Improvement to the SBIR & STTR Programs at the Department of Energy: 2010-2018

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Outline

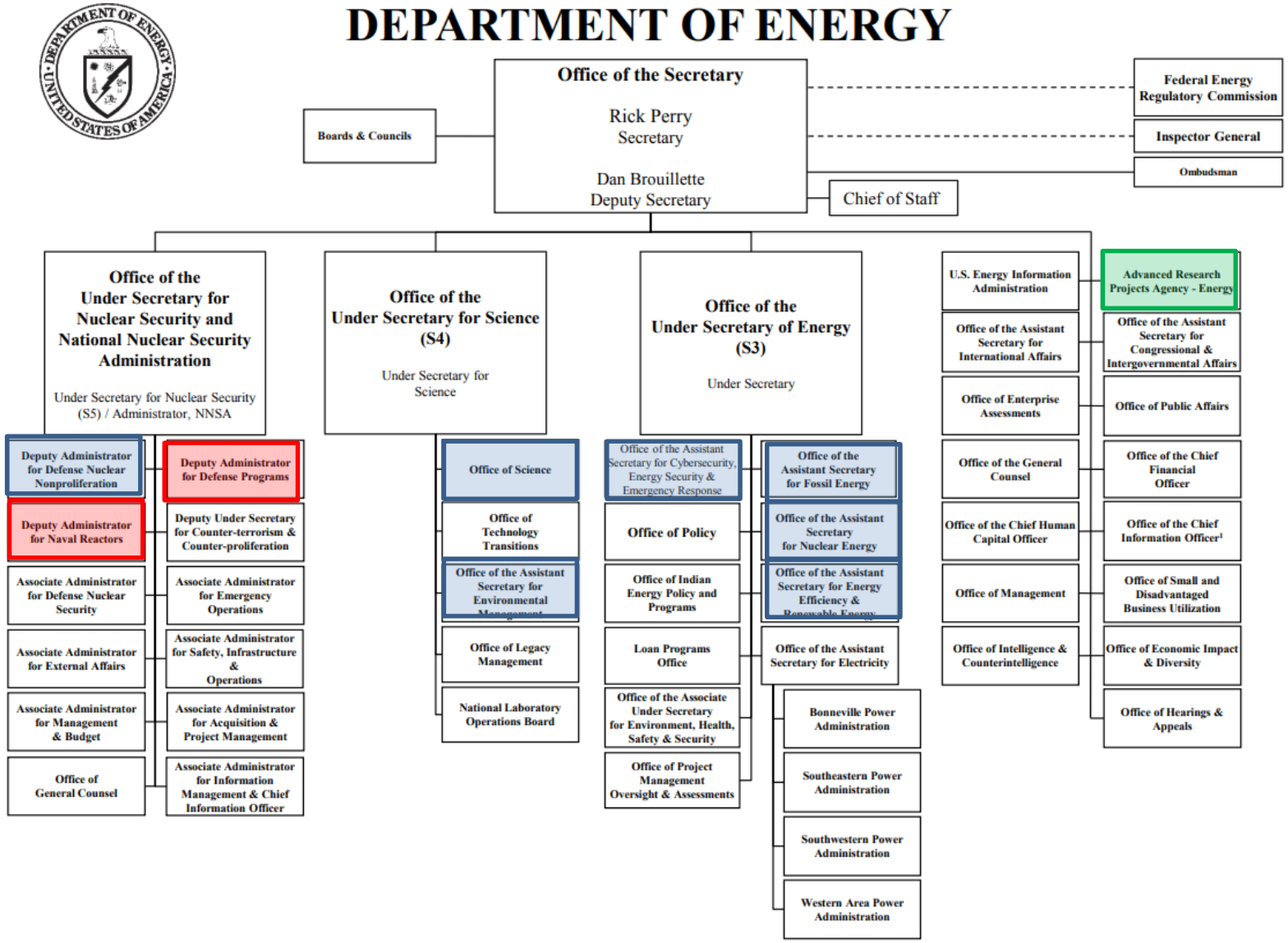
- DOE SBIR/STTR Programs Office
- Outreach
- Operations
- Outcomes

DOE SBIR/STTR Programs Office

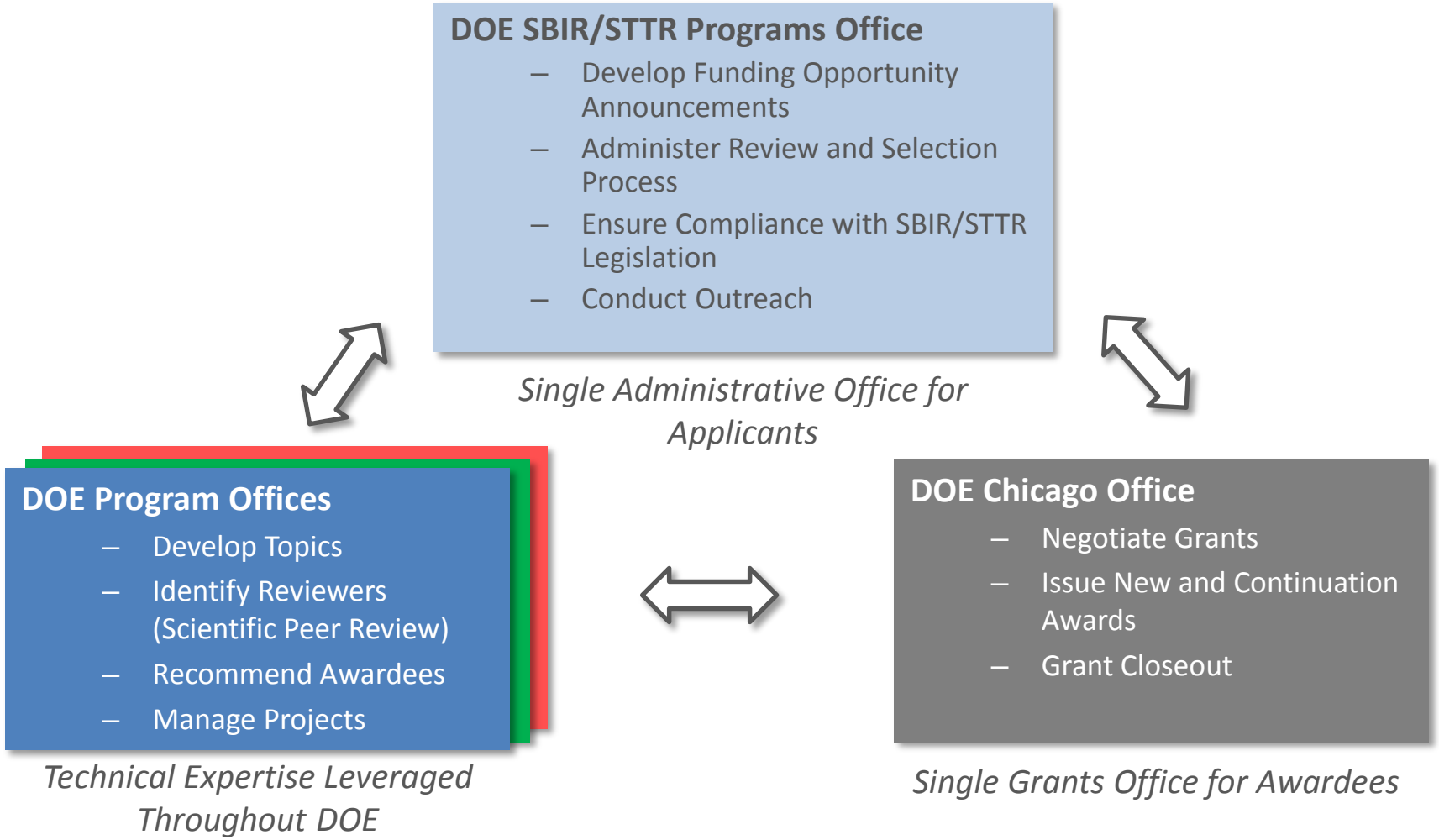
- The DOE SBIR/STTR Programs Office was created as a separate office by DOE in December, 2010 to increase visibility of these programs.
  - The SBIR/STTR programs were previously administered within the Office of Advanced Scientific Computing Research
- The SBIR/STTR Programs Office resides in the Office of Science
  - Office of Science is the largest source of funding for the SBIR/STTR programs
  - Office of Science provides funding to support the administration of the programs

R&D Programs Participating in SBIR/STTR

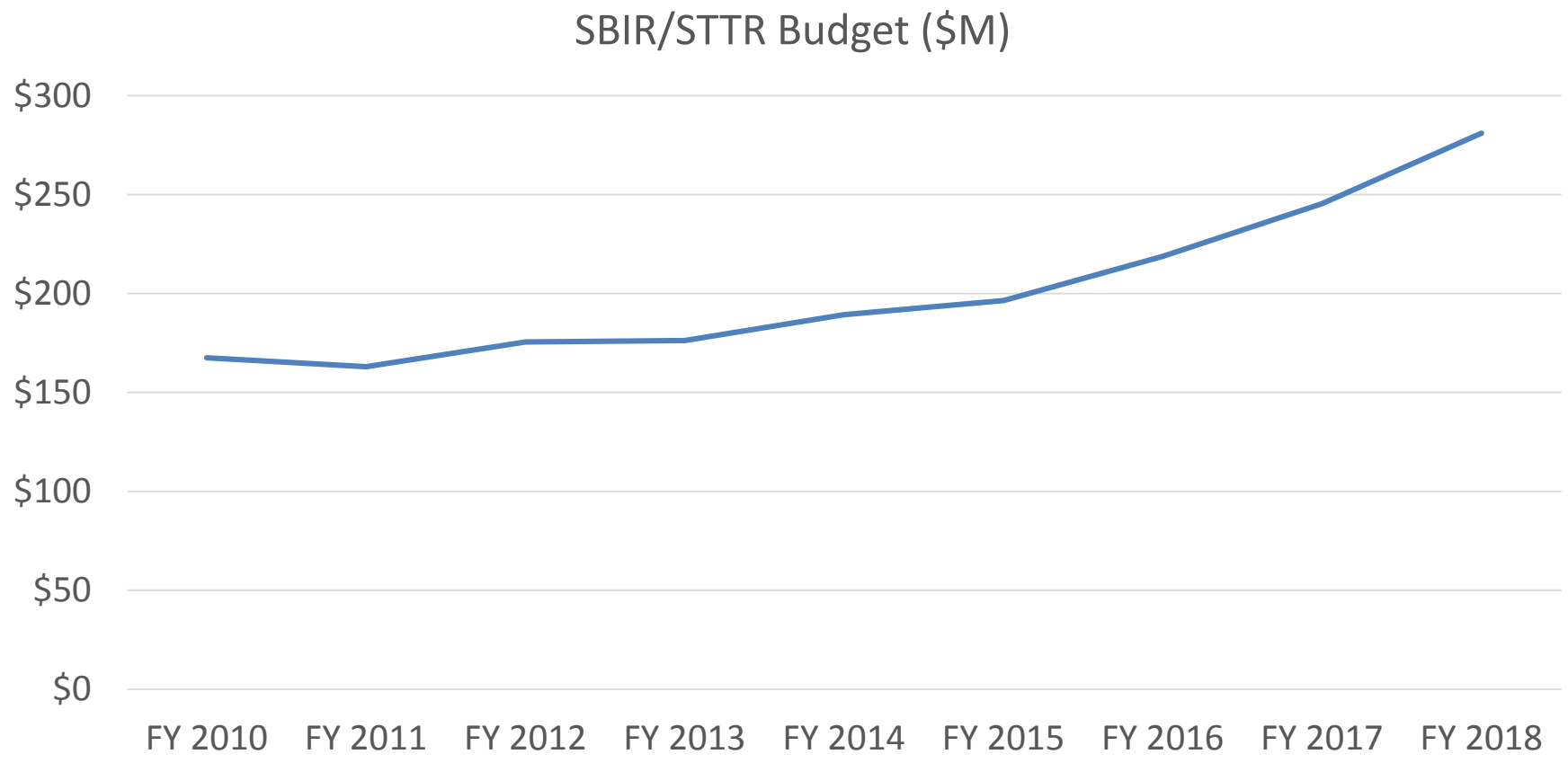
- Office of Defense Nuclear Nonproliferation
- Office of Science
- Office Environmental Management
- Office of Electricity Delivery and Energy Reliability
- Office of Energy Efficiency and Renewable Energy
- Office of Fossil Energy
- Office of Nuclear Energy
- ARPA-E operates its own SBIR/STTR Programs
- Exempt by Statute
  - Weapons Activities
  - Naval Reactors



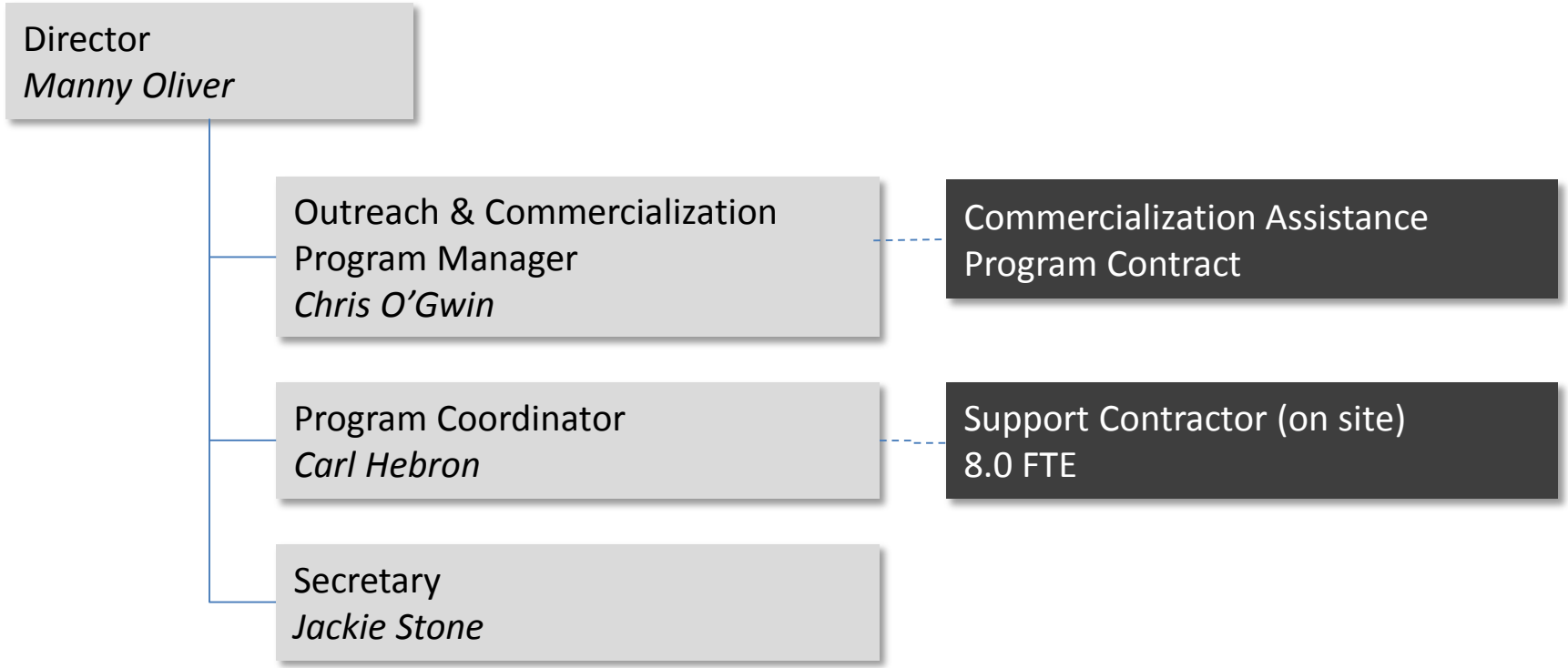
Operation of the DOE SBIR and STTR Programs



DOE SBIR/STTR Program Budgets, 2010-2018

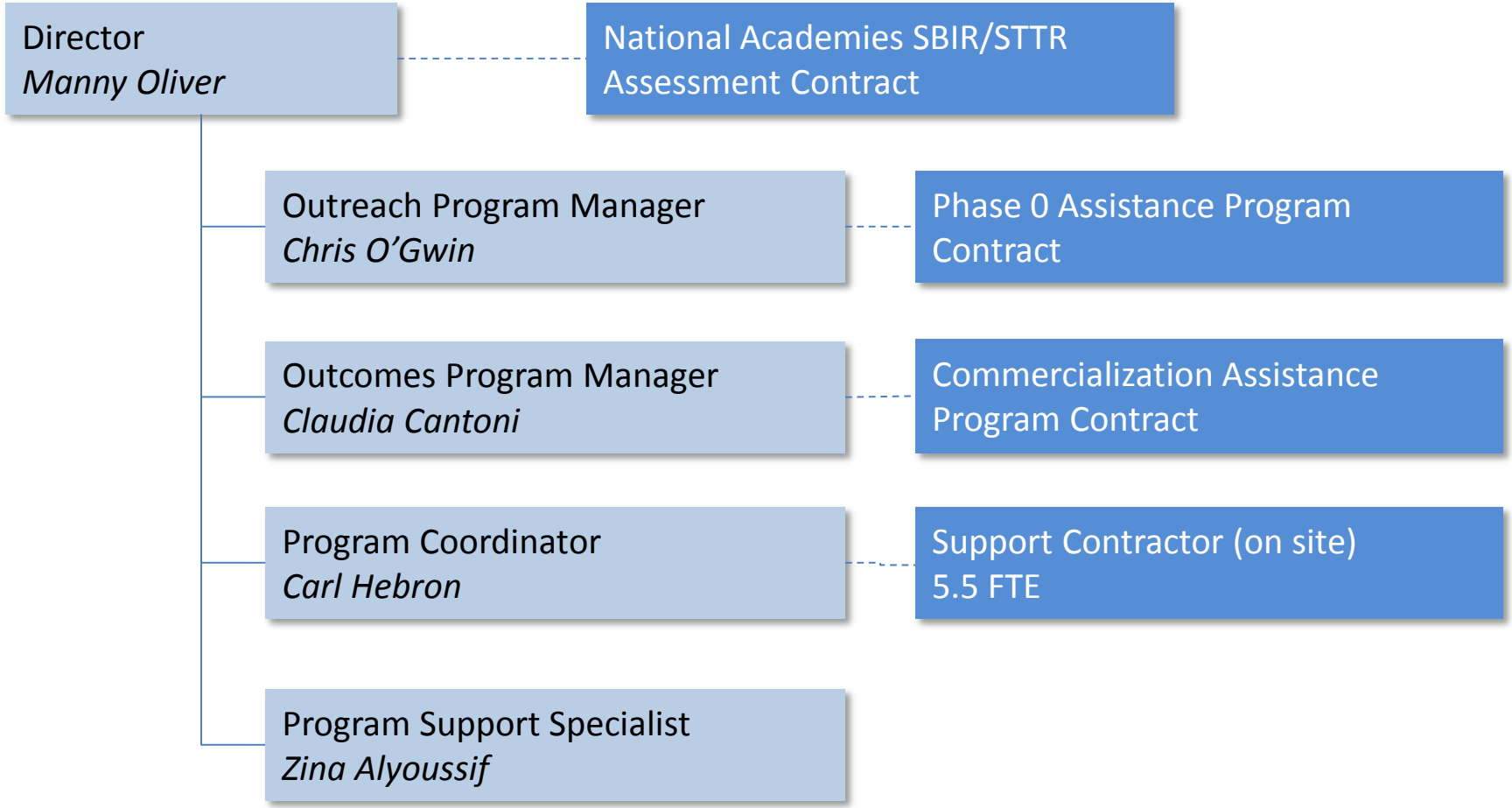


DOE SBIR/STTR Programs Office 2010



Office of Science staff (2010): 1077

DOE SBIR/STTR Programs Office 2018



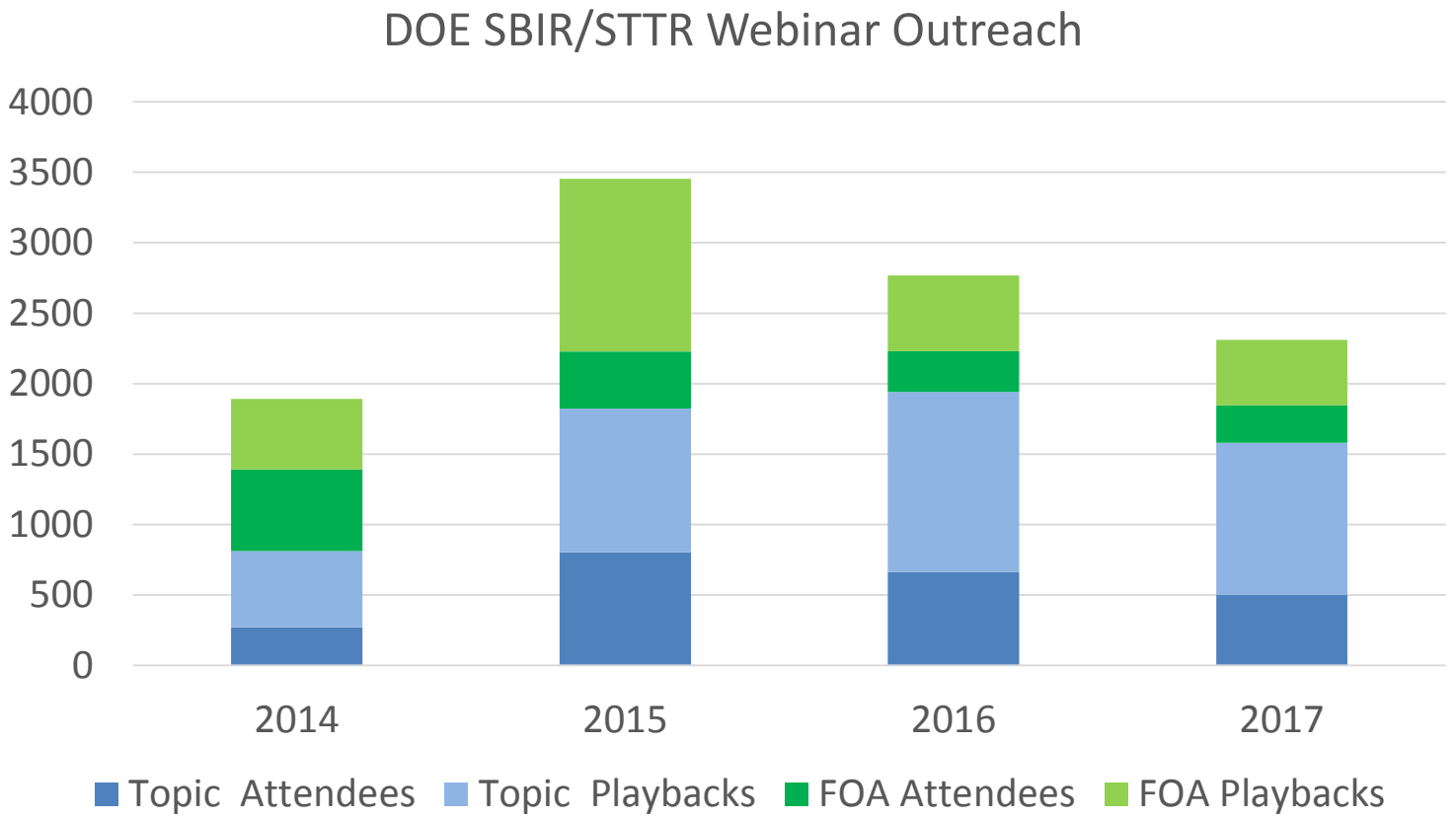
Office of Science staff (2018): 820 (down 24% from 2010)

Outreach

Webinars

- Issue
  - Outreach was conducted primarily through in-person meetings at conferences/events
    - Time and resource intensive
    - Events not aligned with our solicitation schedule
- Program Change
  - Beginning in FY 2013 began conducting webinars scheduled to coincide with our solicitations
    - Topic webinars by DOE program managers
      - *"Well organized, informative, interactive presentation."*
    - Funding Opportunity Announcement by the SBIR director
      - *"This is a first time experience with a government webinar. I thought it was great. I look forward to reviewing the powerpoint slides later. Thanks!."*

Webinar Stats



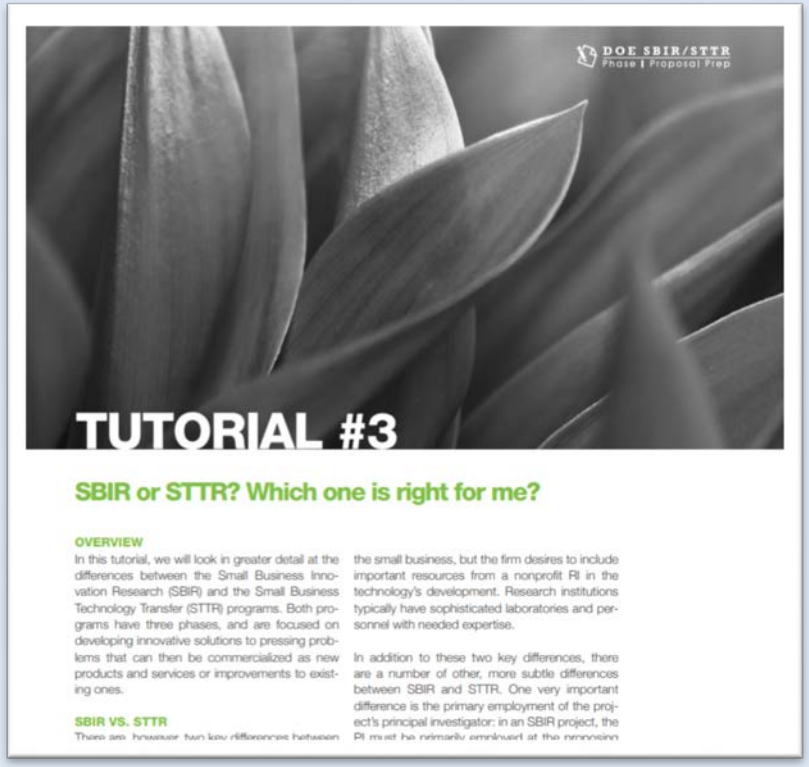
Outreach

Phase 0 Assistance Program

- Outreach to under-represented groups
  - We were generally unsuccessful in getting access to prospective applicants when we contacted organizations representing under-represented groups
- In FY 2015
  - Awarded contract to provide direct assistance to applicants from under-represented groups
  - Modeled after state Phase 0 programs
  - Goal: Increase the number of responsive, high quality proposals submitted to the DOE from:
    - Women-owned small businesses
    - Socially and economically disadvantaged small businesses (minority-owned)
    - Small businesses in states with historically low SBIR/STTR applications to the DOE
  - Approximately 5% of applicants receive Phase 0 services
  - Has resulted in improved application success rate of under-represented applicants compared with their peers
  - Success rate for transition to Phase II is similar to overall applicant pool (~50%)

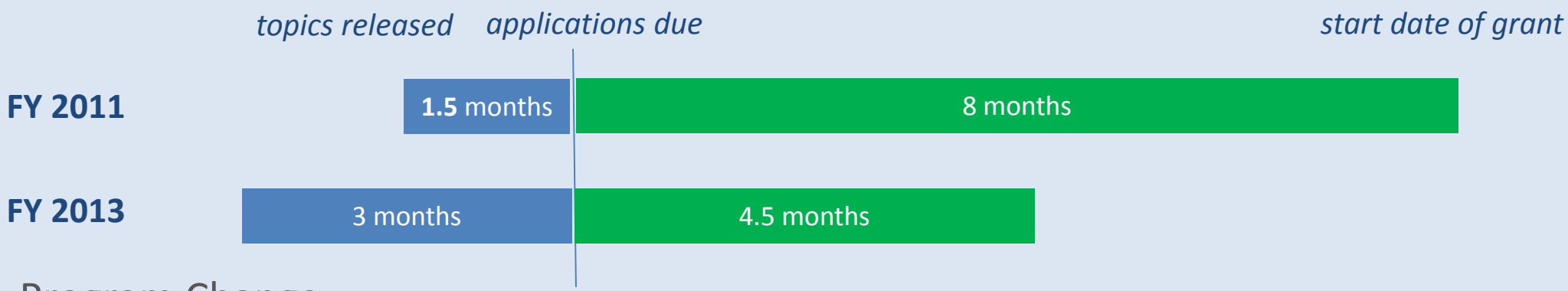
Online Application Assistance

- Issue
  - Although we have support staff to provide support by phone or email, our online support was lacking
- Program Change
  - As part of the Phase 0 application assistance contract, in FY 2015 we implemented a series of short tutorials to provide more targeted answers to application related questions
  - Website: http://www.doesbirlearning.com/
  - Format was later adopted by SBA for developing tutorials for the SBIR/STTR programs as a whole



Application Timelines

- Issue
  - In FY 2011 our process provided limited time to develop innovative solutions and required extensive time to make award decisions



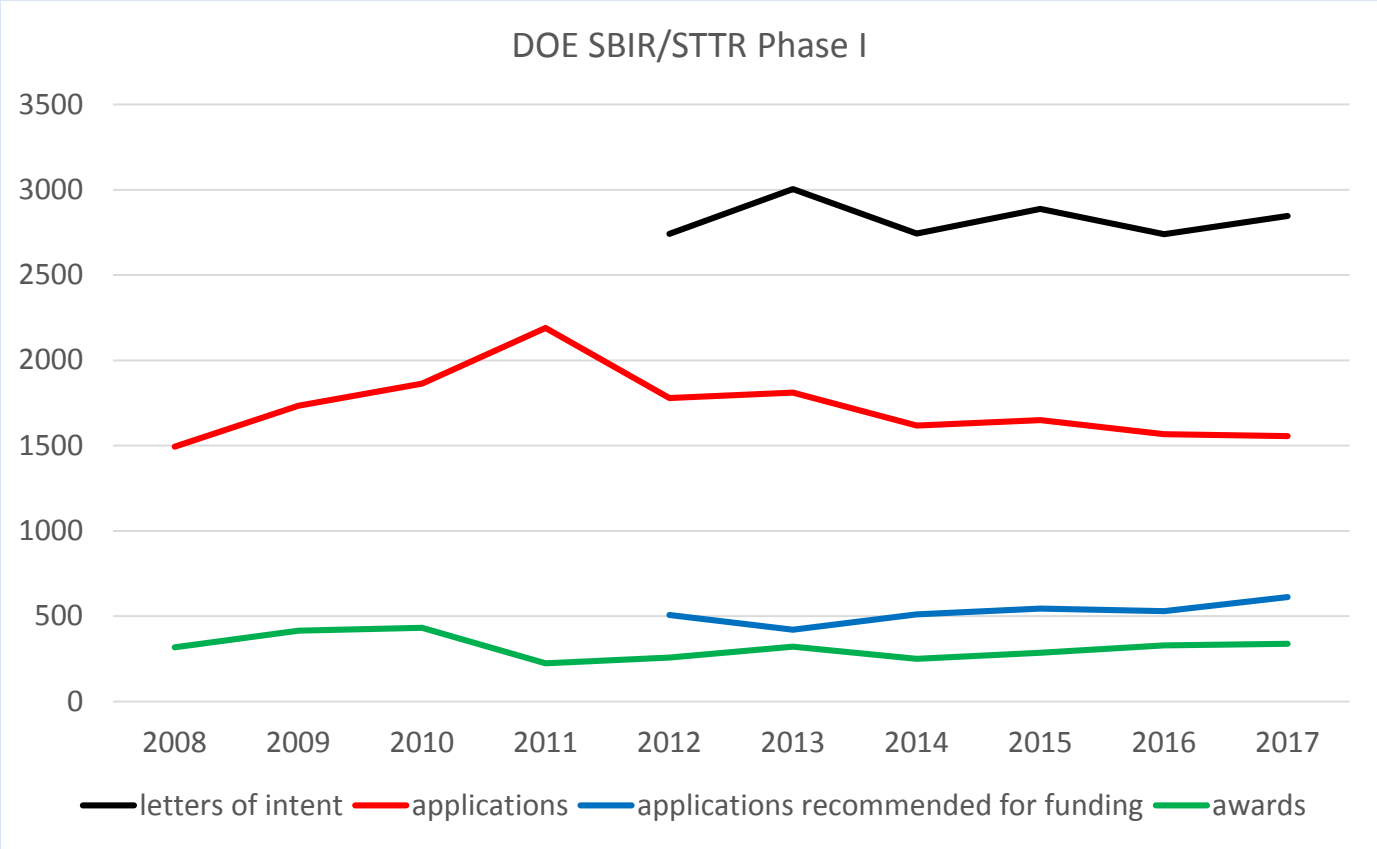
- Program Change
  - By 2013, we had adjusted our process timelines
  - Two annual Phase I & II solicitations (in place of one) to level annual workload
  - Letters of intent introduced to shorten review time (allows us to identify reviewers in advance)
  - Dedicated SBIR/STTR grants team in the Chicago Office

Online Application Management System

- Issue
  - Administering the application process was labor intensive and documentation was not centralized
- Program Change
  - Beginning in FY 2012, we began implementation of a web-based application management system in the Office of Science: Portfolio Analysis and Management Systems (PAMS)
  - Provides online access to all: applicants, reviewers, SBIR/STTR programs office, DOE program managers
  - Notifications are sent out automatically throughout the review process
  - Implementation still being expanded: eventually all documents progress reports, final reports, will be uploaded accessible in the system

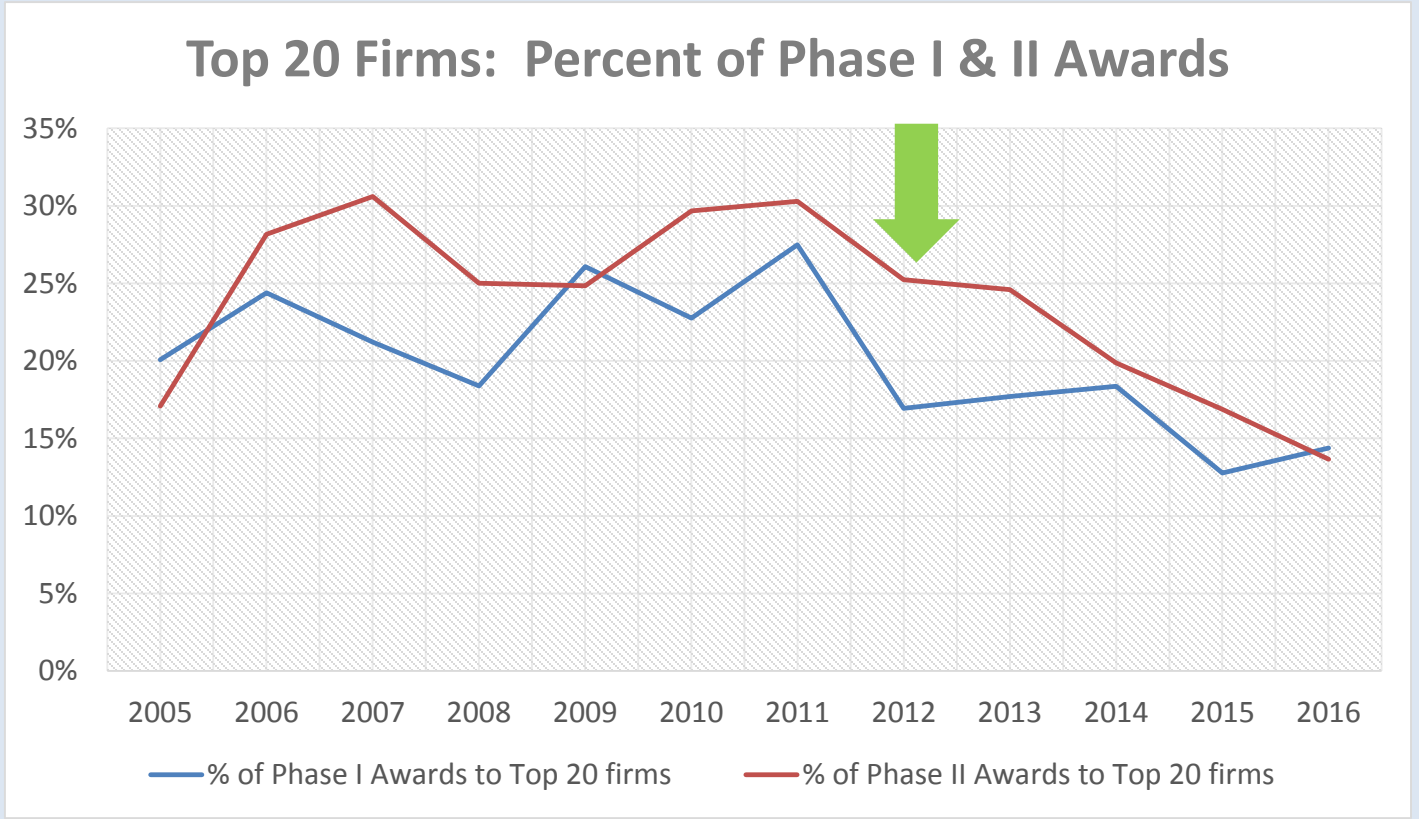
Reviewer Workload

- Issue
  - Expansion of the SBIR/STTR programs was straining our reviewer population
- Program Change
  - By providing feedback to non-responsive letters of intent we were able to reduce our application review workload while maintaining a sufficient number of high quality applications.



Award distribution

- Issue
  - A small number of experienced firms were crowding out new applicants
- Program change
  - If FY 2012 implemented a limit of 10 applications per Phase I solicitation (NASA best practice)



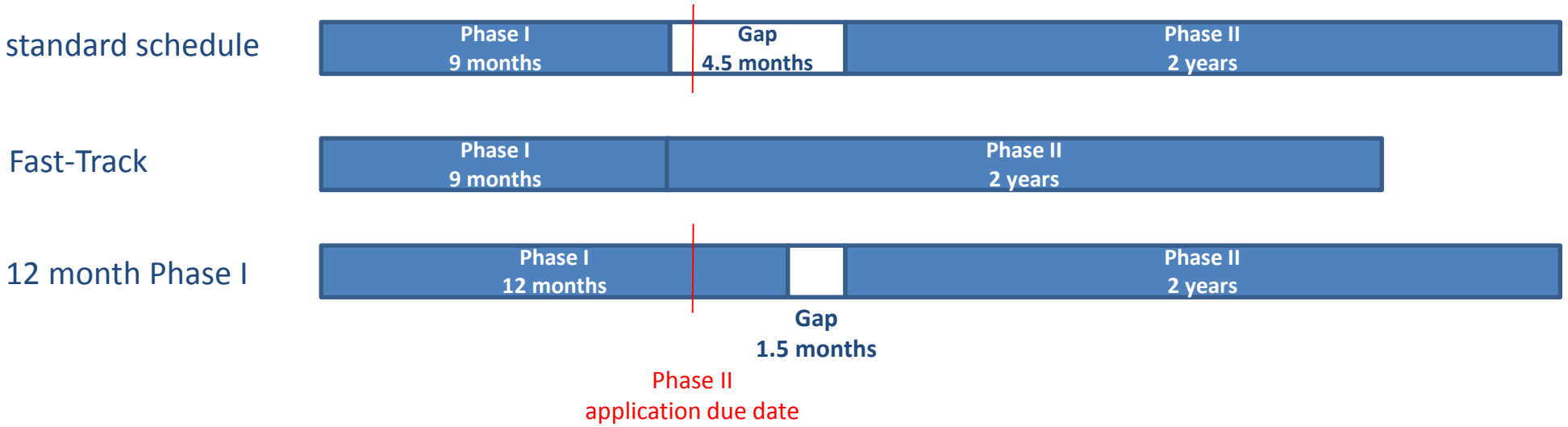
Phase I Principal Investigator Meeting

- Issue
  - SBIR/STTR awardees are typically not visited by DOE program managers
  - Small businesses would like more engagement with DOE and better understanding of grant requirements and expectations
- Program change
  - In FY 2017, implemented Phase I Principal Investigator Meeting (NSF best practice)
    - Small businesses meet face to face with
      - DOE program managers to provide a verbal progress report
      - Commercialization Assistance Program contractor
    - Presentations and additional meetings with DOE SBIR/STTR Programs Office, DOE Chicago Office, successful past awardees, investment community

Phase I/II Funding Gap

- Issue
  - Funding gap between Phase I and II (~ 4.5 months for DOE) provides challenges for small businesses to retain key personnel and project momentum
- Program changes
  - In FY 2013 implemented Fast-Track option(NIH best practice)
    - Applicants submitted combined Phase I/II application
    - Receive combined Phase I/II award with no gaps between Phase I/II
  - However, utilization was low
    - Many programs did not want to use this option because they prefer peer review between Phase I & II
    - Applicants must have a well-defined project path for Phase I/II and strong commercialization plan
  - In FY 2017 extended Phase I awards to 6-12 months (previously 6-9 months)
    - Phase I application due after 9.5 months
    - Provides ability to fund during the gap (although no additional funding)

Phase I/II Funding Gap



Switching Between SBIR and STTR programs

- Issue
  - Programs were structured such that firms must remain in the same program in both Phase I & II
  - SBIR/STTR Reauthorization Act of 2011 allowed agencies to provide flexibility between phases
- Program Change
  - In FY 2012, we implemented the ability for programs to switch programs
  - Have observed a small number of STTR Phase I awardees switching to SBIR in Phase II

Automatic Release of SBIR/STTR Final Technical Reports

- Issue
  - DOE Office of Inspector General identified that SBIR/STTR final technical reports were not being released to the public in a timely fashion
    - Statute requires us to protect the final technical report for a minimum of 4 years and for the protection to be extended if federal awards to continue the R&D are made
    - Previous policy was to only release the reports on a case by case basis if a request was received
- Program Change
  - In FY 2018 we revised the release policy so that the reports will be released automatically after 4 years unless (1) DOE issues a follow-on SBIR/STTR award (Phase II or Sequential Phase II) or (2) the small business certifies they have follow-on funding to continue the R&D
    - There were extensive discussions with SBA and other agencies to identify a simpler process (e.g. a fixed 12 year period of protection), but a viable approach acceptable to the small business community was not identified

Outcomes

Emphasis on Commercialization in Call for Topics

- Issue
  - Some DOE programs were focused on technical accomplishment rather than commercialization
- Program Change
  - Beginning in FY 2012 emphasized need for topics to have commercial potential for the small business
  - Selected topic areas (e.g. open source software) were discouraged unless appropriate business models were adopted

Outcomes

Phase I Commercialization Plan

- Issue
  - Many Phase I Proposals failed to discuss commercialization aspect of project impact
  - Single largest reason projects terminated after Phase II: no market for the technology (National Academies 2008 study of the DOE SBIR program)
- Program change
  - Beginning in FY 2012, required brief (4 page maximum) Phase I Commercialization Plan that includes a statement about anticipated revenues
  - Goal is to have firms start thinking about commercialization early
  - Unlike Phase II, we don't have paid business development reviewers evaluate Phase I commercialization plans

Outcomes

Phase II Commercialization Plan Review

- Issue
  - Previously relied on volunteers from DOE National Laboratory technology transfer offices to perform reviews of Phase II Commercialization Plan
  - Because commercialization plan contributed only to the Impact review criteria (1/3 of total), it was possible to have a poor commercialization plan and still be recommended for funding
- Program change
  - Switched to paid reviewers with business development backgrounds for Phase II commercialization plans
  - Flagged proposals with poor commercialization plans or poor commercialization history. Such applications required program manager justification if recommended for funding.

Outcomes

Improving Commercialization Assistance

- Issue
  - Previous commercialization assistance programs provided market research assistance during Phase I and was limited to approximately 20% of awardees
- Program Changes
  - In FY 2012, revamped the Commercialization Assistance Program to provide a menu of services depending on maturity and needs of the small business
  - Contract set up so the participation by small businesses was voluntary and contractor was only paid for services provided
  - Participation levels: 75-80% of Phase I and II awardees
  - Beginning in FY 2012, also allowed small businesses to select their own vendor
  - In FY 2017, re-competed the contract and added a new track for companies seeking an industry-specific consultant. (Based on feedback on services provided by the previous contractor.)

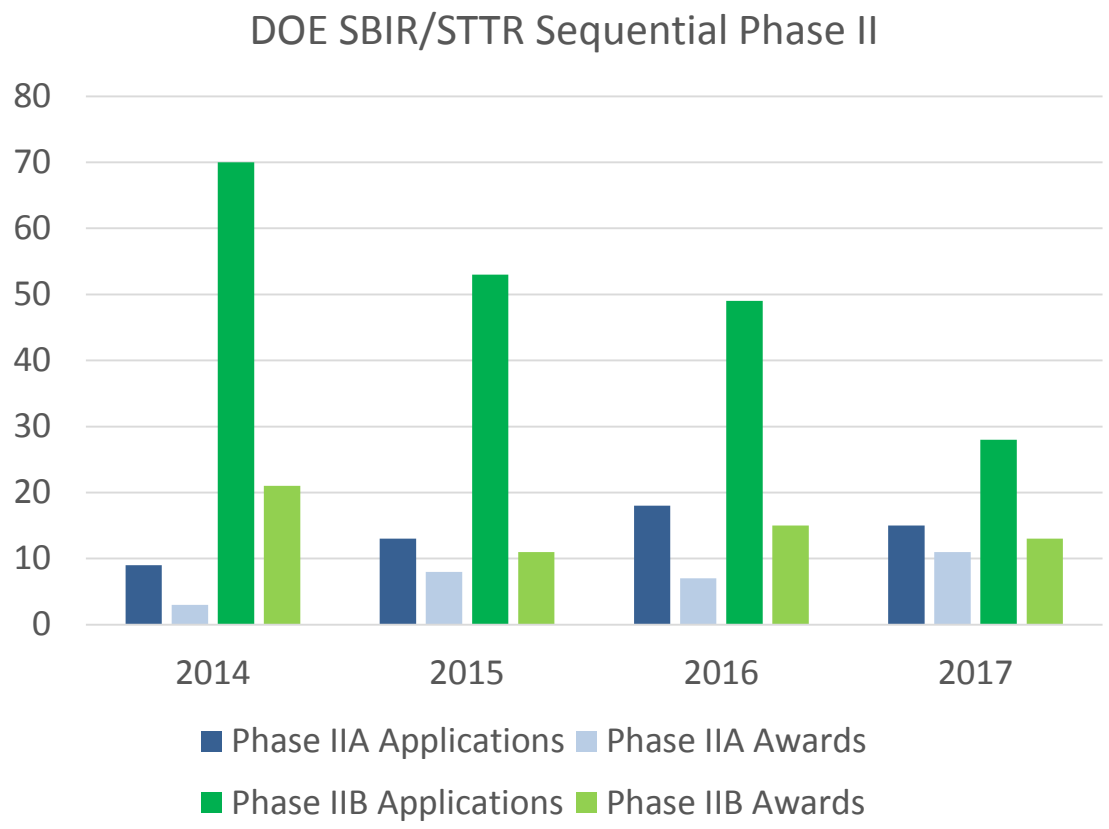
Outcomes

Sequential Phase II Awards

- Issue
  - Occasionally Phase II projects concluded without completion of planned prototype or process development. (Required firms to cycle back for another Phase I/II award.)
  - From customer interactions during Phase II, firms identified additional R&D required for market acceptance of their innovation

- Program change
  - In FY 2014, implemented sequential Phase II awards to address the issues above
    - Phase IIA: provides additional funding to complete original Phase II projects. Only selected topics are eligible to apply.
    - Phase IIB: provides additional funding to conduct additional research identified to meet customer requirements. All topics are eligible to apply

Sequential Phase II Award History



Outcomes

Technology Transfer Opportunities

- Issue
  - Patents resulting from DOE funded research at National Laboratories and universities might languish because of additional research was needed to validate commercial potential
- Program change
  - In FY 2013, implemented technology transfer topics in SBIR/STTR solicitations to help mature promising technologies (NIST best practice)

TTO awards	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Phase I	2	8	8	2	3
Phase II		1	3	4	0

Outcomes

Success Stories

- Issue
  - DOE program offices do not document the successful achievements of SBIR/STTR awardees in Phase III
- Program Change
  - In FY 2016, a new staff member was added to work with past awardees to develop Phase III success stories
    - Has provided DOE program offices with evidence of SBIR/STTR program impact as well as useful guidance to new awardees on how others have succeeded

Summary

- The SBIR/STTR Programs continue to evolve both as result of statutory and policy changes as well as new initiatives to improve outreach, operational efficiency, and outcomes
- Looking forward future opportunities identified by this assessment