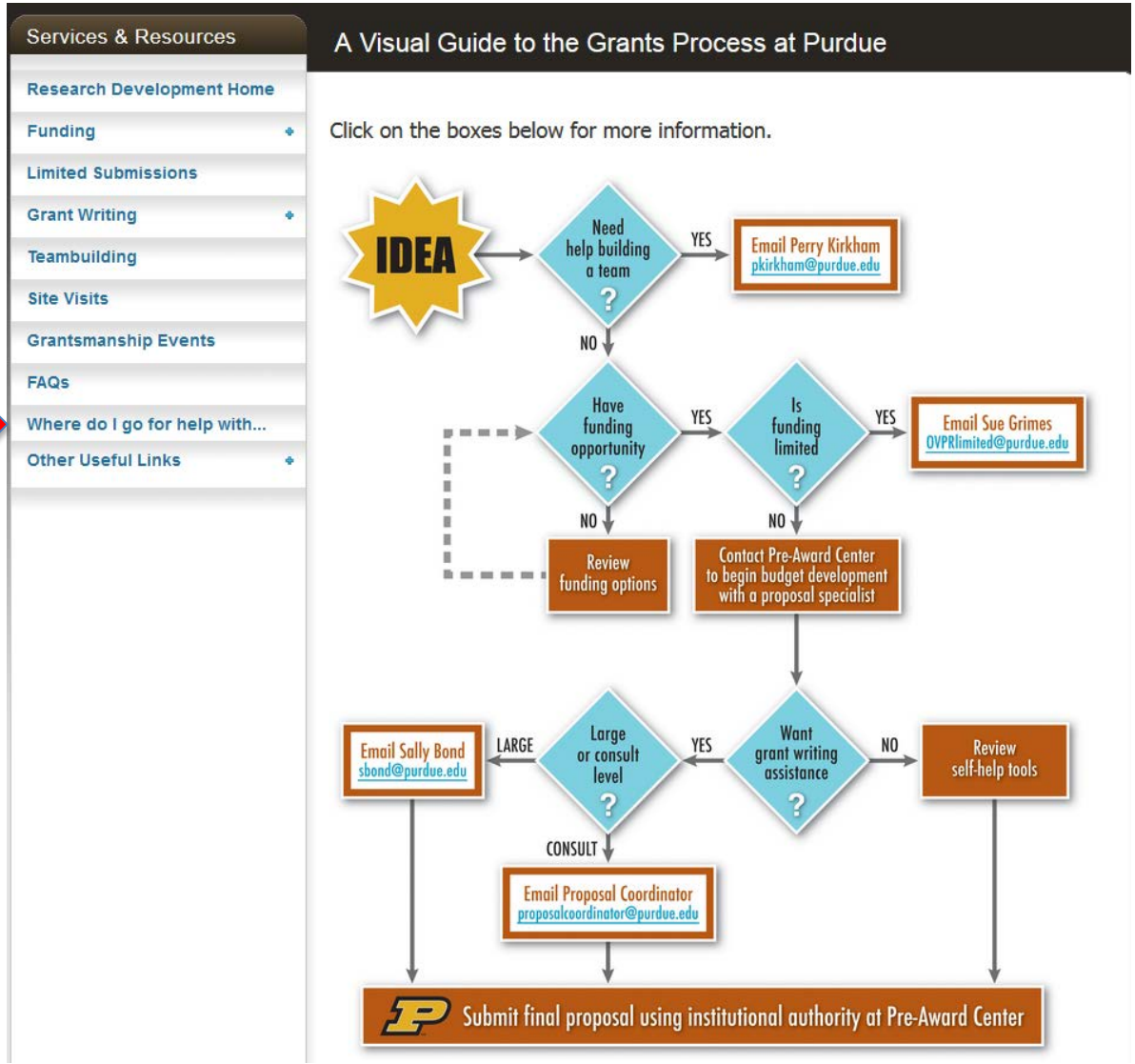
PURDUE UNIVERSITY

Purdue Research Development Services

Office for the Vice President for Research services and resources

Where Do I Go for Help?

Hyperlinked "help" flowchart



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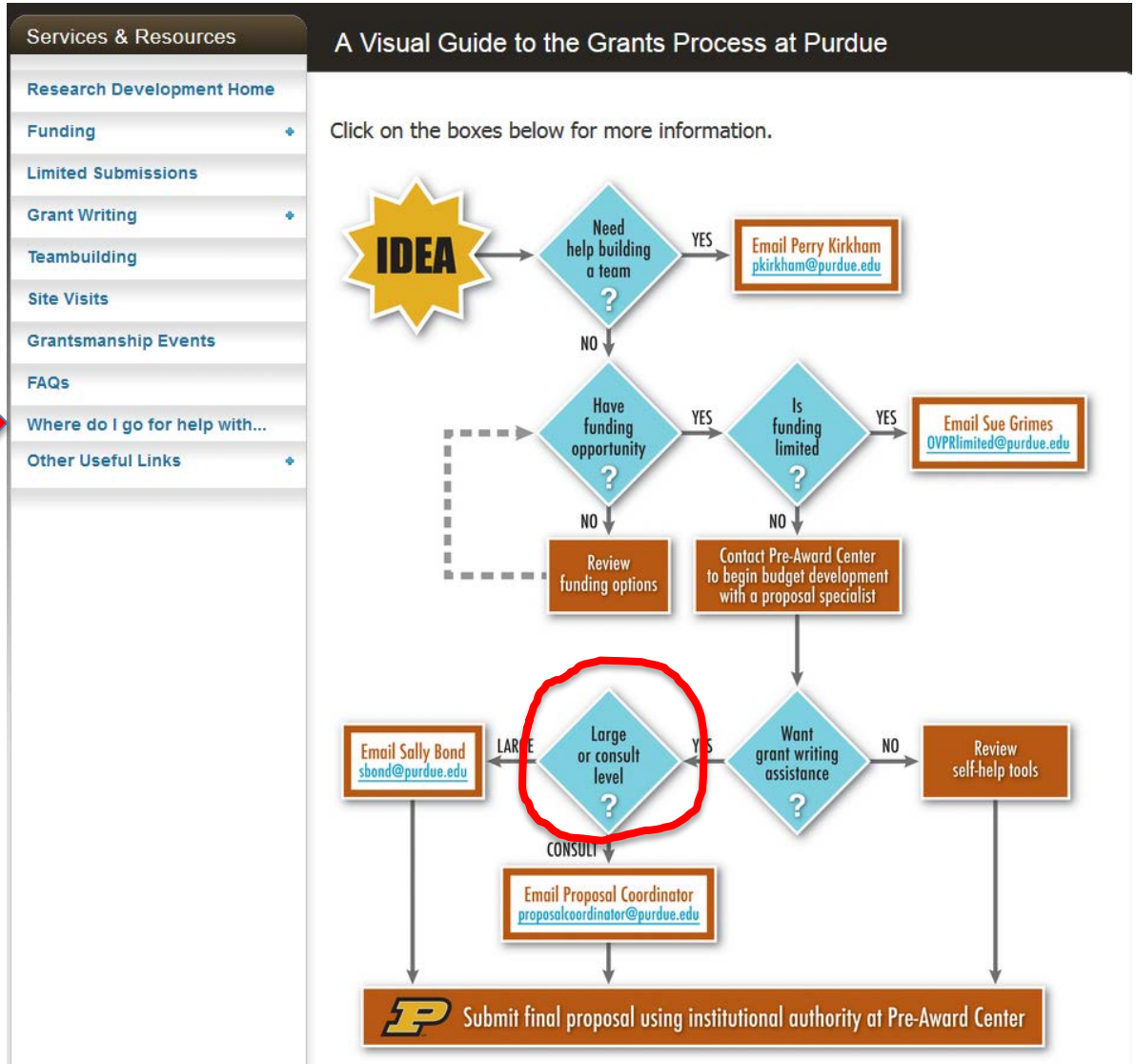
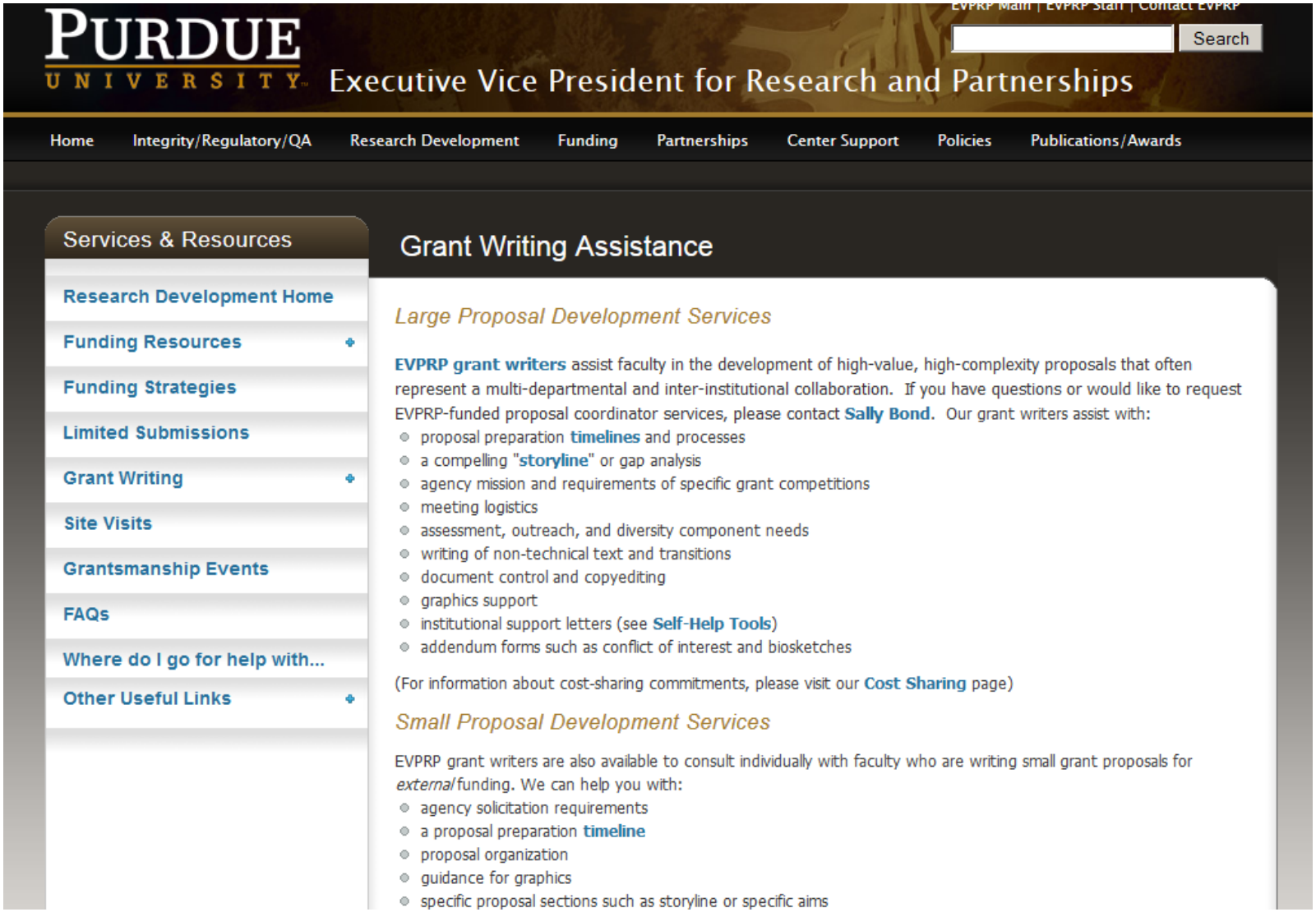


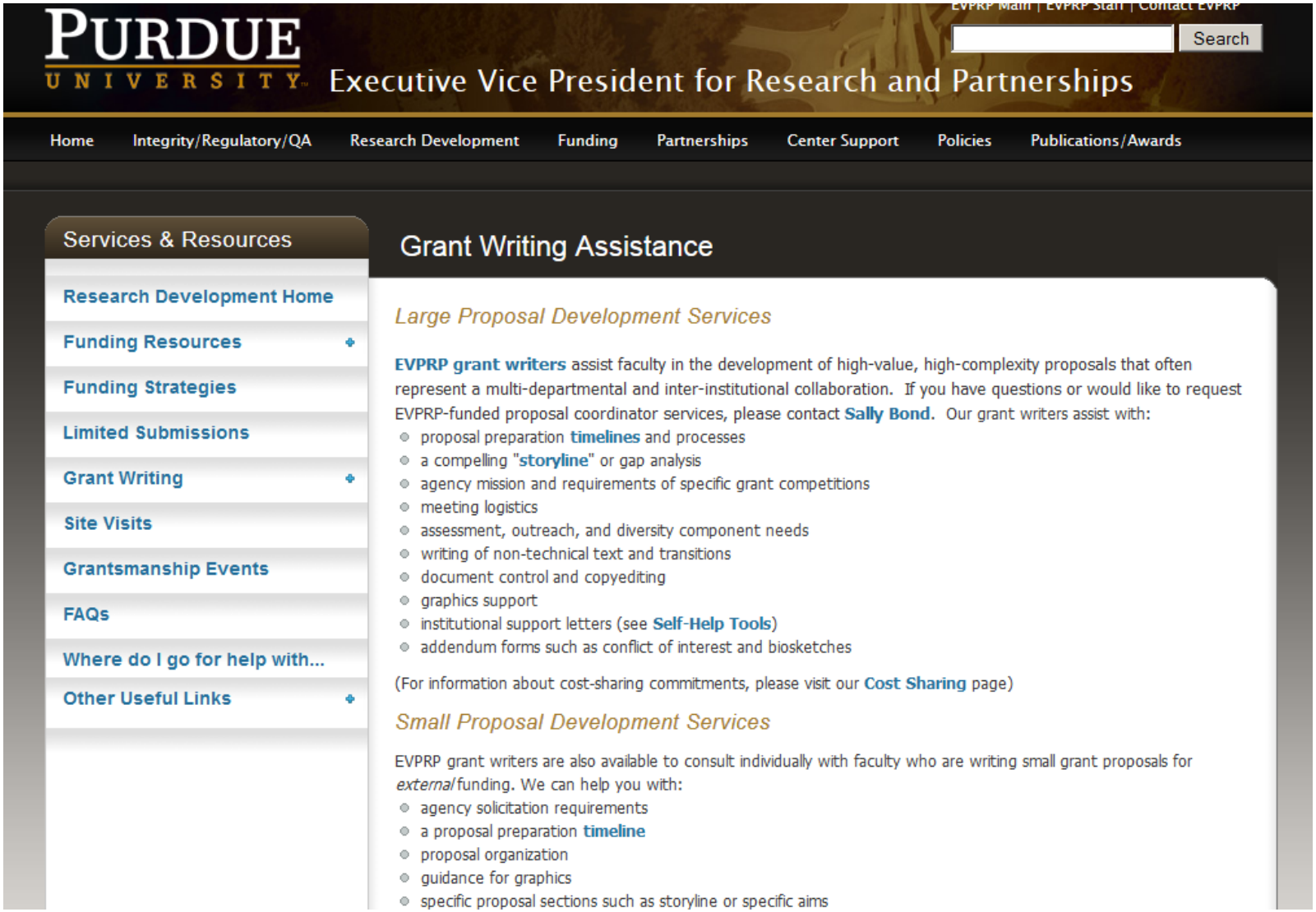
Large-Scale Proposal Coordination

High-value, higher-complexity, interdisciplinary



Smaller Proposal Consultation

Help is available for proposals of all sizes.



Proposal Preparation

Tailored and intentional plan

General 10-week project timeline:

	1	2	3	4	5	6	7	8	9	10
Analysis and Planning										
Distribute documents noted in RFP										
Identify previously successful proposals										
Identify PI										
Notify Pre-Award Center for assigned budget specialist										
Problem Overview • *What is the problem* • *What has already been done to address problem* • *What gaps remain* • *How we propose to address gaps*										
Vision										
Goals										
Identify proposal win themes/discriminators										
Program Officer Input										
Contact PO	initial									
Team debrief on meeting										
Refine initial analysis/planning										
Proposed Outline										
Discuss/refine outline structure										
More detailed outline, if needed										
Identify graphics needed										
Partnerships										
Recruit collaborative partners										
Produce "talking points" brochure or website										
Recruit industry affiliates										
Recruit advisory board members										
Collect letters of commitment										
Management and Personnel										
Identify basic management structure										
Collect biosketches										
Proposal Writing and Editing										
Assign writing										
Write section components										
Compile 1st draft										
Project team 1st edit										
Any outside review input/edit										
Editing iterations										
Write summary or abstract										

Red Text: Important to have agreement (and explicit text for problem overview) prior to proposal writing

Key Strategies

Strategies to steer you away from common trouble spots

- tell a compelling story
- respond to solicitation
- answer “Why Purdue?”
- know your reviewer
- conduct internal review

Key Strategies

Addressing common trouble spots

- tell a compelling story
- respond to solicitation
- answer
- know y
- conduc

- good science is a story that begins with a problem
- narrative gives coherence
- hooks reviewer so weaknesses are not fatal flaws

Key Strategies

Addressing common trouble spots

- tell a compelling story
- respond to solicitation
- answe
- know
- condu

- What is the problem?
- What has been done already to address the problem?
- What is the gap that remains?
- How do you propose to address this gap?

Key Strategies

Addressing common trouble spots

- tell a compelling story
- respond to solicitation
- answe
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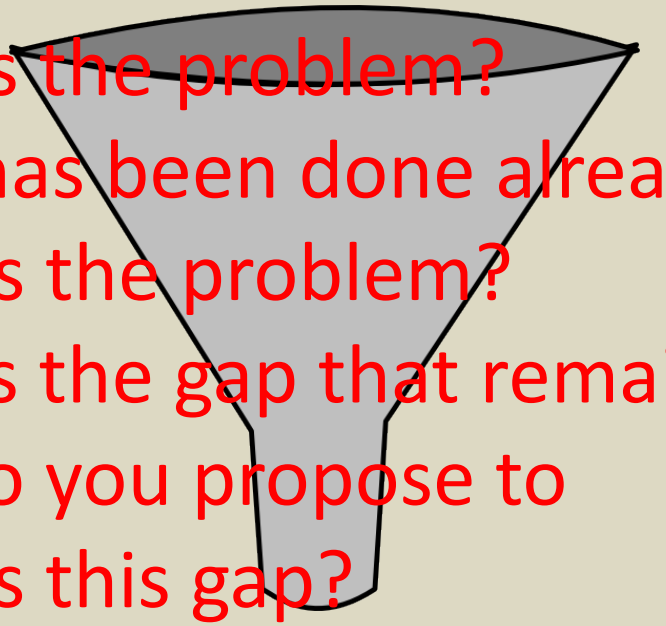
- condu



Build the Storyline

Example narrative…in op-ed language

What is the problem?

What has been done already to address problem?

What is the gap that remains?

How do we propose to address this gap?

NSF IGERT: Solar Economy IGERT (SEIGERT)
PI: Rakesh Agrawal

2. Vision, Goals, and Thematic Basis

Currently, fossil fuel resources of coal, natural gas and petroleum supply nearly 85% of the total energy needs of the US economy. The flow of energy from fossil fuels to end-uses: 1) electricity, 2) heating, 3) chemicals, and 4) transportation is a complex system dictated by resource availability, processing capacity, government policy, world affairs, and market forces. However, recent volatility of petroleum prices, uncertainty of future carbon taxes, and the potential impact of greenhouse gasses on the environment has led to renewed efforts to reduce our dependence on fossil fuels.

Recently, 25 U.S. state legislatures passed legislation that establishes minimum percentages of the state's electricity supply that must come from renewables by a certain date. These so-called Renewable Portfolio Standards (RPS) are shown in Figure 1. The states with RPS account for over half the nation's electricity. The implementation of RPS presents the U.S. with great opportunities and challenges. Currently, the total primary power used in the U.S. by all four major end-uses is 3.3 TW (PCAST, 2006). When averaged over day, night, seasons, and cloud cover, over 1800 TW of sunlight falls on U.S. land. Clearly, economic collection and transformation of solar energy can provide a long-term solution for all the energy needs of the United States.

For decades, the U.S. enjoyed global leadership in solar energy innovation and market share. By 2005, however, the U.S. share of the world production capacity of solar cell modules dropped to 8% while shipments from Europe and Japan increased to 26% and 48%, respectively (EIA, 2007). The economic effect of the decreasing U.S. market share is exacerbated by a rapidly increasing need for solar cell manufacturing. The U.S. Photovoltaic Industry Roadmap foresees a 30% growth of the world solar industry over the next decade and a U.S. solar industry that needs to employ 250,000 people by 2030 (DOE, 2001). However, at a time when U.S. states and industry need a significant increase of highly skilled labor with solar energy expertise, the supply of Ph.D.s in this area is limited Further, of all the research articles published on solar energy, the fraction published by U.S. authors has dropped significantly in the last 30 years, from 49% to 18%. More importantly, of all the journal citations for articles on solar energy, the fraction of citations that U.S. authors receive is down from 61% to 24% in that same time period (Hillhouse, 2007). The output and impact of U.S. research on solar energy is diminishing. These trends clearly define a challenge of national importance. *It is imperative that the U.S. strategy include effective education and training programs to develop the human resources and intellectual capital that will allow us to compete in this emerging world market for* **Sun-to-Electricity**. Our ***vision*** is to prepare for a fossil fuel-deprived world where nearly all energy demands are met sustainably by solar energy resources.

Build the Storyline

Example narrative for NIH specific aims page

What is the problem?

What has been done already to address problem?

What is the gap that remains?

How do we propose to address this gap?

Carolina Wählby of the Broad Institute
http://www.niaid.nih.gov/researchfunding/grant/pages/appsamples.aspx

Research Strategy

A Significance

The NIH is committed to translating basic biomedical research into clinical practice and thereby impacting global human health[1], and Francis Collins identifies high-throughput technology as one of five areas of focus for the NIH's research agenda[2]. For many diseases, researchers have identified successful novel therapeutics or research probes by applying technical advances in automation to high-throughput screening (HTS) using either biochemical or cell-based assays[3–6]. Researchers are using genetic perturbations such as RNA interference or gene overexpression in cell-based HTS assays to identify genetic regulators of disease processes as potential drug targets[7–9]. However, the molecular mechanisms of many diseases that deeply impact human health worldwide are not well-understood and thus cannot yet be reduced to biochemical or cell-based assays.

Ideally, researchers could approach disease from a phenotypic direction, in addition to the traditional molecular approach, by searching for chemical or genetic regulators of disease processes in whole model organisms rather than isolated cells or proteins. Moving HTS towards more intact, physiological systems also improves the likelihood that the findings from such experiments accurately translate into the context of the human body (e.g., in terms of toxicity and bioavailability), simplifying the path to clinical trials and reducing the failure of potential therapeutics at later stages of testing. In fact, for some diseases, a whole organism screen may actually be necessary to break new therapeutic ground; in the search for novel therapeutics for infectious agents, for example, it is widely speculated that the traditional approach of screening for chemicals that directly kill bacteria *in vitro* has been largely exhausted[10]. Our work recently identified six novel classes of chemicals that cure model organisms from infection by the important human pathogen *E. faecalis* through mechanisms distinct from directly killing the bacterium itself[11]. Anti-infectives with new mechanisms of action are urgently needed to combat widespread antibiotic resistance in pathogens.

Enabling HTS in whole organisms is therefore recognized as a high priority (NIH PAR-08-024)[12,13]. *C. elegans* is a natural choice. Manually-analyzed RNAi and chemical screens are well-proven in this organism, with dozens completed[14–16]. Many existing assays can be adapted to HTS; instrumentation exists to handle and culture *C. elegans* in HTS-compatible multi-well. Its organ systems have high physiologic similarity and genetic conservation with humans[17,18]. *C. elegans* is particularly suited to assays involving visual phenotypes: physiologic abnormalities and fluorescent markers are easily observed because the worm is mostly transparent. The worms follow a stereotypic development pattern that yields identically-appearing adults[19,20], such that deviations from wild-type are more readily apparent.

The bottleneck that remains for tackling important human health problems using *C. elegans* HTS is image analysis (NIH PA-07-320)[21,22]. It has been recently stated, "Currently, one of the biggest technical limitations for large-scale RNAi-based screens in *C. elegans* is the lack of efficient high-throughput methods to quantitate lethality, growth rates, and other morphological phenotypes"[23]. **Our proposal to develop image analysis algorithms to identify regulators of infection and metabolism in high-throughput *C. elegans* assays would bring image-based HTS to whole organisms, and have the following impact:**

- **Identifying novel modulators of infection by the NIH priority pathogen Microsporidia** (Aim 1). Microsporidia are emerging human pathogens whose infection mechanisms are almost completely unknown.

Build the Storyline

Create a one-page brief

One-page project description sent to program officer that includes:

- concise storyline
- vision/goals
- team
- methodology/approach
- impact

Build the Storyline

One-page…taste of your entire grant in a single, bite-sized piece

It forces you to distill all aspects down to their essences and to find a way of piecing things together that is economical, coherent, logical, and compelling […] is totally unforgiving, revealing problems in the clarity of your thinking and presentation, weaknesses in the logic of your research, vagueness in your methods, and failures in the all-important 'so what?' realm. Given the luxury of length, additional verbiage has a way of camouflaging weaknesses (at least from the writer but not so often from the reviewer).

—Robert Levenson, UC-Berkeley

Key Strategies

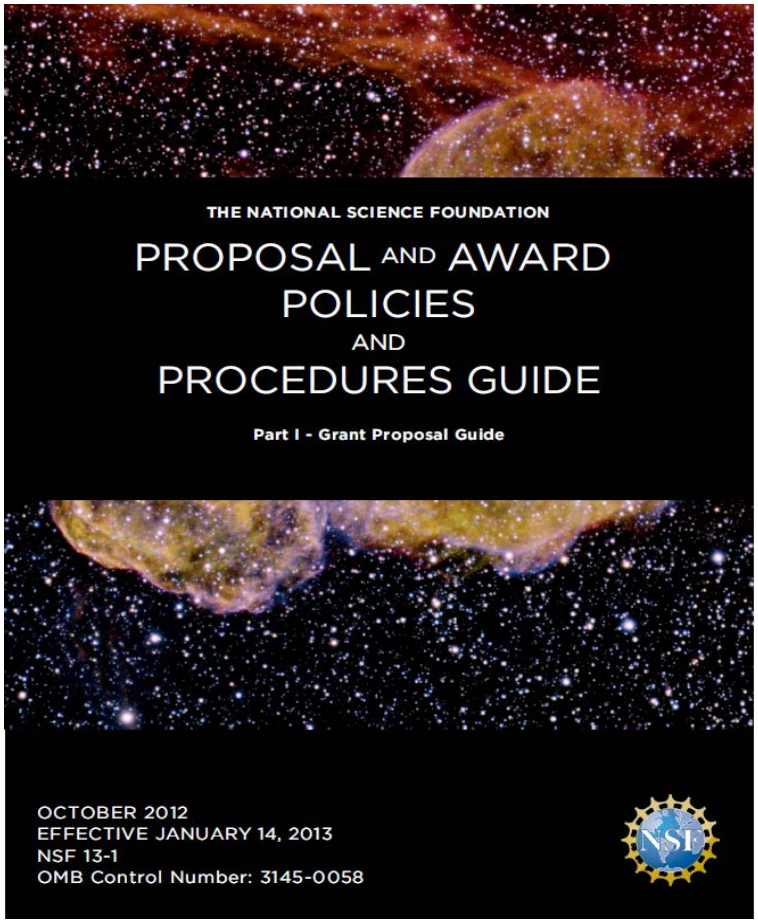
Addressing common trouble spots

- tell a compelling story
- respond to solicitation
- answer "W
- know you
- conduct internal review

  - follow all instructions!
  - outline before writing

Respond to Solicitation

Follow all instructions! Know the agency guidelines as well as solicitation



Research on Education and Learning (REAL)

PROGRAM SOLICITATION
NSF 13-604

REPLACES DOCUMENT(S):
NSF 10-516, NSF 12-542, NSF 12-552

National Science Foundation

Directorate for Education & Human Resources
Research on Learning in Formal and Informal Settings

Letter of Intent Due Date(s) ***(optional)*** (due by 5 p.m. proposer's local time)*:*

October 25, 2013

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

January 10, 2014

IMPORTANT INFORMATION AND REVISION NOTES

A revised version of the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), NSF 13-1, was issued on October 4, 2012 and is effective for proposals submitted, or due, on or after January 14, 2013. Please be advised that the guidelines contained in NSF 13-1 apply to proposals submitted in response to this funding opportunity.

Please be aware that significant changes have been made to the PAPPG to implement revised merit review criteria based on the National Science Board (NSB) report, National Science Foundation's Merit Review Criteria: Review and Revisions. While the two merit review criteria remain unchanged (Intellectual Merit and Broader Impacts), guidance has been provided to clarify and improve the function of the criteria. Changes will affect the project summary and project description sections of proposals. Annual and final reports also will be affected.

A by-chapter summary of this and other significant changes is provided at the beginning of both the *Grant Proposal Guide* and the *Award & Administration Guide*.

Please note that this program solicitation may contain supplemental proposal preparation guidance and/or guidance that deviates from the guidelines established in the Grant Proposal Guide.

Revision Summary

This solicitation has been revised to incorporate into the Other Information section a newly issued publication jointly developed by the National Science Foundation and the Institute of Education Sciences in the U.S. Department of Education entitled, *Common Guidelines for Education Research and Development*. The *Guidelines* describe six types of research studies that can generate evidence about how to increase student learning. Research types include those that generate the most fundamental understandings related to education and learning; examinations of associations between variables; iterative design and testing of strategies or interventions; and assessments of the impact of a fully-developed intervention on an education outcome. For each research type, there is a description of the purpose and the expected empirical and/or theoretical justifications, types of project outcomes, and quality of evidence.

The *Guidelines* publication can be found on the NSF website with the number NSF 13-126 (http://www.nsf.gov/pubs/2013/nsf13126/nsf13126.pdf). A set of FAQs regarding the *Guidelines* are

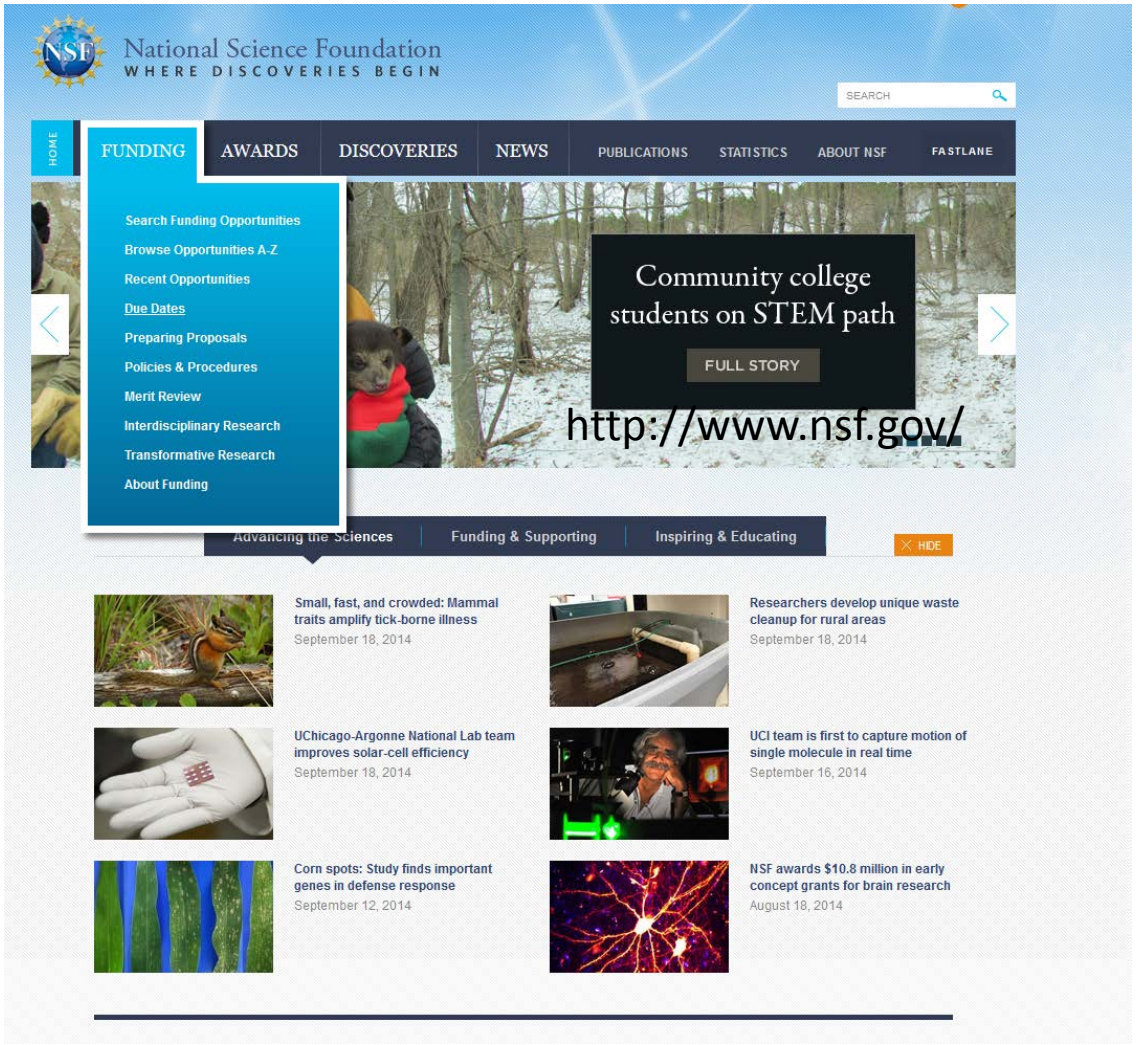
Respond to Solicitation

Sleuth what was funded previously to identify trends

- What type of science and how does it compare to yours?
- What was team composition?
- What type of education integration?
- What type of institution?
- What type of budget?

Respond to Solicitation

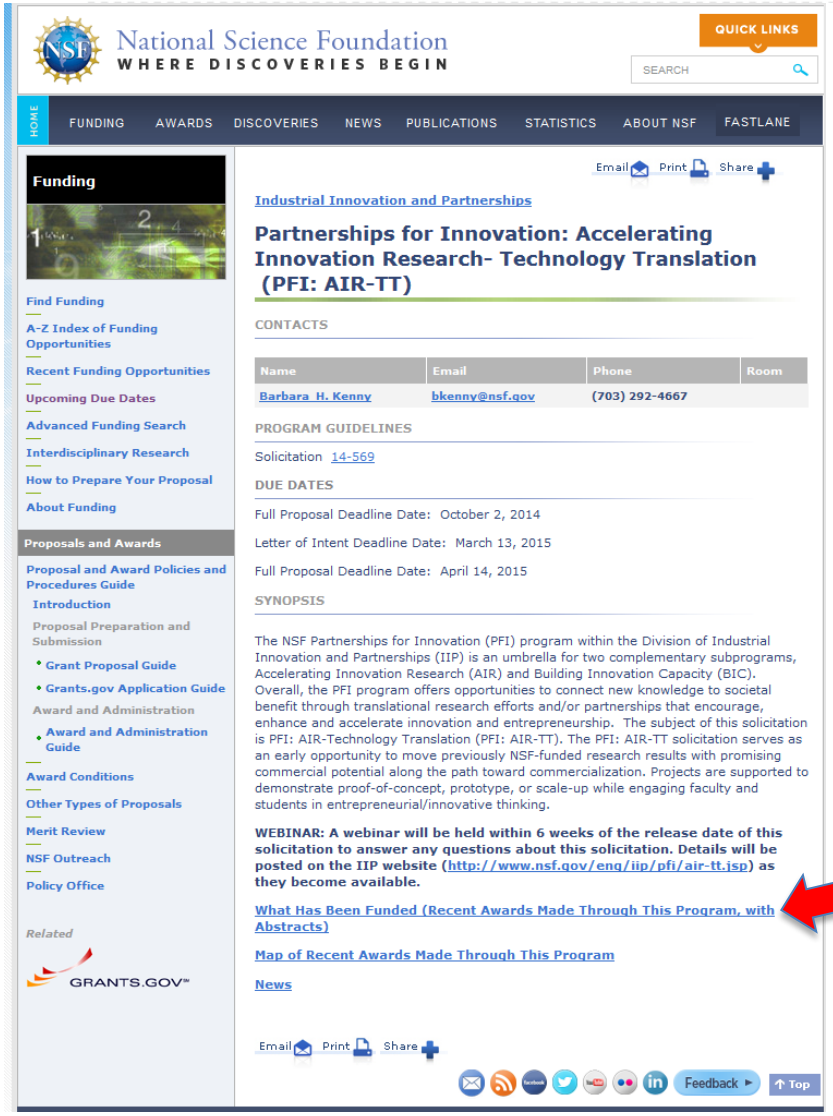
Agency websites often show what was previously funded.

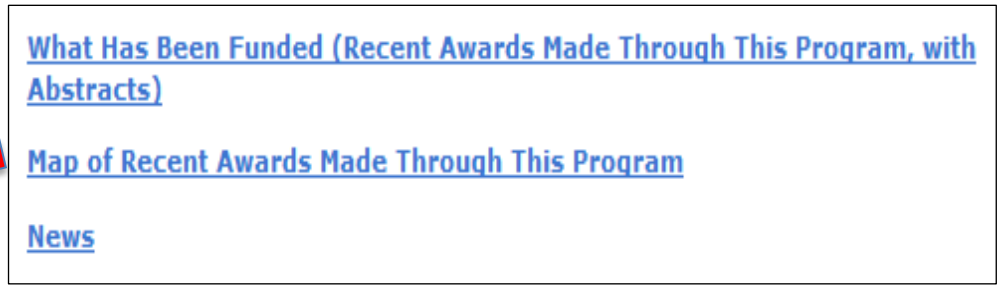


www.nsf.gov

Respond to Solicitation

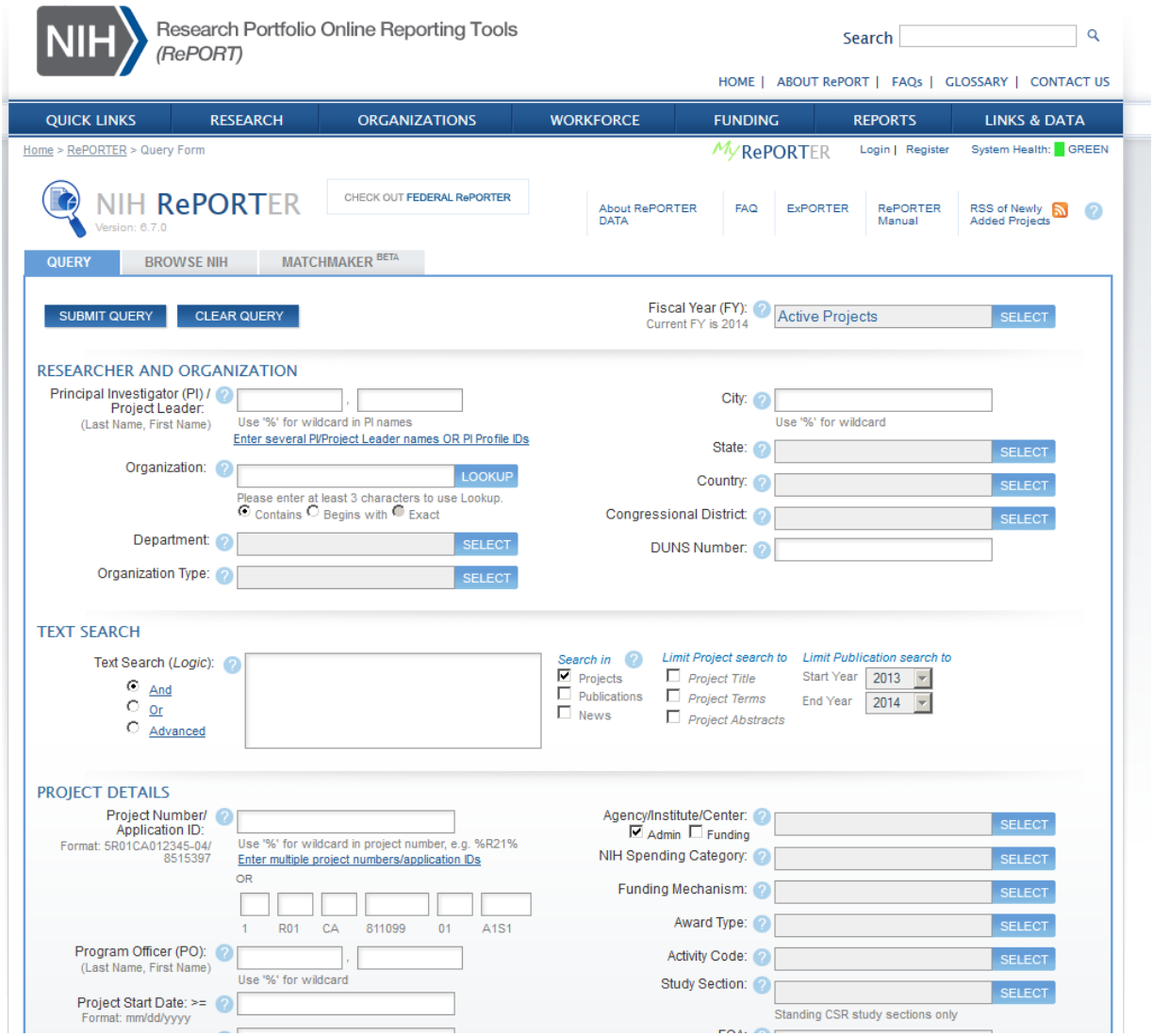
Each program page has “what has been funded” and map of recent awards.





Respond to Solicitation

NIH RePORTer http://projectreporter.nih.gov/reporter.cfm.



Respond to Solicitation

NIH RePORTer http://projectreporter.nih.gov/reporter.cfm.

Search Results

Back to Query Form | Save Query | Share Query

Export: All Projects GO

PROJECTS | PUBLICATIONS | PATENTS | CLINICAL STUDIES | DATA & VISUALIZE | MAP | LINKS | NEWS & MORE

There were **3230** results matching your search criteria. Records per page 25 Show/Hide Search Criteria

Click on the column header to sort the results 1 2 3 4 ... 128 129 130 Page 1 of 130 Next Last

T: Application Type; Act: Activity Code; Project: Admin IC,Serial No.; Year: Support Year/Supplement/Amendment

T	Act	Project	Year	Sub #	Project Title	Contact PI/ Project Leader	Organization	FY	Admin IC	Funding IC	FY Total Cost by IC	Similar Projects
5	R01	MH094478	03		LEARNING, NEURAL SIGNALING OF CORTISOL, AND EARLY ADVERSITY IN DEPRESSION	ABERCROMBIE, HEATHER C	UNIVERSITY OF WISCONSIN-MADISON	2014	NIMH	NIMH	$493,154	
5	P50	MH086404	05		DOPAMINE DYSFUNCTION IN SCHIZOPHRENIA	ABI-DARGHAM, ANISSA	NEW YORK STATE PSYCHIATRIC INSTITUTE	2014	NIMH	NIMH	$1,805,264	
1	K01	MH102428	01A1		DECODING NEURAL SYSTEMS UNDERLYING AFFECTIVE PROSODY IN CHILDREN WITH AUTISM	ABRAMS, DANIEL ARTHUR	STANFORD UNIVERSITY	2014	NIMH	NIMH	$176,164	
5	K25	NS058573	05		TIME-RESOLVED MR METHODS FOR ANALYSIS OF CONTRAST AND FLOW VELOCITY IN ANEURYSMS	ACEVEDO-BOLTON, GABRIEL ALEJANDRO	UNIVERSITY OF CALIFORNIA, SAN FRANCISCO	2012	NINDS	NINDS	$150,101	
5	R01	CA171651	02		DEVELOPMENT OF GOGGLE SYSTEM FOR FLUORESCENCE IMAGE-GUIDED SURGERY	ACHILEFU, SAMUEL	WASHINGTON UNIVERSITY	2014	NCI	NCI	$558,269	
5	R01	MH094743	04		MOTIVATED MEMORY AS THERAPEUTIC TARGET	ADCOCK, RACHEL ALISON	DUKE UNIVERSITY	2014	NIMH	NIMH	$463,300	
5	P50	MH094258	03	5386	CONNECTIVITY OF THE SOCIAL DECISION-MAKING SYSTEM	ADOLPHS, RALPH	CALIFORNIA INSTITUTE OF TECHNOLOGY	2014	NIMH		*$370,781*	
5	P50	MH094258	03		THE NEUROBIOLOGY OF SOCIAL DECISION-MAKING	ADOLPHS, RALPH	CALIFORNIA INSTITUTE OF TECHNOLOGY	2014	NIMH	NIMH	$1,914,032	
5	K99	EY022924	02		THE CAUSAL ROLE OF INFERIOR TEMPORAL CORTEX IN OBJECT RECOGNITION	AFRAZ, SEYED REZA	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	2014	NEI	NEI	$106,833	

Respond to Solicitation

Outline before you write. Be consistent with formatting.

Example of NSF-style proposal outline

1. RATIONALE [2.5 pages]

- Storyline
  - What is the problem?
  - What has been done already?
  - What is the gap that still remains?
  - What do you propose to do to address this gap?

Goals and Objectives

- List goals and objectives (per goal)

Team Partnership

- Team expertise
- Targeted teacher and/or community college faculty participants
- Institutional commitment

Broader Impacts

- curriculum accessed by underrepresented students through targeted teacher recruitment
- community-based research activities
- integrating research activities into computing-related courses in local high schools
- role models from HCBU partner on HUBzero webinars
- presentation to parent-teacher organizations to include assessment results from DLRC-collected metrics
- presentations at both technology education conferences as well as K-12 STEM learning

2. NATURE OF TEACHER ACTIVITIES [3.5 pages]

- Need clearly articulated research projects and activities
  - Map to goals/objectives
- Teachers must be involved in research project for at least 6 weeks
- Must have orientation session at beginning of the program for the teachers to acquaint them with laboratory methods, safety procedures, analytical methods, etc
- Address approach to research training being undertaken

Research Project

- Include overview statement of spectrum of research projects

Project 1

- Provide detailed descriptions of examples of research projects
  - Include who is doing what role
- Present plans that will ensure the development of RET participant-faculty interaction and communication
- How will you facilitate development of collegial relationships and interactions as teachers work closely in teams with university faculty and students?

Project 2

- Provide detailed descriptions of examples of research projects
  - Include who is doing what role
- Present plans that will ensure the development of RET participant-faculty interaction and communication
- How will you facilitate development of collegial relationships and interactions as teachers work closely in teams with university faculty and students?

Project Timetable

- Need Gantt-style chart such as this.
- Overview sentence

Program Initiatives	Year one	Year Two	Year Three	Year Four	Year Five
CICAWEST Administration					
Advisory Board Meeting					
D&I Team and COD meeting					
Mentoring Academy					
Training of coaches/chairs					
Mentoring pairs					
Departmental Transformation					
Diversity Forums					
Chairs/Dept Heads @ PU					
All Three Institutions					
Transformational Team Visits					
NCWIT Visiting Committees					
Promotion and Tenure Review					
Building Networks					
Summit					
Invited Lectures					
Evaluation and Assessment					
STEM Climate Assessment					
Space/Resource Inventory					
Coaching Measures					
Mentor/Mentee percp/self-eff prod					
Attitudinal Surveys					
Deans and Heads					
Faculty					
Network Analysis					
External Project Analysis					
Dissemination					
Website					
CIC *Women in Academia*					
Summit Attendees Mailings					
Publications					
National Presentations					

3. RESEARCH ENVIRONMENT [2.5 pages]

- Describe the experience and record of involvement with K-12/community college education and research of the PI
- Describe faculty who may serve as research mentors. Consider table such as:

Mentor Name	Dept/School	Expertise

- Describe institution
  - Include emphasis on cross-disciplinary partnership and past record of success in cross-disciplinary collaborations

Key Strategies

Addressing common trouble spots

- tell a compelling story
- respond to solicitation
- answer "Why Purdue?"
- know yo
- conduct

- win differentiators of expertise, facilities, prior work, campus environment

Key Strategies

Addressing common trouble spots

- tell a compelling story
- respond to sc
- answer "Why
- know your reviewer
  - writing for expert and non-expert
  - busy, rushed
- conduct internal review

Know Your Audience

How is your reviewer reading your draft? How can you help?

- sleepless, busy, rushed
- stack of 25 proposals to review
- reading proposal on plane or late at night
- perhaps not an expert in your exact field

Know Your Reviewer

Mechanics matter. Sloppy writing = sloppy science

- Use formatting as a roadmap
- fix grammar and proof proposal
- get rid of passive voice whenever possible

Know Your Reviewer

Mechanics matter. Sloppy writing = sloppy science

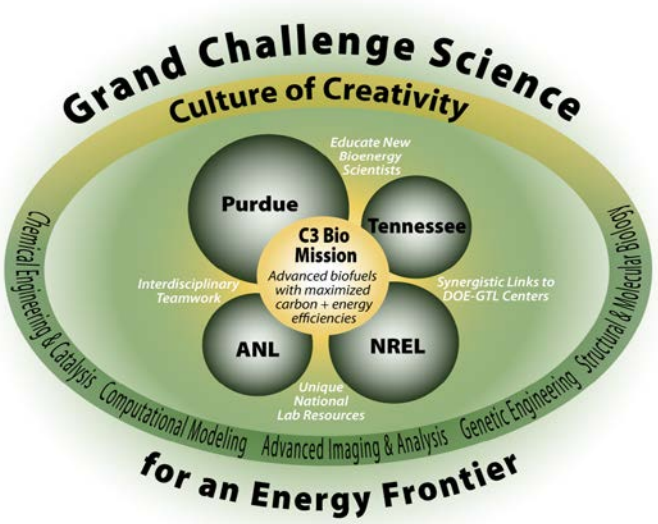
Elemental mapping of animal tissues has been investigated, and results have been documented.

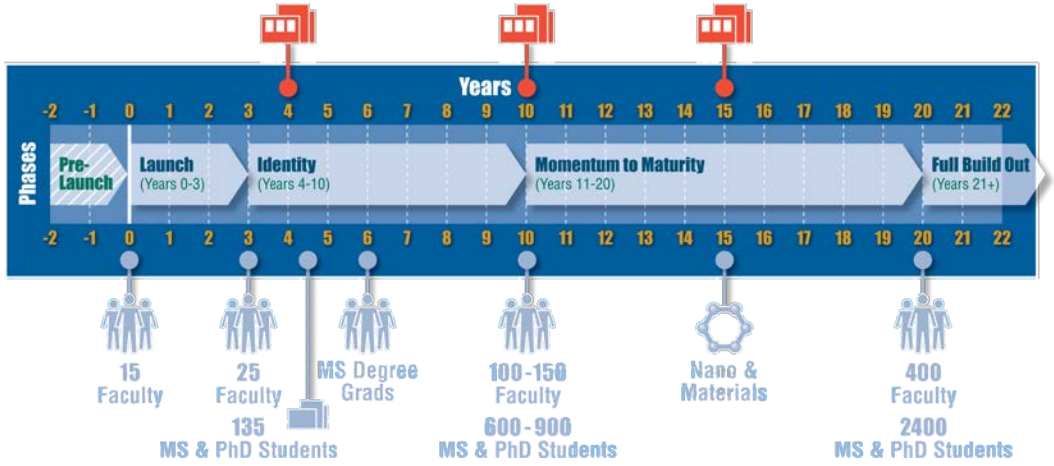
changed to:

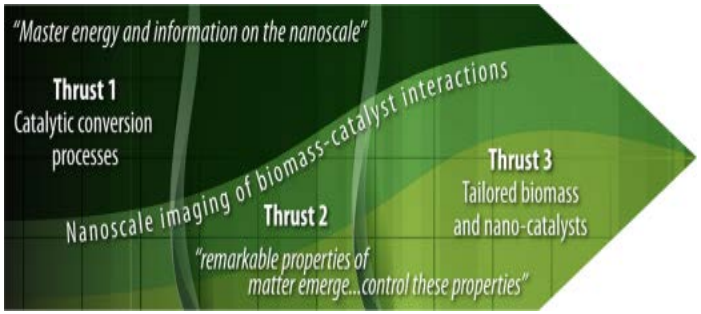
We investigated elemental mapping of animal tissues and documented results.

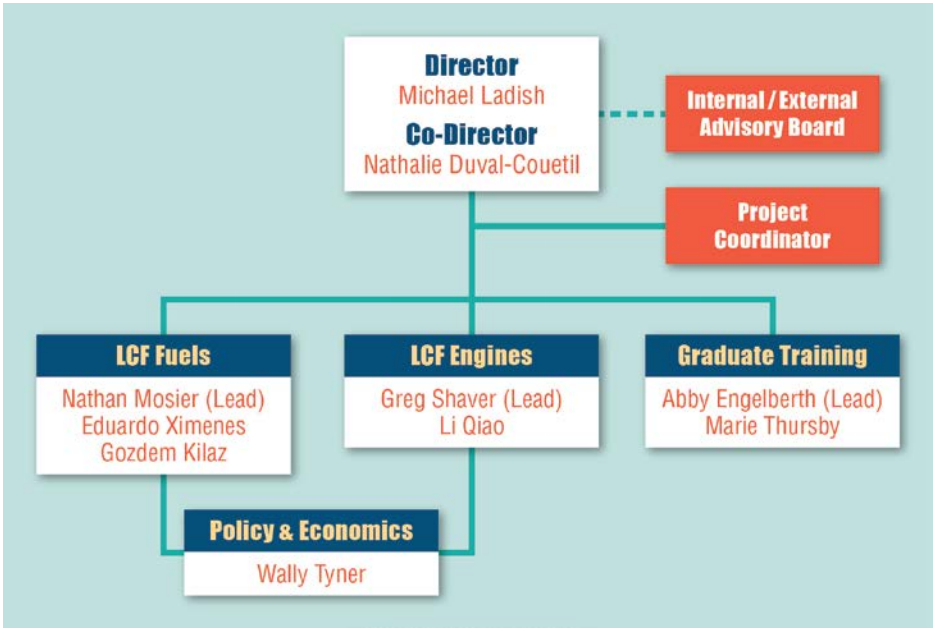
Know Your Reviewer

Use quality graphics and make them readable









Know Your Reviewer

Use visuals to summarize narrative when possible.

Program Initiatives	Year 1	Year 2	Year 3	Year 4	Year 5
Indiana administration					
Membership approved by Executive Council for working committees					
Partner retreat					
Create I-hub					
Create Passport tracking					
External Advisory Board meetings					
Annual Alliance-wide conference					
Goal 1: Alliance-wide practices					
Campus director monthly centralized training					
Augmented training sets					
Faculty/students training on I-hub					
Cross-Alliance recruiting, including veterans					
Goal 2: Effective community college partnership facilitating transfer to four-year STEM programs					
Co-mentored domestic research experience at partner campuses					
Co-mentored international research experience					
Industry guest speakers					
Cross-Alliance teaching symposia and workshops with community college faculty					
Goal 3: Aligning experiences with Tinto's principles of iteration					
Map activities and identify gaps					
Pair scholars with mentors					
Create individualized portfolios					
Map incentives to Passport Badges					
Cross-Alliance international research cohort					
Disseminate model-based best practices					
Goal 4: Research longitudinal model of Scholar development					
Compile a list of Scholar attributes					
Test and validate Scholar attributes					
Collect Scholar data					
Analyze Scholar data and portfolios					
Conduct interviews with Scholars					
Evaluation and Assessment					
Formative site visits					
Formative focus groups/interviews					
Formative web-based surveys					
Formative analysis and reporting					
Summative data plan development					
Summative quantitative data gathering					
Summative analysis and final reporting					

Key Strategies

Addressing common trouble spots

- tell a compelling story
- respond to solicitation
- answer "
- know you
- conduct internal review

- planned from beginning
- formal or informal

Internal Review

New eyes on your draft before submission

General 10-week project timeline:

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Analysis and Planning										
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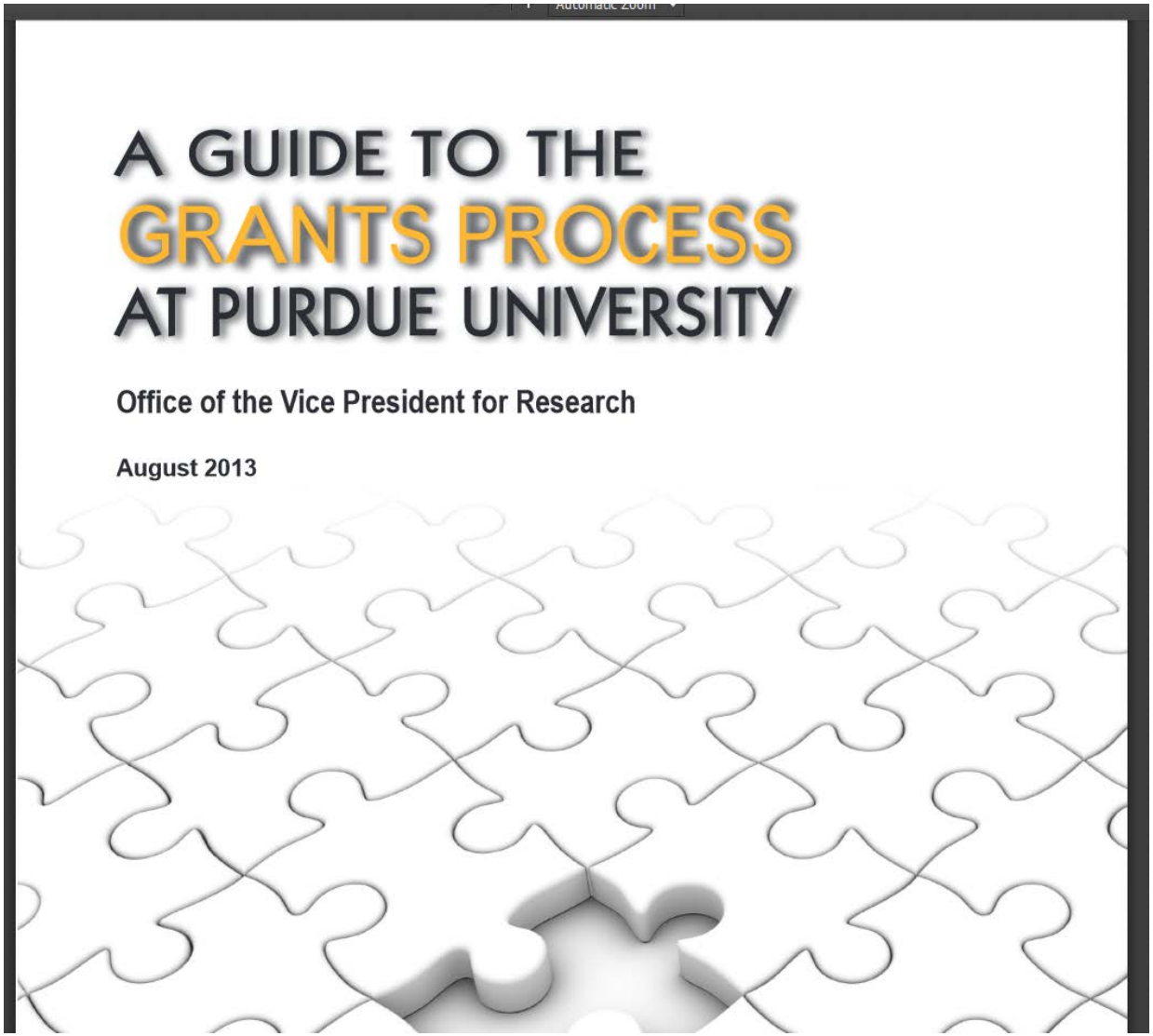
Proposed Outline										
Discuss/refine outline structure										
More detailed outline, if needed										
Identify graphics needed										
Partnerships										
Recruit collaborative partners										
Produce "talking points" brochure or website										
Recruit industry affiliates										
Recruit advisory board members										
Collect letters of commitment										
Management and Personnel										
Identify basic management structure										
Collect biosketches										
Proposal Writing and Editing										
Assign writing										
Write section components										
Compile 1st draft										
Project team 1st edit										
Any outside review input/edit										
Editing iterations										
Write summary or abstract										

Red Text: Important to have agreement (and explicit text for problem overview) prior to proposal writing

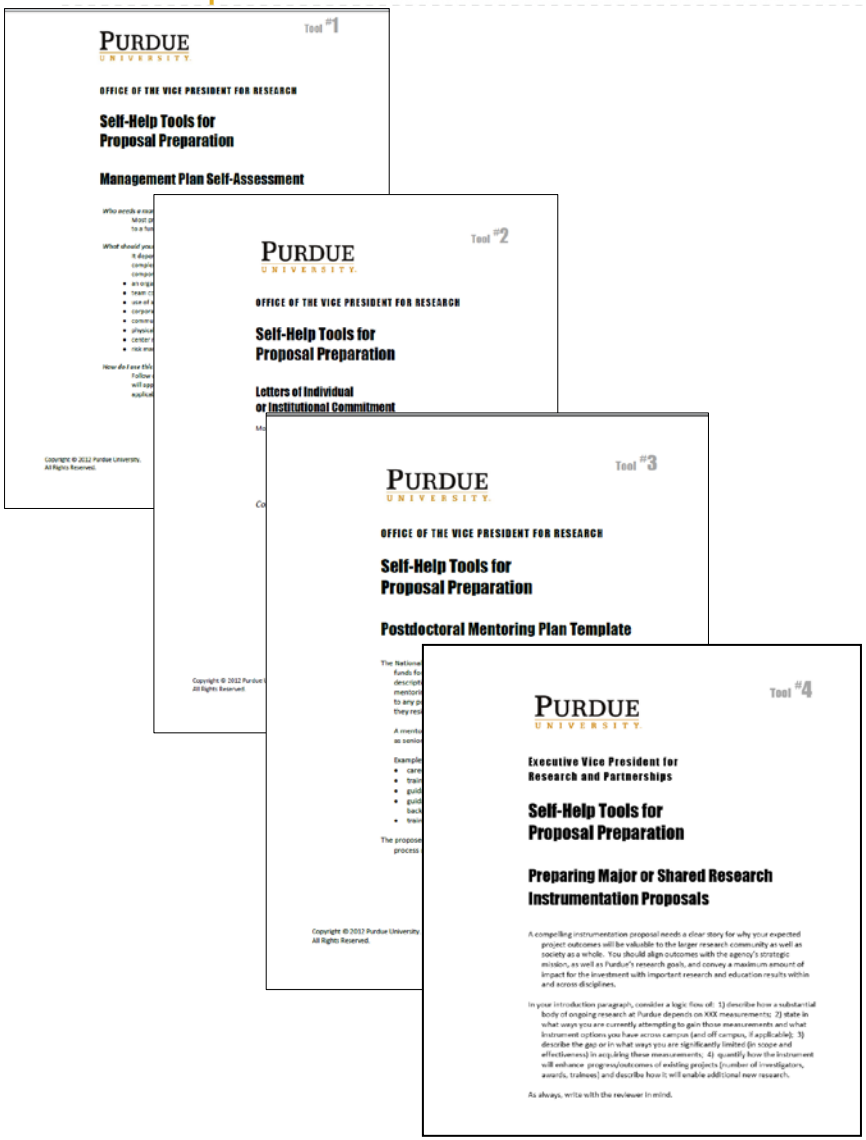
Key Online Resources

Who does what at Purdue to submit your proposal



Key Online Resources

Self-help tool series



- *Management Plan Self-Assessment*
- *Letters of Individual or Institutional Commitment*
- *Postdoctoral Mentoring Plan Template*
- *Tips for Major Research Instrumentation Proposals*

Key Online Resources

OVPR e-Pubs for searchable, citable, up-to-date institutional text

http://docs.lib.purdue.edu/ovpr/

Key Online Resources

OVPR e-Pubs for searchable, citable, up-to-date institutional text

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Purdue University
Purdue e-Pubs

University General Facility Descriptions | Office of the Vice President of Research

2-21-2014

Discovery Park General Facilities Description

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Purdue University Office of the Vice President for Research

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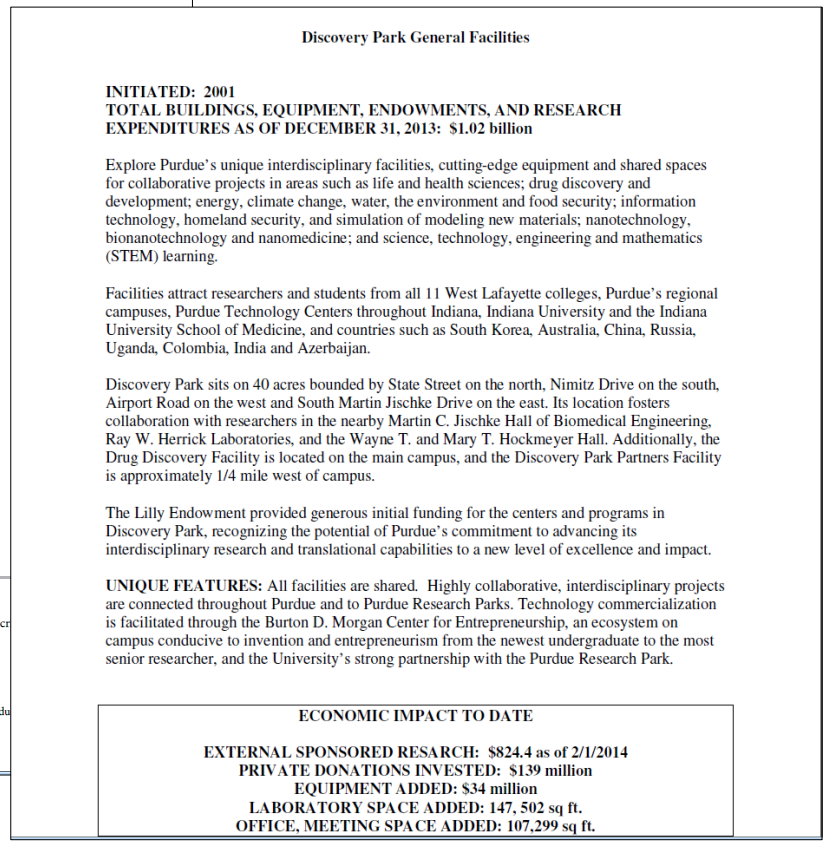

Discovery Park General Facilities

INITIATED: 2001
TOTAL BUILDINGS, EQUIPMENT, ENDOWMENTS, AND RESEARCH EXPENDITURES AS OF DECEMBER 31, 2013: $1.02 billion

Explore Purdue's unique interdisciplinary facilities, cutting-edge equipment and shared spaces for collaborative projects in areas such as life and health sciences; drug discovery and development; energy, climate change, water, the environment and food security; information technology, homeland security, and simulation of modeling new materials; nanotechnology, bionanotechnology and nanomedicine; and science, technology, engineering and mathematics (STEM) learning.

Facilities attract researchers and students from all 11 West Lafayette colleges, Purdue's regional campuses, Purdue Technology Centers throughout Indiana, Indiana University and the Indiana University School of Medicine, and countries such as South Korea, Australia, China, Russia, Uganda, Colombia, India and Azerbaijan.

Discovery Park sits on 40 acres bounded by State Street on the north, Nimitz Drive on the south, Airport Road on the west and South Martin Jischke Drive on the east. Its location fosters collaboration with researchers in the nearby Martin C. Jischke Hall of Biomedical Engineering, Ray W. Herrick Laboratories, and the Wayne T. and Mary T. Hockmeyer Hall. Additionally, the Drug Discovery Facility is located on the main campus, and the Discovery Park Partners Facility is approximately 1/4 mile west of campus.

The Lilly Endowment provided generous initial funding for the centers and programs in Discovery Park, recognizing the potential of Purdue's commitment to advancing its interdisciplinary research and translational capabilities to a new level of excellence and impact.

UNIQUE FEATURES: All facilities are shared. Highly collaborative, interdisciplinary projects are connected throughout Purdue and to Purdue Research Parks. Technology commercialization is facilitated through the Burton D. Morgan Center for Entrepreneurship, an ecosystem on campus conducive to invention and entrepreneurism from the newest undergraduate to the most senior researcher, and the University's strong partnership with the Purdue Research Park.

ECONOMIC IMPACT TO DATE

EXTERNAL SPONSORED RESEARCH: $824.4 as of 2/1/2014
PRIVATE DONATIONS INVESTED: $139 million
EQUIPMENT ADDED: $34 million
LABORATORY SPACE ADDED: 147, 502 sq ft.
OFFICE, MEETING SPACE ADDED: 107,299 sq ft.

Key Online Resources

Tools for understanding broader impacts

Funding Agency Requirements for Broader Impacts

While a variety of funding agencies require researchers to address **how proposed research will benefit the nation**, the National Science Foundation (NSF) has made broader impacts a significant emphasis. The *NSF Grant Proposal Guide* now requires the project summary, narrative, and the Prior NSF Support section to contain a discussion of the broader impacts accomplished:

- through the research itself,
- through the activities that are directly related to specific research projects
- through complementary activities that are supported by the

The "societally relevant outcomes" valued by NSF include but are not

- full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM);
- improved STEM education and educator development at any level;
- increased public scientific literacy and public engagement with science and technology;
- improved well-being of individuals in society;

Two recommended reads from the Office of the Vice President for R

(1) *NSF Merit Review FAQs* from January 2013 http://www.ns

(2) Centers for Ocean Sciences Education Excellence (COSEE) http://www.cosee.net/files/coseenet/BI%202_0%20FAQs

For tips on building broader impact activities into your pro

Steps to Leveraging Campus Resources for Broader Impacts

Networking — Step 1

Network Prior to Identifying Any Proposed Project

Become familiar with Purdue infrastructure and existing programs that may complement your research.

- Attend campus symposia, workshops, educational showcases, and poster sessions on campus.
- Consider the OVPR virtual Rolodex of potential broader impact, education, and outreach partners. http://catalog.e-digitaleditions.com/i/256966

Understanding Funding Opportunity — Step 2

Know if You Need Large-Scale Educational Research or Broader Impact Activities

Identify funding opportunity

Is this a larger, perhaps center-level proposal requiring educational components that:

- build on a theoretical framework,
- include rigorous assessment,
- create new pedagogical knowledge?

YES → Identify educational researchers who can be full partners in developing a customized and integrated research plan

NO → Move to Step 3, "Identifying Broader Impacts"

Identifying Broader Impacts — Step 3 — Step 4

Be Targeted, Intentional, and Creative

Identify any broader impacts **intrinsic to** the research itself, e.g. new tools for your research community, practitioners, or policy makers.

Identify potential high-quality, innovative education and outreach activities that fit your interests and can bring benefits of your research to a wider audience.

Go beyond the normal requirements of your faculty job and do more than develop new courses.

Think about your goal. For example, do you want to develop the STEM pipeline in your area? Increase diversity of participation? Help provide workforce training?

Partnering — Step 5

Build Your Education and Outreach Team

Begin conversations with campus program representatives. Talk about your project goal, budget for activities, and timeframe.

Work together to tailor initiatives to your project and determine appropriate metrics for success.

Writing — Step 6

Expert Contributions to Text

Your broader impact partner can be a great source for compelling information on:

- rationale for activities,
- track record of success for initiatives,
- description of relevant expertise, and
- program implementation details.

Key Online Resources

Virtual Rolodex for broader impact partners at Purdue

http://catalog.e-digitaleditions.com/i/256966

Questions?

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