IOWA innovation

IOWA INNOVATION CORPORATION

Government Money to Develop Innovative Technology

The SBIR/STTR Program

5/3/17

The SBIR/STTR program distributes ~$2.6B per year and up to $1.7M per proposal concept over 2 phases

SBIR/STTR Basics: Three Phase Program

Program funds the development of novel and innovative technologies by small businesses (<500 employees)

Phase I

- Proof-of-concept/feasibility study
- Up to $100K-$225K for 6-12 month project

Phase II

- Full R&D effort (prototype, field test, scaling)
- Up to $600K-$1.5M for 2 year project

Phase III

- Commercialization phase
- Requires the use of non-SBIR/STTR funds

11 Federal agencies grant or contract **~$2.6 Billion per year**

- DOD - $1.4B
- NIH - $720M
- NSF - $160M
- DOE - $160M
- NASA - $120M
- Others - $70M
  - USDA
  - Ed
  - Commerce
  - EPA
  - DHS
  - DOT

The government has 2 programs that will give your company money to develop and commercialize your innovative idea

	Description	Key Requirements
Small Business Innovation Research Program	▪ Program encourages small businesses to engage in commercializable R&D ▪ 11 agencies ▪ 3.2% of federal research budget	▪ 2/3 of work (usually represented by cost) must be done within the company ▪ **PI must be principally employed by the company**
Small Business Technoogy Transfer Program	▪ Expands federal innovation R&D by encouraging JV opportunities for small businesses and nonprofit research institutions ▪ Only 5 largest agencies ▪ 0.45% of federal research budget	▪ 40% of work must be done inside of the company ▪ 30% of the work must be done by a non-profit research institution (like U of I) ▪ **PI Can be outside of the company** (except at NSF) ▪ Usually allows for longer execution period

Contracting agencies are “Their Ideas”, Granting agencies are “Your Ideas”

Contracting Agencies

- *“Their Ideas”*
  - *Procurement mechanism*
- Topics are highly focused
- Usually internally review
- May end up being your customer
  - Can sole source from you with a non-competitive bid

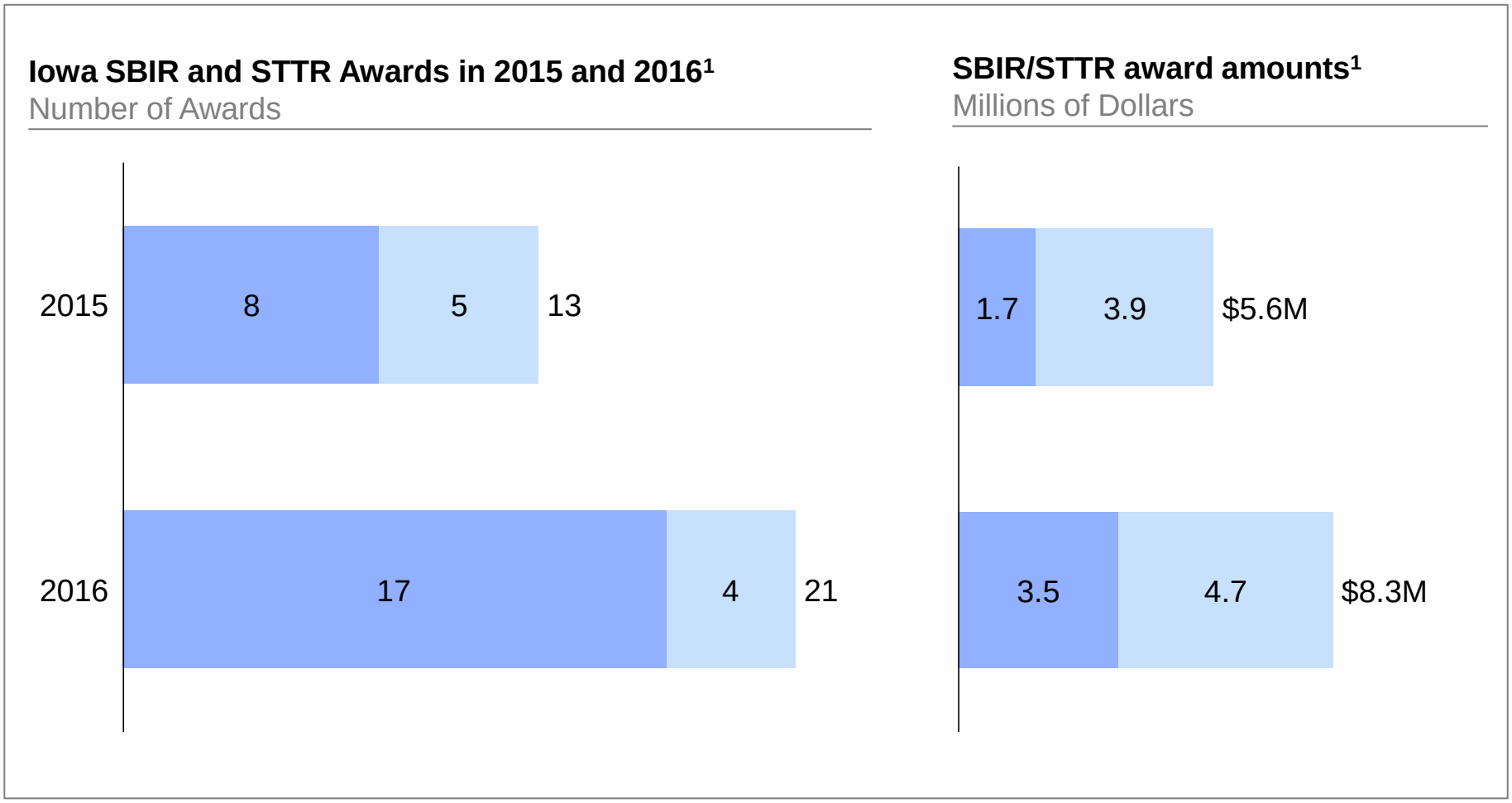
DoD, NASA, EPA, DOC, DOT, ED, DHS, DOE

Granting Agencies

- *“Your Ideas”*
  - *Assistance mechanism*
- “Investigator initiated” (topics are generally broader)
- More flexibility
- Usually external or ad hoc review

HHS/NIH, ED, NSF, USDA, DOE

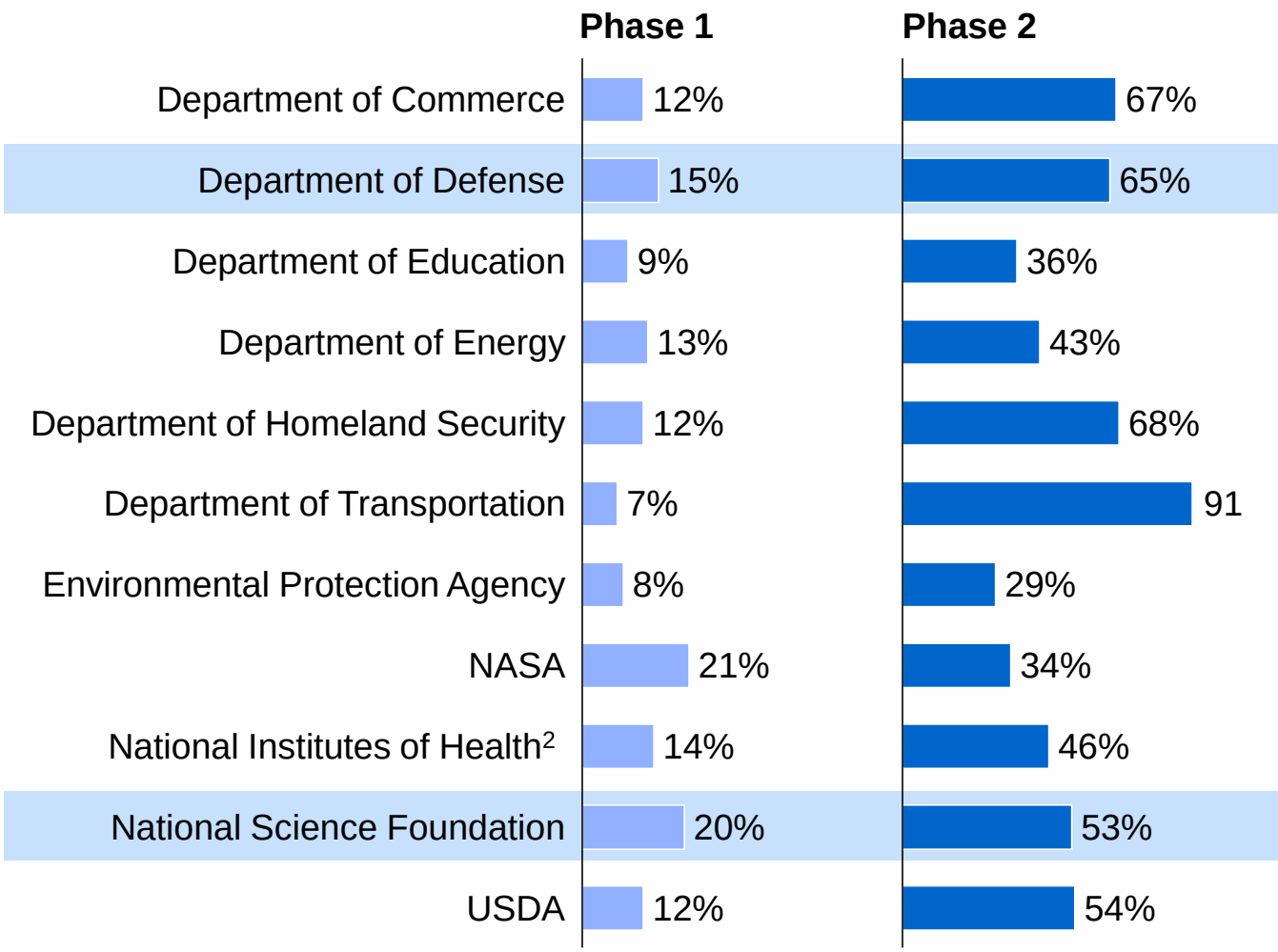
Overall, Iowa received 21 awards totaling ~$8.3M in 2016



1: Overall statewide numbers including proposals submitted outside of SBIR/STTR Outreach program

Odds of success for a phase 1 is ~15% and for a Phase 2 is ~50%[1]

Percentage of proposals awarded SBIR



- Depends on budget, number of proposals submitted, target number of Phase I vs. Phase II
- **You must receive a Phase I award before applying for Phase II**

1 SBIR.gov - 2013 data

Deeper dive into the National Science Foundation

Phase 1 Funding	Phase 2 funding
$225,000	$750,000

NSF SBIR/STTR Topic Areas:

- Educational Technologies and Applications (EA)
- Information Technologies (IT)
- Internet of Things (I)
- Semiconductors (S) and Photonic (PH) Devices and Materials
- Electronic Hardware, Robotics and Wireless Technologies (EW)
- Advanced Manufacturing and Nanotechnology (MN)
- Advanced Materials and Instrumentation (MI)
- Chemical and Environmental Technologies (CT)
- Biological Technologies (BT)
- **Smart Health (SH) and Biomedical (BM) Technologies**

Recent Iowa awardees

VariFAS Various Fatty acids and Derivatives

- Novel enzymes for producing homogeneous preparations of individual, monounsaturated industrial fatty acids

TECHNOLOGIES INNOVAS

- Developing sensor integration into cleaning balls used in heat exchangers

vsiaerospace

- A Collaborative Aerospace Vehicle Design Game in Support of Engineering Curricula for Grades 9-12

Deeper dive into the Department of Defense

Phase 1 Funding	Phase 2 funding
$150,000	$1,000,000

3 solicitations a year – 700 to 800 different topics

DOD Divisions

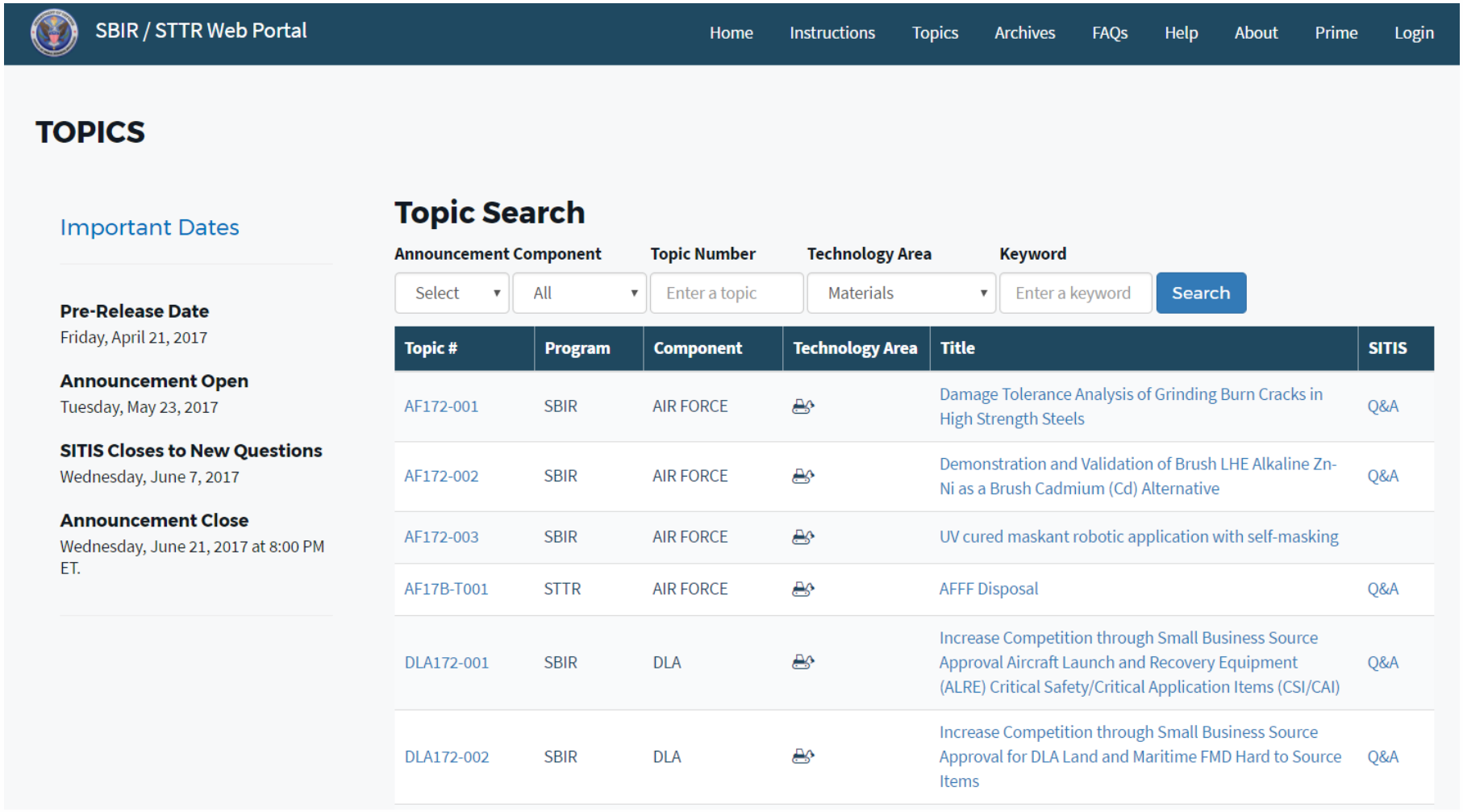
- Army
- Navy
- Air Force
- DARPA
- Defense Health Agency
- Defense Logistics Agency
- Missile Defense Agency
- US Special Operations Command
- Chemical and biological defense program
- National Geo-spatial Intelligence Agency

Most of the funding

Recent Iowa awardees

- Shock Tolerant, Solid State, Submersible Emergency Transmitter
- Reliability-Based Design Optimization Software Package for Broader Simulation-Based Design Applications
- Maximizing graph programming parallelism via cellular automata

Deeper dive into the Department of Defense: Example



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TOPICS

Important Dates

Pre-Release Date
Friday, April 21, 2017

Announcement Open
Tuesday, May 23, 2017

SITIS Closes to New Questions
Wednesday, June 7, 2017

Announcement Close
Wednesday, June 21, 2017 at 8:00 PM ET.

Topic Search

Announcement Component: Select | Topic Number: All | Enter a topic | Technology Area: Materials | Keyword: Enter a keyword | Search

Topic #	Program	Component	Technology Area	Title	SITIS
AF172-001	SBIR	AIR FORCE		Damage Tolerance Analysis of Grinding Burn Cracks in High Strength Steels	Q&A
AF172-002	SBIR	AIR FORCE		Demonstration and Validation of Brush LHE Alkaline Zn-Ni as a Brush Cadmium (Cd) Alternative	Q&A
AF172-003	SBIR	AIR FORCE		UV cured maskant robotic application with self-masking	
AF17B-T001	STTR	AIR FORCE		AFFF Disposal	Q&A
DLA172-001	SBIR	DLA		Increase Competition through Small Business Source Approval Aircraft Launch and Recovery Equipment (ALRE) Critical Safety/Critical Application Items (CSI/CAI)	Q&A
DLA172-002	SBIR	DLA		Increase Competition through Small Business Source Approval for DLA Land and Maritime FMD Hard to Source Items	Q&A

Deeper dive into the Department of Defense: Example

Component: AIR FORCE
Topic #: AF172-001
Title: Damage Tolerance Analysis of Grinding Burn Cracks in High Strength Steels
Technology Areas: Materials / Processes

OBJECTIVE: Develop special methods, data, or applications for the modeling and crack growth analysis of thermally induced cracks located in grinding burns of high strength steel landing gear parts.

DESCRIPTION: Landing gear are specialized structures designed to sustain the high stresses and loads of landing aircraft. They are often made of high strength steels (300M, 4340, steels with Ftu>180ksi) which are sensitive to elevated temperatures due to material microstructure and low tempering temperatures. On occasion, during manufacture, rework, or chrome grinding, landing gear are overheated resulting in an under/over tempered martensitic condition (burn). Generally, these conditions are associated with the formation of microstructurally and physically small cracks in the 0.001 - 0.010 in. range. It is desirable to better understand the fracture mechanics of small cracks in burned high strength steel parts and methods/models that can be used to manage such cracks in landing gear, and more generally, aerospace specific high strength steel parts.

PHASE I: Investigate the types of machining conditions that encourage the formation of microstructurally and physical small cracks in under/over tempered steels. Define a test plan that will result in valuable data that can be used within the assumptions and limitations of LEFM methodologies to predict crack growth in burned high strength steel materials.

PHASE II: Initiate and complete the test plan developed in Phase I. Phase II testing results will be documented in a technical report and submitted to the government. All lessons learned and additional testing needed for a Phase III effort will be included in this report. The test plan shall include at a minimum test data development, stress intensity validation for specific specimen types selected, and fracture surface analysis to determine stress intensity solutions for failed parts/specimens.

PHASE III DUAL-USE APPLICATIONS: Finalize the results of all testing in a technical report, and create methodology and models that allow for the management of burn induced cracks. Develop specialized tools and techniques that will enable the quick evaluation of grinding burn cracks in support of landing gear sustainment.

Each agency has it's own specific deadlines

Agencies determine their own solicitation schedules:

- Some agencies have multiple deadlines per year
- Some agencies have only one deadline per year
- Deadlines vary as to the date and **time**

Currently open solicitations:

Agency	Close date
National Science Foundation (NSF)	06/14/17
Department of Defense(DOD)	06/17/17
National Institutes of Health (NIH) - Grants	09/05/17

Expected solicitation release dates:

Agency	Release date	Close date
USDA	08/01/17	10/08/17
Department of Energy (release 1)	07/18/17	10/16/17
Department of Defense(DOD)	08/25/17	10/25/17
National Science Foundation (NSF)		12/14/17
NASA	11/20/17	02/01/18
Department of Education (DoEd)	12/01/17	01/15/18
Department of Homeland Security (DHS)	12/03/17	02/03/18

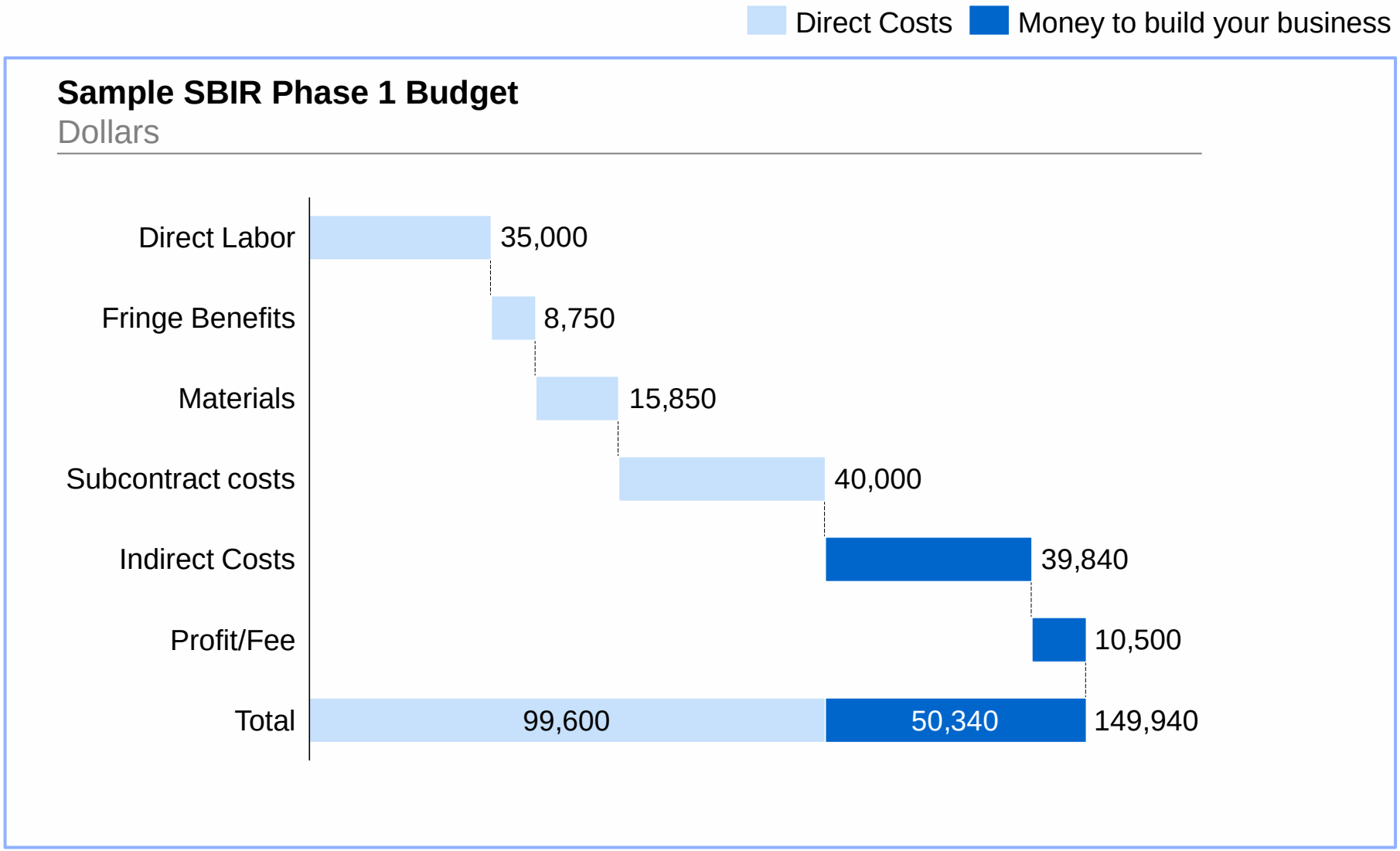
What you need to improve your odds

- Need an innovative idea
- Need credibility as a researcher and a company (especially with NSF)
- Understand the agency's mission and needs
- Respond to the appropriate solicitation or topic (unsolicited proposals are ***not*** accepted)
- Follow the rules

Duplicate proposals and resubmissions are ALLOWED

- Can submit essentially duplicate proposals to different agencies
- However, ***cannot accept funding for duplicate work***
- Can submit multiple proposals related to a “platform” technology, provided the projects are substantially different
- **Resubmissions are permitted at granting agencies (Not at contracting ones)**

In an SBIR budget, up to 1/3 or more may be used on your business



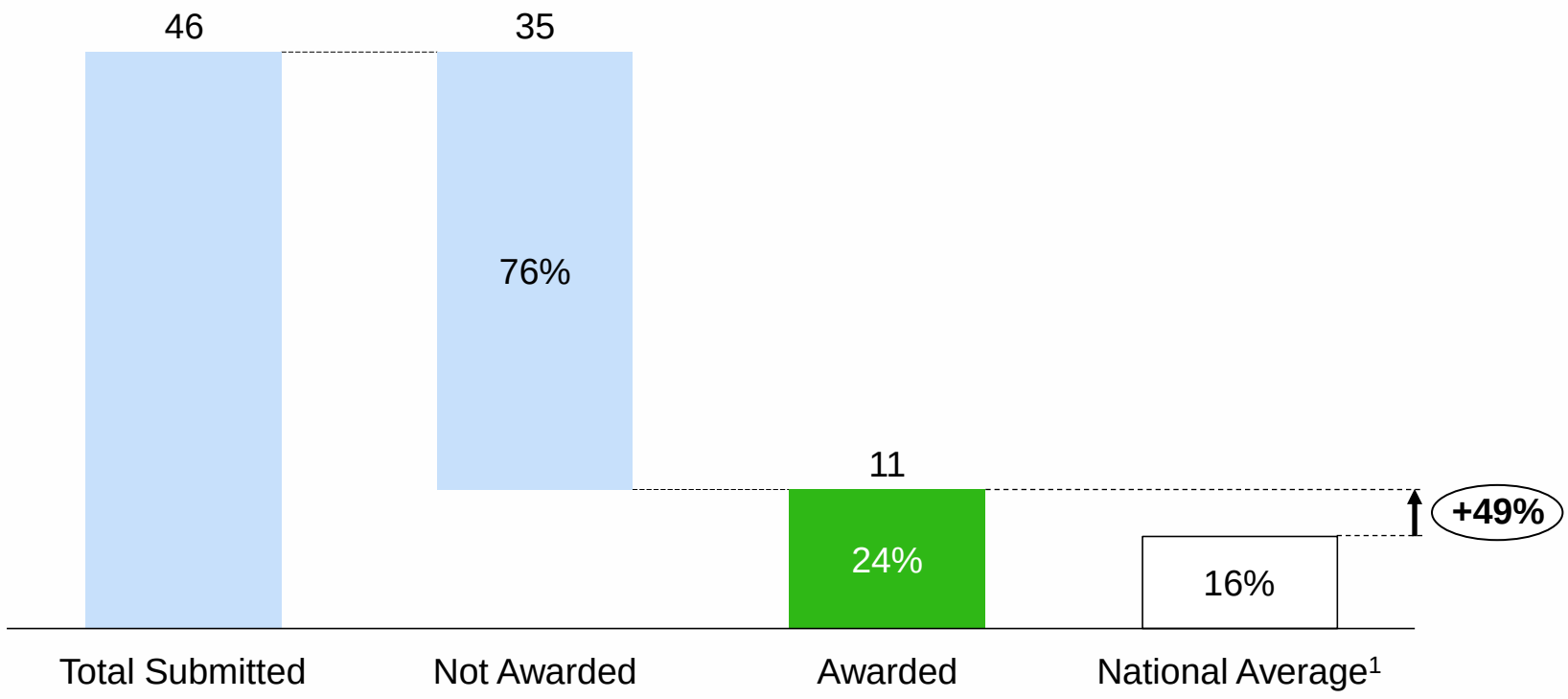
IICorp has programs to help you be successful

	Support Programs	Details
Pre-Award Support	Proposal Idea Review	▪ No-cost 1-hour review with an expert SBIR consultant for feedback on early SBIR ideas
	Third-party Proposal Technical Assistance	▪ Provides **100% paid for** third-party services directly related to preparing SBIR/STTR Phase I and II proposals
Post-Award Support	Commitment to Match Financial Assistance	▪ Commitment to Match Financial Assistance – $25,000 upon notification of award ▪ *Additional Support Contingent on legislative changes in Summer 2017* – $25,000 Grant disbursed after Phase 2 proposal submitted
	Phase I to Phase II Consultant Support	▪ 100% paid for expert SBIR/STTR consultant to help companies from pre-award to Phase 2 proposal submission ▪ For Phase 1 award winners that have never received a Phase 2 award (included as part of commitment to match)

24% of Phase I proposals were awarded compared to 16% nationally

FY2016 SBIR/STTR Outreach Program Phase I Proposal Performance

Number of Proposals

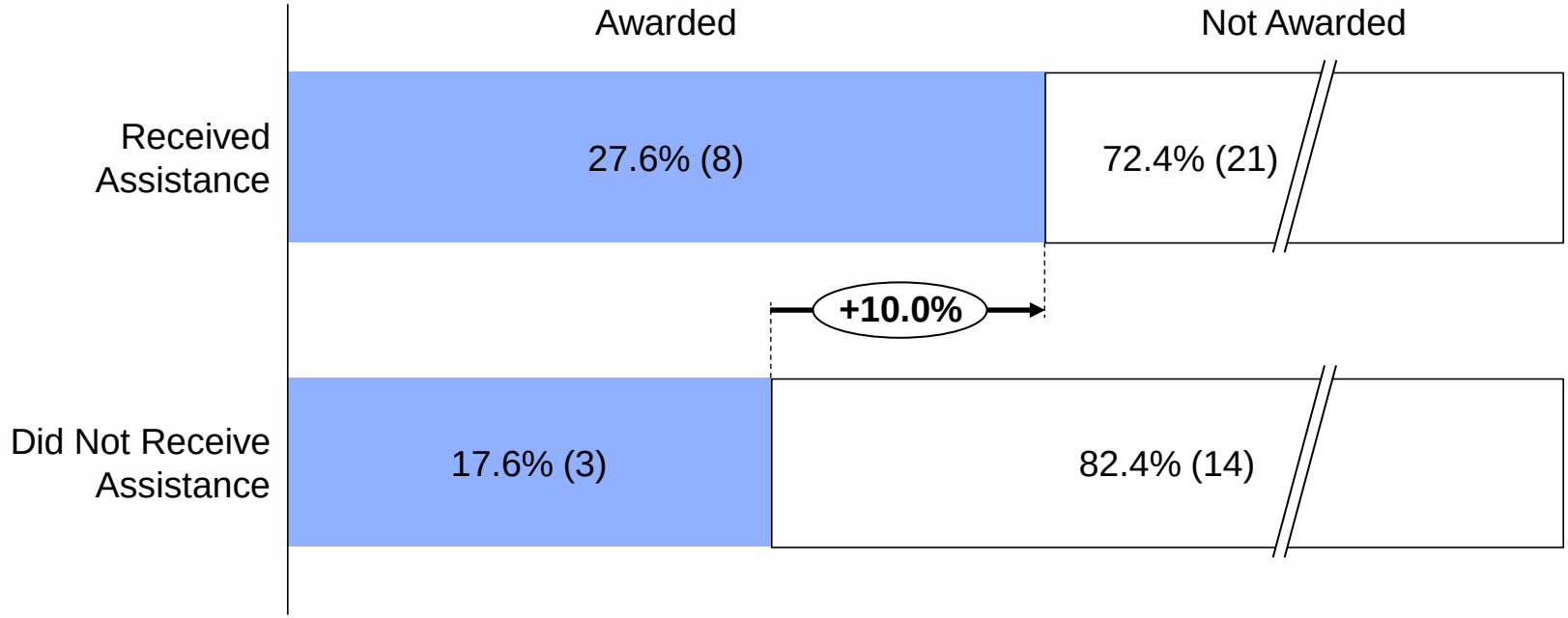


1: SSTI agency surveys five-year average, 2009-2013

Proposals that took advantage of technical assistance had a higher success rate

Affect of FY2016 SBIR Outreach Program Technical Assistance on Proposal Success

Percentage of Proposals



11 FY2016 outreach program companies won awards totaling $2.75M

Company	Agency	Amount	Technology description
VARIFAS BIORENEWABLES Transform agricultural sugars to designer fatty acids	NSF	$674K (Ph II)	▪ Developing scalable processes to synthesize novel bio-renewable fatty acids for lubricants
VIDA	NIH	$300K	▪ Developing quantitative assessment of identified pulmonary lesions that characterizes lung diseases
VOXELLO	NIH	$155K	▪ Developing a device to allow patients, who can't communicate easily, to access nurse call system
SAFI-TECH	NSF	$225K	▪ Developing a liquid metal solder that can be applied at or slightly above room temperature
AAT	USDA	$100K	▪ Developing process to use maize pollen enabling hybridization in self-pollinating plant varieties
GROSS-WEN TECHNOLOGIES LLC.	USDA	$100K	▪ Developing a bio-fertilizer made from algae grown on processing wastewater
Shockwave, LLC	DOE	$150k	▪ Developing fractionation technology to process biofuel feedstocks
INNOVAS TECHNOLOGIES	NSF	$225k	▪ Developing sensor integration into cleaning balls used in heat exchangers
INFONDRIAN	NIH	$225k	▪ Developing automated patient chart checking software to improve treatment error detection
PxAlpha	NIH	$225k	▪ Developing rotating shield brachytherapy platform to control radiation dosage in cancer patients
iotamotion Hearing, advanced.™	NSF	$225k	▪ Developing medical device to adjust cochlear ear implants in situ

How to contact IICorp to get started

For more information or to get started contact:

Jordan Hobfoll

Statewide SBIR/STTR Coordinator

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(515) 421-4038

Appendix

Deeper dive into the USDA

USDA SBIR/STTR Topic Areas:

- Forests and Related Resources
- Plant Production and Protection - Biology
- Animal Production and Protection
- Air, Water and Soils
- Food Science and Nutrition
- **Rural Development**
- Aquaculture
- Biofuels and Biobased Products
- **Small and Mid-Size Farms**
- Plant Production and Protection -- Engineering

Recent Iowa awardees

- Energy Efficiency for Rural Communities
- Code optimization for two-dimensional distributed soil loss modeling
- Algal Wastewater Treatment technology

Deeper dive into the Department of Energy

DOE SBIR/STTR Research Divisions:

- Office of Advanced Scientific Computing Research
- Office of Biological and Environmental Research
- Office of Basic Energy Sciences
- Office of Nuclear Physics
- Office of Defense Nuclear Nonproliferation
- **Office of Fossil Energy**
- **Office of Electricity Delivery and Energy Reliability**
- Office of Fusion Energy Sciences
- **Office of Energy Efficiency and Renewable Energy**
- Office of High Energy Physics
- Office of Nuclear Energy

Recent Iowa awardees

ARTi

- Multiple-stage activated-char filtration

AMJET Turbine Systems, LLC
AFFORDABLE, RENEWABLE POWER

- Power-Dense Lightweight Hydro Turbine/Generators for 20,000+ Low-Head US Dams and Reclamation Conduits that Install In-Line,are Low Cost and Mass Producible