# *The SBIR & STTR Programs at the Department of Energy*


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Part 1

# OVERVIEW OF THE FEDERAL SBIR/STTR PROGRAMS

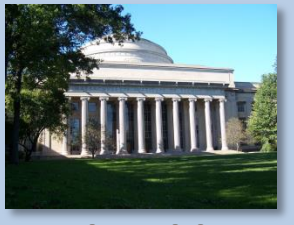
# FEDERAL Extramural R&D

federal government

Extramural R&D
~$75B/year

businesses

federally funded laboratories



universities

**SBIR/STTR**
**~$2.3B/year**

**small businesses**

# Program Goals

**Small Business Innovation Research (SBIR)** *est. 1982*

- Stimulate technological innovation
- Use small business to meet Federal R&D needs
- Foster and encourage participation by women and socially and economically disadvantaged persons in technological innovation
- Increase private-sector commercialization of innovations derived from Federal R&D

**Small Business Technology Transfer (STTR)** *est. 1992*

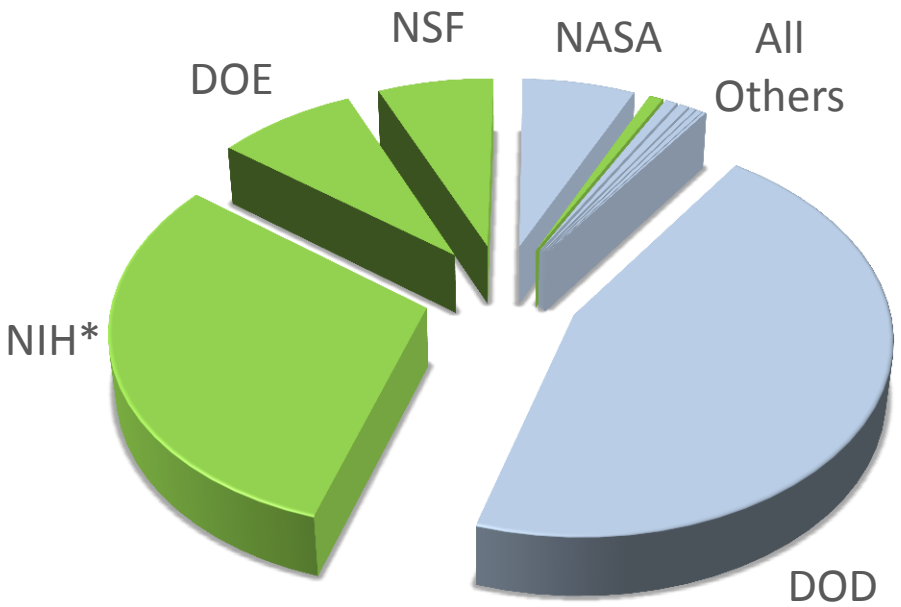
- Stimulate and foster scientific and technological innovation through cooperative research and development carried out between small business concerns and research institutions
- Foster technology transfer between small business concerns and research institutions

*SBIR and STTR were reauthorized on December 31, 2011 (P.L. 112-81) through September 30, 2017*

# Major Differences between SBIR & STTR

- STTR: Requires Collaboration with a Research Institution
  - College, University, Federal R&D Laboratory, other non-profit research organization
- Principal Investigator primary employment
  - SBIR: employed by the small business
  - STTR: employed by the small business OR research institution
- Percentage of R/R&D conducted by the small business
  - SBIR
    - Phase I: minimum 2/3 by small business
    - Phase II: minimum 1/2 by small business
  - STTR:
    - Phase I & II: minimum 40% by small business; minimum 30% by research institution
  - Subcontracting is permitted provided the level of effort requirements above are met

# SBIR/STTR Budgets by Agency, FY 2013




**~$2.3B in FY13 across all agencies**

Grants

Contracts

| Agencies with SBIR & STTR Programs | Budget |
|---|---|
| Department of Defense (DOD) | $ 1.0 B |
| Department of Health and Human Services (HHS): National Institutes of Health (NIH)* | $697.0 M |
| Department of Energy (DOE), including Advanced Research Projects Agency (ARPA-E) | $183.9M |
| National Science Foundation (NSF) | $153.0 M |
| National Aeronautics and Space Administration (NASA) | $ 148.8 M |

| Agencies with SBIR Programs | Budget |
|---|---|
| U.S. Department of Agriculture (USDA) | $18.4M |
| Department of Homeland Security (DHS): Science and Technology Directorate (S&T) and Domestic Nuclear Detection Office (DNDO) | $15.7 M |
| Department of Education (ED) | $13.4 M |
| Department of Transportation (DOT) | $7.6 M |
| Department of Commerce (DOC): National Oceanic and Atmospheric Administration (NOAA) and National Institute of Standards and Technology (NIST)* | $7.4 M |
| Environmental Protection Agency (EPA) | $3.8 M |

**NIH also issues contracts; Within DOC, NIST issues grants and NOAA issues contracts*

# Small Business Eligibility for SBIR & STTR

- For-profit U.S. business
- 500 employees or fewer, including affiliates
- Ownership *(applies to all agencies)*
  - Be a concern which is more than 50% directly owned and controlled by one or more individuals (who are citizens or permanent resident aliens of the United States), other small business concerns (each of which is more than 50% directly owned and controlled by individuals who are citizens or permanent resident aliens of the United States), or any combination of these
  - Joint ventures where the entities meet the requirements above
- Portfolio Companies *(currently only NIH & ARPA-E)*
  - Be a concern which is more than 50% owned by multiple venture capital operating companies, hedge funds, private equity firms, or any combination of these. No single venture capital operating company, hedge fund, or private equity firm may own more than 50% of the concern.
- Performance of R&D
  - All R&D must be performed in the United States

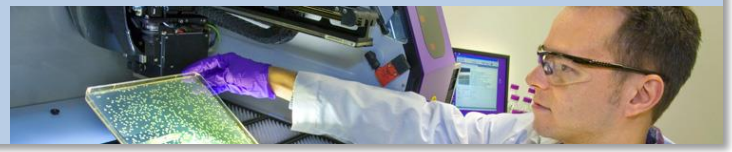
# 3 Phases

**PHASE I: FEASIBILITY, PROOF OF CONCEPT**

- Award Amount: $150,000 (guideline), $225,000 (max.)
- Project Duration: 6-12 months

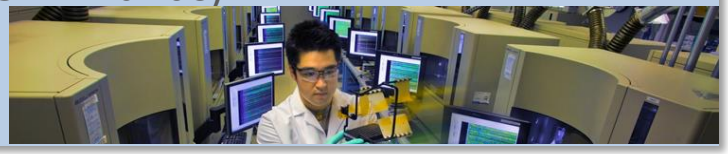
**PHASE II: CONTINUE R/R&D FOR PROTOTYPES OR PROCESSES**

- Award Amount: $1,000,000 (guideline), $1,500,000 (max.)
- Project Duration: 2 years



**PHASE III: COMMERCIALIZATION**

- Federal or Private Funding (non-SBIR/STTR funds)
- No dollar or time limits



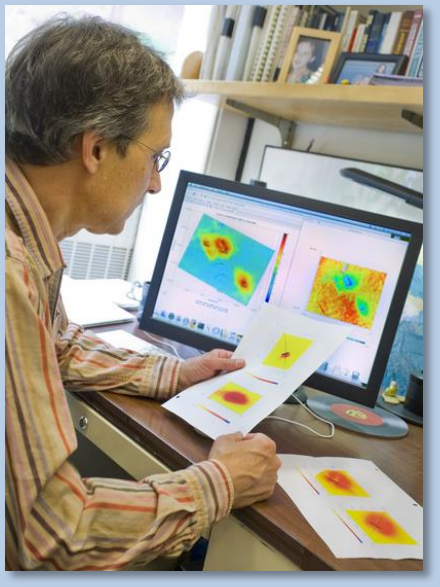
# Intellectual Property

- Patent rights
  - Small business concerns normally retain the principal worldwide patent rights to any invention developed with Government support
- Government Use
  - The Federal Government receives a royalty-free license for Federal Government use

http://www.uspto.gov/

# Data Protection

- Protection Period
  - Data generated from your R/R&D is protected from public disclosure for a minimum of 4 years (civilian agencies) or 5 years (DOD) after the conclusion of your award (Phase I, Phase II, or federally funded Phase III)
- Government Use
  - The Government retains a royalty-free license for Government use of any technical data delivered under an SBIR award, whether patented or not



Part 2

# THE DOE MISSION & SBIR/STTR TOPIC AREAS

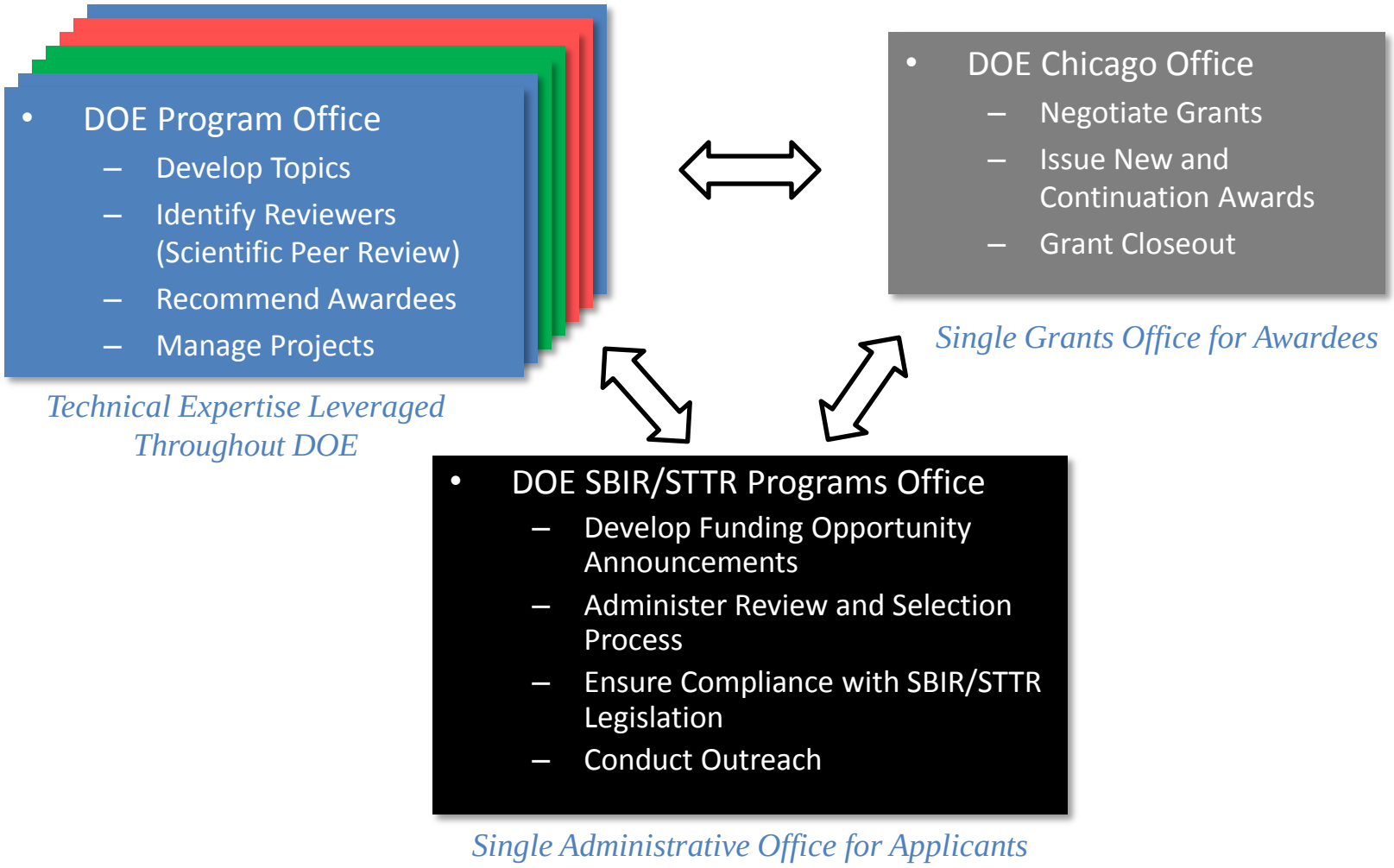
# U. S. Department of Energy Mission

- **The mission of the Department of Energy** is to ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions.
  - **Goal 1:** Catalyze the timely, material, and efficient transformation of the nation's energy system and secure U.S. leadership in **clean energy** technologies.
  - **Goal 2:** Maintain a vibrant U.S. effort in **science and engineering** as a cornerstone of our economic prosperity, with clear leadership in strategic areas.
  - **Goal 3:** Enhance **nuclear security** through defense, nonproliferation, and environmental efforts.

**Program Offices Participating in the DOE SBIR/STTR Programs**

- Electricity Delivery & Energy Reliability
- Energy Efficiency & Renewable Energy
- Fossil Energy
- Nuclear Energy
- Advanced Scientific Computing Research
- Basic Energy Sciences
- Biological & Environmental Research
- Fusion Energy Sciences
- High Energy Physics
- Nuclear Physics
- Defense Nuclear Nonproliferation
- Environmental Management

# Operation of the DOE SBIR and STTR Programs



# DOE Program Offices supporting
# Goal 1: Clean Energy Technologies

- Office of Electricity Delivery and Energy Reliability
- Office of Energy Efficiency and Renewable Energy
- Office of Fossil Energy
- Office of Nuclear Energy


R&D Topic Areas
- Smart Grid Technologies
- Bio-energy & Biofuels
- Energy Efficient Buildings
- Geothermal Energy
- Hydrogen & Fuel Cells
- Solar Power
- Energy Efficiency Vehicles
- Water Power
- Wind Energy
- Clean Coal Technologies
- $CO_2$ capture and sequestration
- Oil and Gas Technologies
- Advanced Materials and Controls for Nuclear Energy
- Nuclear Waste

# DOE Program Offices Supporting
# Goal 2: Science and Engineering Leadership

- Advanced Scientific Computing Research
- Basic Energy Sciences
- Biological and Environmental Research
- Fusion Energy Sciences
- High Energy Physics
- Nuclear Physics

R&D Topic Areas

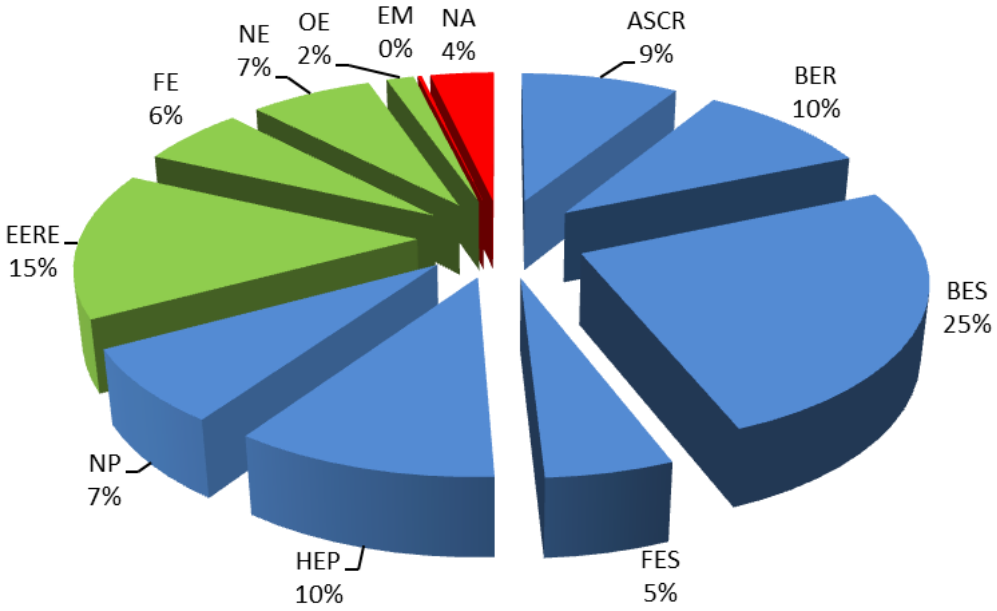
- High Performance Computing & Networking
- Cybersecurity
- Advanced materials
- Instrumentation for neutron, x-ray, and electron based characterization tools
- Modeling and Simulation
- Atmospheric and Subsurface Measurement Technology
- Genomic Science and Related Biotechnologies
- Fusion Energy Systems
- Accelerator technology
- RF Components and Systems
- Data Acquisition, Processing and Analysis

# DOE Program Offices Supporting
# Goal 3: Nuclear Security

- Office of Defense Nuclear Nonproliferation
- Office of Environmental Management

R&D Topic Areas
- Novel Radiation Monitoring Concepts
- In Situ Remediation
- Facility Deactivation and Decommissioning
- Remote Sensing
- Global Nuclear Safeguards R&D
- Nuclear Detonation Detection

# FY 2015 SBIR/STTR Funding by DOE Program

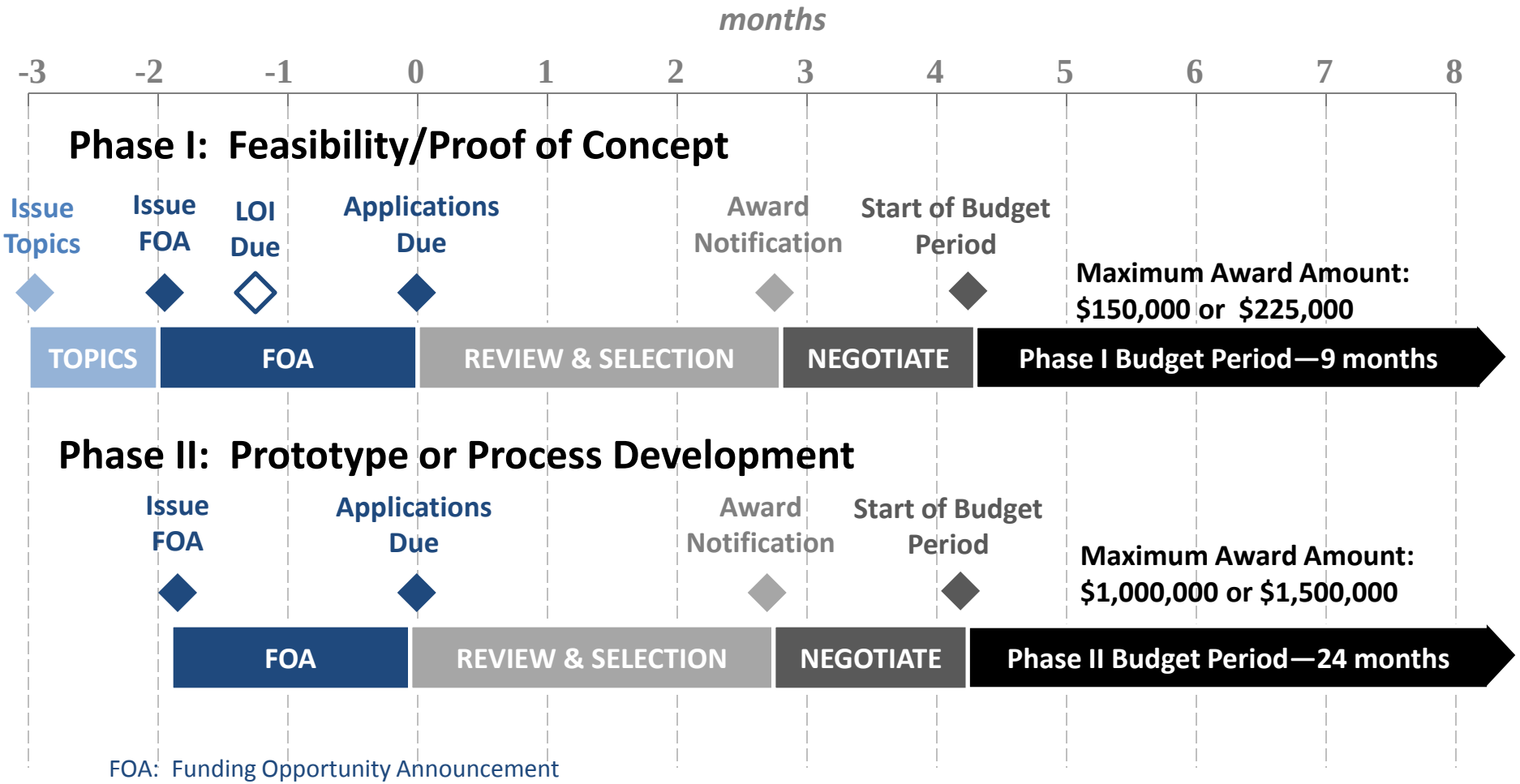



| Program | ($M) |
|---|---|
| ASCR | 17.6 |
| BER | 19.4 |
| BES | 50.3 |
| FES | 10.1 |
| HEP | 20.8 |
| NP | 14.8 |
| EERE | 29.1 |
| FE | 11.7 |
| NE | 13.6 |
| OE | 3.1 |
| EM | 0.5 |
| NA | 7.1 |
| total | 198.0 |

Part 2

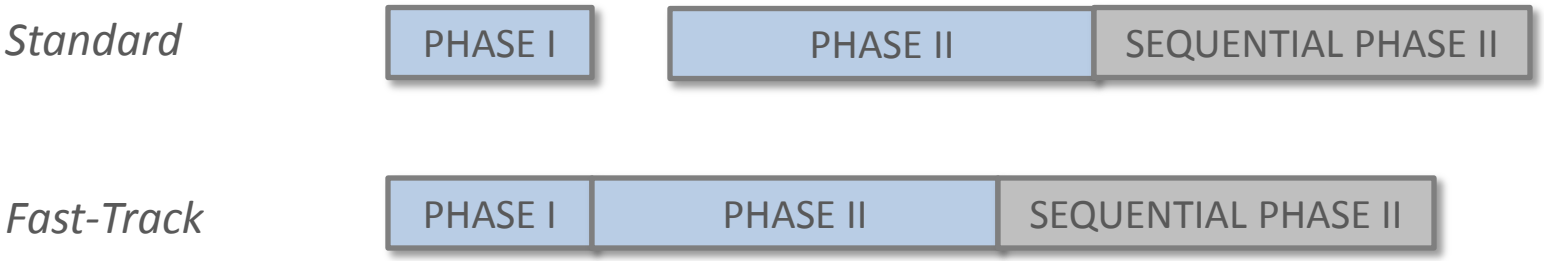
# THE APPLICATION PROCESS

# Application & Award Timelines




FOA: Funding Opportunity Announcement
LOI: Letter of Intent

# Award Sequence




Sequential Phase II Awards

- Phase IIA: For projects requiring more time and funding than available with a single Phase II award to complete prototype or process development
- Phase IIB: For projects requiring additional R&D funding to transition an innovation towards commercialization

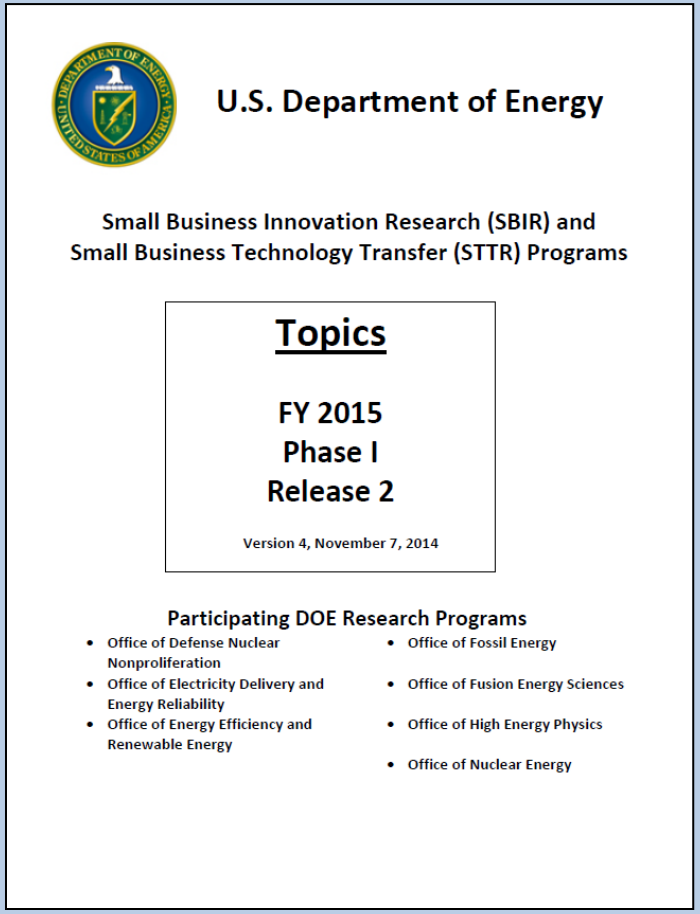
# Schedule: FY 2016 Phase I, Releases 1&2

| Phase I FOA Schedule | Release 1 | Release 2 |
|---|---|---|
| Topics Issued | July 20, 2015 | November 2, 2015 |
| Topic Webinars | Week of July 27, 2015 | Week of November 9, 2015 |
| Funding Opportunity Announcement Issued | August 17, 2015 | November 30, 2015 |
| FOA Webinar | August 21, 2015 | December 4, 2015 |
| Letters of Intent Due | September 8, 2015 | December 21, 2015 |
| Full Applications Due | October 19, 2015 | February 9, 2016 |
| Award Notification | early January 2016* | early May 2016* |
| Grant Start Date | late-February 2016* | early June 2016* |

**preliminary dates subject to change*

# Topics

- Topics Document
  - DOE primarily uses focused topics
  - Issued 4 weeks prior to the Funding Opportunity Announcement
- Communication with DOE program managers
  - Open communication permitted
- Webinar
  - DOE program managers discuss their topics
  - Applicants submit questions in advance or during the webinar
  - Webinars are recorded and available from our website



U.S. Department of Energy

Small Business Innovation Research (SBIR) and
Small Business Technology Transfer (STTR) Programs

**Topics**

**FY 2015**
**Phase I**
**Release 2**

Version 4, November 7, 2014

**Participating DOE Research Programs**

- Office of Defense Nuclear Nonproliferation
- Office of Electricity Delivery and Energy Reliability
- Office of Energy Efficiency and Renewable Energy
- Office of Fossil Energy
- Office of Fusion Energy Sciences
- Office of High Energy Physics
- Office of Nuclear Energy

# Technology Transfer Opportunity (TTO) Topics

- An opportunity to transfer inventions made by a DOE National Lab or university to your small business for commercialization
- Awardees receive
  - an SBIR/STTR grant and
  - an option to license the technology

# Example:
# Technology Transfer Opportunity Topic

- The DOE National Lab or university responsible for the TTO is listed along with contact information and other references
- Please contact the Lab or university to obtain information about the TTO

**b. Technology Transfer Opportunity: Irreversible, Low Load Genetic Switches**

Recombinases that have been conclusively demonstrated to work orthogonally are non-cross-reacting and do not cause unpredictable recombination events. Researchers at the Joint BioEnergy Institute (JBEI) have developed novel nucleic acid constructs containing matched orthogonal site selective recombinases. The JBEI invention removes the ability of a cell to access certain genes and enables the concurrent use of multiple recombinases. This system enables multiple genes to be turned on or off at different states of an organism's lifecycle, which has both research and industrial applications. It offers improved reliability over other approaches by ensuring that circuits proceed to completion rather than equilibrating. Potentially, these devices could be used to construct an expression system with low load on the cell, a very low level of basal expression and an extremely high level of expression after induction. This could be useful where a growth phase and a production/manipulation phase need to be kept distinct. Using this sort of toggle, many changes can be made at once to cell physiology.

**Licensing Information:**
Lawrence Berkeley National Laboratory
Contact: Peter Matlock (pymatlock@lbl.gov; 510-486-5803)
TTO Tracking Number: EJIB-2593
Patent Status: US Patent Application
USPTO Link: http://appft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=%2Fnetahtml%2FPTO%2Fsearch-adv.html&r=2&p=1&f=G&l=50&d=PG01&S1=088,288.APN.&OS=APN/088,288&RS=APN/088,288
Website: http://ipo.lbl.gov/lbnl2593/

# Tech Transfer Opportunities & SBIR/STTR

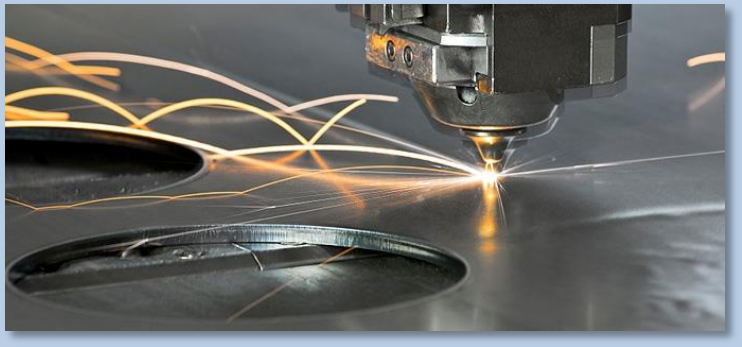
- DOE issues call for Technology Transfer Opportunities (TTOs) to participating Research Institutions
  - List of DOE program offices participating in the SBIR/STTR solicitation is provided
  - TTOs submitted by Research Organizations would preferably have resulted from basic or applied science funded by these DOE program offices
- DOE issues call for SBIR/STTR topics to DOE program offices and provides list of submitted TTOs
  - DOE program offices submit R&D topics and selected TTOs to be included in SBIR/STTR solicitation
- DOE releases SBIR/STTR topics and Funding Opportunity Announcement (FOA)
  - Research Institutions agree not to license TTOs included in SBIR/STTR FOAs during the application and review periods
  - Research Institution provides information to potential applicants about the TTO
- DOE selects small businesses for SBIR/STTR awards
  - DOE negotiates Phase I SBIR/STTR grant with small business
  - Research Institution negotiates no-cost 6 month option agreement with small business

# TTO & Conflicts of Interest

- Research Institutions and their staff cannot participate in the review and selection process for SBIR/STTR awards associated with their TTOs
  - Small business will typically include a subaward to the Research Organization in their application
- Employees of the Research Institution may apply for SBIR/STTR grants
  - Policies must be in place to ensure that all applicants have equal access to TTO information

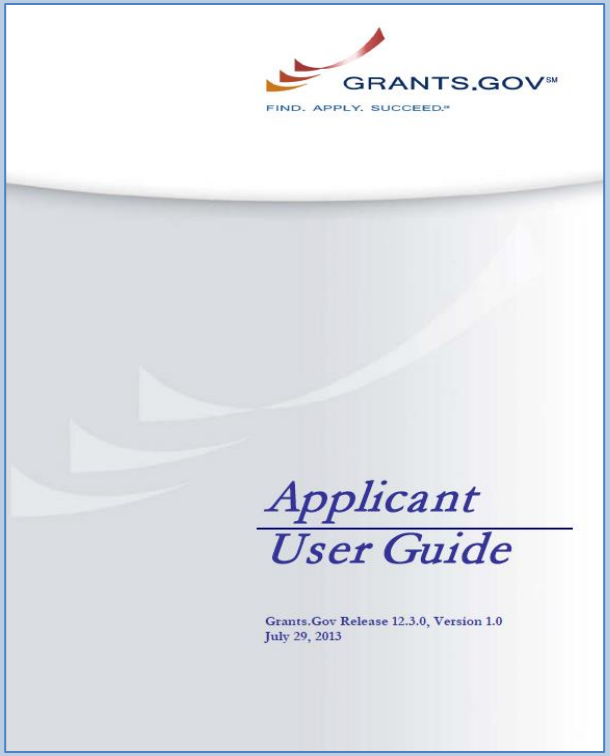
# DOE Topics & Commercialization

- DOE topics are drafted by program managers who are aware of the technology roadblocks but may not be aware of the commercialization challenges
- Small business applications are expected to address the commercialization challenges and ensure that there is a profitable business opportunity
  - Phase I & II Commercialization Plans
- DOE conducts follow-up surveys to track commercialization outcomes of its SBIR/STTR awards



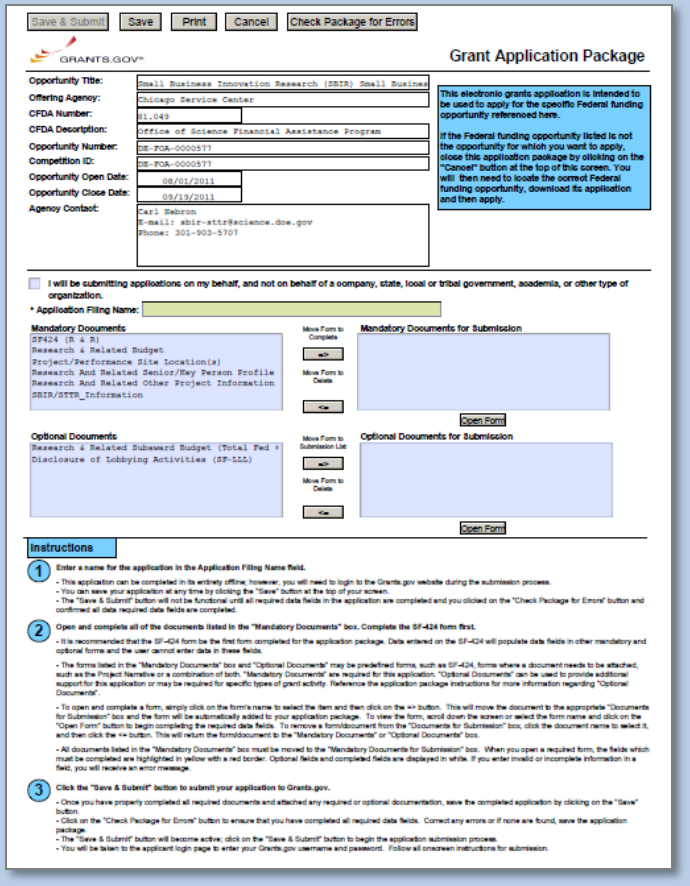
# Application Process: Registration

- Applications must be submitted through Grants.gov
- Multiple registrations are required
  1. Obtain a DUNS number
  2. Complete a SAM registration.
     - Must be updated annually
  3. Complete Grants.gov registration
     - Start this process as early as possible!
  4. Small Business Administration company registry
     - Small businesses must register at the SBA company registry (http://www.sbir.gov/registration ) and submit a copy of their registration with their grants.gov application
- See the Grants.gov Applicant User Guide for more details on this process



# Important Elements of Your Application

- Project Narrative
  - Page and word limits
    - Phase I: 15 pages, 7,500 words
    - Phase II: 20 pages, 10,000 words
    - Fast-Track: 25 pages, 12,500 words
- Budget & Budget Justification
- Key Personnel
- Commercialization Plans
  - Phase I commercialization plan
    - An example can be found here
  - Phase II commercialization plan
- SBIR/STTR Information
- Data Management Plan



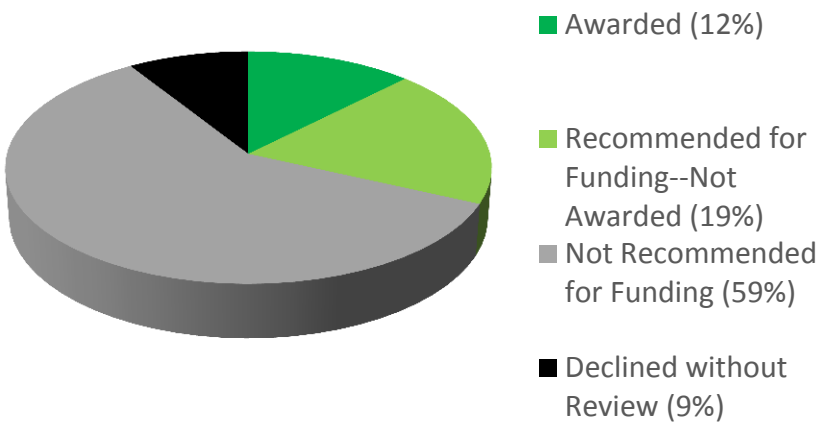
# Review and Selection of Applications

- DOE primarily uses external peer review to evaluate your applications
  - Typically at least 3 technical reviewers
  - 1 reviewer for the Phase II commercialization plan
- Review Criteria (equally weighted)
  - Strength of the Scientific/Technical Approach
  - Ability to Carry Out the Project in a Cost Effective Manner
  - Impact

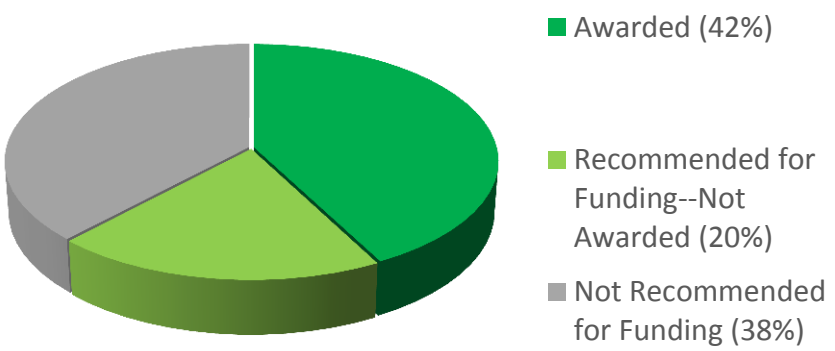
- You will be notified of the decision on your application within 90 days of the application deadline
  - Reviewer comments will be made available to you. Use this feedback constructively to improve future applications

# Application & Award Statistics for FY 2014

- Phase I
  - 1618 applications
  - 201 awards

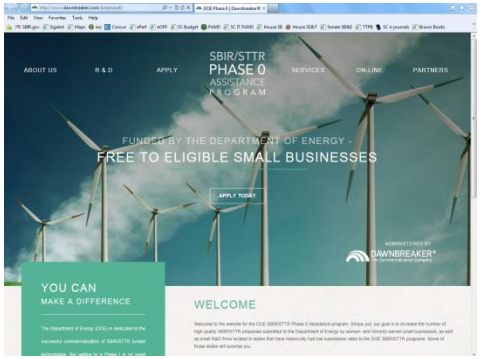



- Phase II
  - 279 applications
  - 118 awards



# Phase 0 Assistance Program

- Goal
  - increase the number of responsive, high quality proposals submitted to the DOE within targeted states with historically low SBIR/STTR applications to the DOE, and amongst women- and minority-owned businesses nationally.
- Services
  - Letter of Intent (LOI) writing assistance
  - Phase I proposal preparation, review and submission assistance
  - Small business development training and mentoring
  - Communication and market research assistance
  - Technology advice and consultation
  - Indirect rate and financial information
- Cost
  - Since this program is entirely funded by the DOE there is no cost to participants.
- Website: [http://www.dawnbreaker.com/doephase0/](http://www.dawnbreaker.com/doephase0/).
- DOE's Under Represented States
  - AK, DC, GA, HI, IA, ID, IN, KS, LA, ME, MN, MS, MT, NC, ND, NE, NY, OK, PA, PR, RI, SC, SD, WA, WI



# Questions?

**Contact information:**

- DOE SBIR/STTR Operations: 301-903-5707
- DOE SBIR/STTR Email: sbir-sttr@science.doe.gov

**Our Website:**

- DOE SBIR/STTR Website: www.science.energy.gov/sbir

**Join our Mailing List:**

- DOE SBIR/STTR Mailing List: http://1.usa.gov/12SkziW