U.S. Government Accountability Office

Small Business Innovation Research: Most Agencies Did Not Implement Required Commercialization Pilot

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Q&A Report to Congressional Committees

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Why This Matters

Small businesses have been a major source of technology development in the U.S. economy but can face challenges obtaining the funding and support needed to fully develop and commercialize their technologies.

The Small Business Innovation Research (SBIR) program was established in 1982 to increase the participation of small innovative companies in federally funded research and development (R&D) and to stimulate small businesses' technology development and commercialization. Federal agencies that participate in the program support small businesses with grants or other types of awards. The Small Business Administration (SBA) oversees, makes policies for, and provides program guidance on the SBIR program to participating agencies. In fiscal year (FY) 2023, agencies made over 5,000 SBIR awards valued at nearly $4 billion to small businesses, according to SBA data.

The SBIR program has three phases. In Phase I, awarded small businesses conduct R&D to determine the feasibility of ideas that may have commercial potential. In Phase II, they receive additional SBIR funding to continue R&D, which may include prototyping the technology. In Phase III, small businesses work toward commercializing technologies developed under Phases I and II, including further R&D or testing, without additional SBIR funding.

The Commercialization Assistance Pilot Program (CAPP), enacted into law in 2018, allows eligible small businesses to apply for an additional Phase II award to continue their existing R&D. SBIR participating agencies are required to implement CAPP, unless granted an exception by SBA. The Small Business Act includes a provision for us to conduct a study of agencies' activities under CAPP, including the awards made and whether CAPP has led to small business growth. In this report, we provide information on agencies' implementation of CAPP, awards made under the program, and small businesses' experience with CAPP.

Key Takeaways

- Since CAPP was enacted in 2018, one agency has implemented CAPP: the Department of Energy, whose Office of Science made seven CAPP awards from fiscal years 2019 to 2024. Unless its period of authorization is extended, CAPP will terminate on September 30, 2025.
- We found that most SBIR participating agencies did not implement CAPP because (1) no small businesses in their SBIR program were eligible for a CAPP award or (2) they already had a similar program in place. Some agencies sought and received exceptions from the requirement to implement CAPP.

- While SBA has the authority to monitor and report on SBIR operations, including CAPP, it has not collected or reported information on CAPP implementation and awards.

What is the Commercialization Assistance Pilot Program (CAPP)?

CAPP is a pilot program that allows agencies to award a third Phase II award, known as a "subsequent award" to eligible small businesses to help them continue their Phase II R&D activities and progress toward commercialization.[1] In 2018, the Small Business Act was amended to create CAPP. Unless granted an exception by SBA's SBIR office for having a sufficiently similar program, each federal agency required to have a SBIR program (known as a SBIR participating agency) was required to implement CAPP by August 13, 2019.[2] These 11 agencies are shown in table 1.[3] The pilot is set to terminate in September 2025.

Table 1: Agencies that Participate in the Small Business Innovation Research (SBIR) Program and are Required to Implement the Commercialization Assistance Pilot Program (CAPP)[a]

Agency
Department of Commerce
Department of Defense (DOD)[b]:
Department of Defense (DOD)[b]: Department of the Army[b]
Department of Defense (DOD)[b]: Department of the Navy[b]
Department of Defense (DOD)[b]: Department of the Air Force[b]
Department of Defense (DOD)[b]: Other Components[b]
Department of Energy[c]
Department of Health and Human Services
Department of Homeland Security
Department of Education
Department of Transportation
Environmental Protection Agency
National Aeronautics and Space Administration
National Science Foundation
U.S. Department of Agriculture

Source: GAO analysis of agency information. | GAO-24-107155

[a]The agencies named in this table are required to operate a SBIR program. See 15 U.S.C. § 638(e)(2), (uu)(10)(A), 5 U.S.C. § 102, 105. The Departments of Commerce, Defense, Energy, Health and Human Services, and Homeland Security each have multiple participating components.

[b]Though the Small Business Administration often refers to the military departments as a single entity, pursuant to the Small Business Act, DOD and the Departments of the Army, Navy, and Air Force are individual SBIR participating agencies and are each responsible for implementing CAPP or requesting an exception. See 15 U.S.C. § 638(e)(2), (uu)(10)(A), 5 U.S.C. § 102, 105. Components of DOD that are part of the intelligence community and operate a SBIR program do so voluntarily. See 15 U.S.C. § 638 (e)(2), (uu)(10)(A).

[c]As of August 2024, only the Department of Energy Office of Science implemented CAPP. The other SBIR participating agencies have not done so for reasons that are discussed later in this report.

For a small business to be eligible for a CAPP award, it must:

- **Have received a Phase II and a sequential Phase II award.** The Small Business Act permits a small business that receives a Phase II award to be eligible to receive a second, or "sequential", Phase II award for continued work on that project.[4] CAPP authorizes a third Phase II award to small businesses that have received a second Phase II award from the agency to which the small business is applying for the CAPP award.[5]
- **Submit, among other things, an updated commercialization plan.** One of the goals of a successful SBIR project is commercialization of the innovation through sales to industry, consumers, or the federal

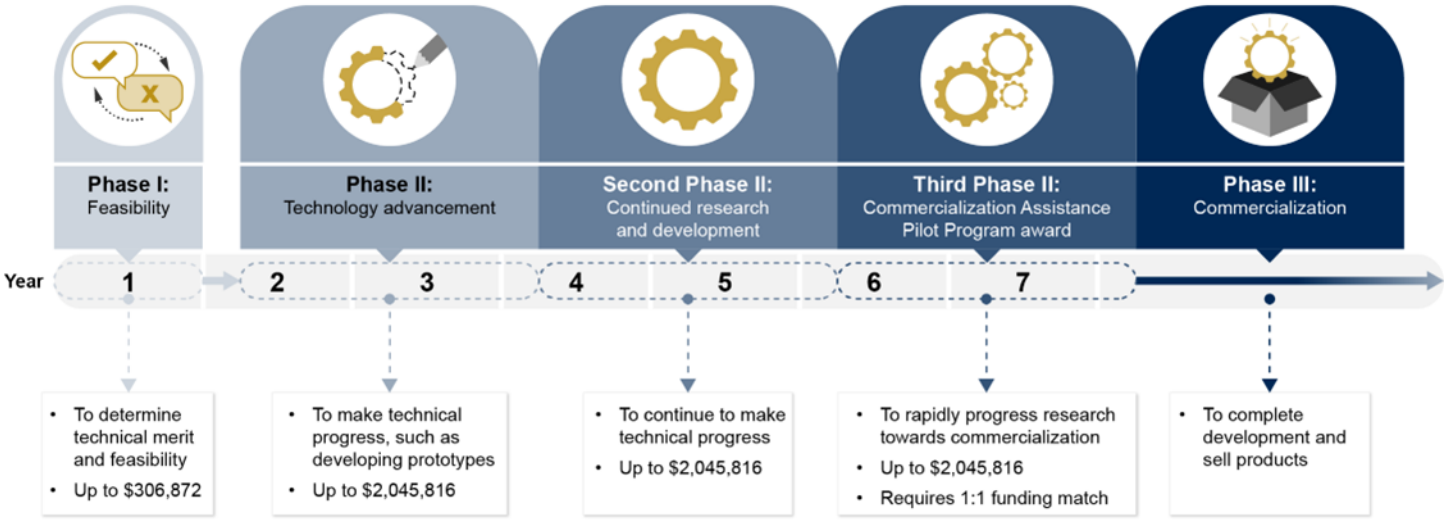
government. A small business must submit a plan for commercializing their innovation when applying for a CAPP award.

- **Secure matching funds from an eligible third party.** A small business applying for a CAPP award must secure matching funds from an eligible third-party investor equal to the CAPP award amount.[6]

CAPP awards may not exceed the limitation on size of awards for a Phase II award, and agencies may not allocate more than 5 percent of the funds allocated to their SBIR program to CAPP awards.[7]

SBIR awards can end before a promising technology has attracted significant non-SBIR government contracts or private-sector capital to license and commercialize the technology. A CAPP award extends the time and funding for small business R&D (see fig. 1).

Figure 1: Small Business Innovation Research (SBIR) Award Phase Timeline with the Commercialization Assistance Pilot Program (CAPP)



Source: GAO analysis of Small Business Administration and Department of Energy information; GAO (illustrations). | GAO-24-107155

Accessible Data for Figure 1: Small Business Innovation Research (SBIR) Award Phase Timeline with the Commercialization Assistance Pilot Program (CAPP)

Illustration of a timeline showing Phase I, Phase II, Second Phase II, Third Phase II Commercialization Assistance Pilot Program award phases, and Phase III Commercialization.

Source: GAO analysis of Small Business Administration and Department of Energy information; GAO (illustrations). | GAO-24-107155

Notes: Phase I, Phase II, second Phase II, and third Phase II awards are funded from agencies' SBIR program budgets. Phase III is funded by other sources, such as non-SBIR agency programs. Awards above the amounts listed require SBA approval.

The timeline shown is a notional example of how an awardee may progress through the phases of the Department of Energy's SBIR program through its Office of Science. Award duration, time between awards, and award amounts may vary.

What awards have been made?

As of September 2024, one agency—the Department of Energy (DOE), through one component, the Office of Science—had implemented CAPP and issued awards.[8] The Office of Science received 21 CAPP award applications and selected 10 awardees (see table 2). These awardees continued R&D of technologies such as nanomaterials, semiconductors, and fuel cells. We found that from fiscal years 2019 through 2023, DOE used 1 percent or less of its overall SBIR budget for CAPP awards, which is below the 5 percent limit specified in the Small Business Act.[9] SBIR budget data for FY 2023 are the most recent data available.[10]

DOE first received an application for a CAPP award in FY 2019 but did not select any awardees until FY 2020. We identified 136 unique small businesses, working

on 195 unique SBIR projects, that were eligible to apply to DOE's Office of Science for a CAPP award from fiscal years 2019 through 2024. Small businesses that receive a second Phase II award from DOE's Office of Science are eligible to apply for a CAPP award 2 years after they applied for their second Phase II award. Using data on prior awards, we identified the small businesses that have been eligible to apply for CAPP awards from fiscal years 2019 through 2024. For example, those that received a second Phase II award in FY 2022 were eligible to apply for FY 2024 CAPP awards.

Table 2: Department of Energy Office of Science Commercialization Assistance Pilot Program (CAPP) Awards, Fiscal Years 2019–2024[a]

Award	Award fiscal year	Department of Energy funding program	Total prior funding [b]	CAPP award amount	Matching funds amount [c,d]	Matching funds source	Awardee location
A	2020	Energy Efficiency and Renewable Energy	$2,150,000	$1,100,000	$1,100,000	Non-SBIR federal government	CA
B	2020	Energy Efficiency and Renewable Energy	$2,146,837	$69,880	$70,000	Other small business	FL
C	2020	Energy Efficiency and Renewable Energy	$2,150,000	$1,150,000	$1,100,000	Venture capital firm	OH
D	2020	Nuclear Physics	$2,169,263	$549,359	$500,000	Other small business	AZ
E	2021	Nuclear Nonproliferation	$2,298,067	$1,099,962	$1,028,000	Other small business	CA
F	2022	Basic Energy Sciences	$2,174,756	$999,431	$999,431	Other small business	CA
G	2022	Basic Energy Sciences	$2,304,662	$1,150,000	$1,100,000	Other small business and non-SBIR federal government	OH
H	2024	Basic Energy Sciences	$2,349,799	N/A[e]	N/A[e]	N/A[e]	CA
I	2024	Fossil Energy	$2,500,000	N/A[e]	N/A[e]	N/A[e]	MA
J	2024	Energy Efficiency and Renewable Energy	$2,349,894	N/A[e]	N/A[e]	N/A[e]	SC
Total			**$22,593,278**	**$6,118,632**	**$5,897,431**		

Source: GAO analysis of data from the Small Business Administration (downloaded February 2024) and the Department of Energy | GAO-24-107155

[a]DOE's Office of Science completed making FY 2024 Phase II award selections in September 2024.

[b]This includes the total for all project awards prior to the CAPP award.

[c]Under CAPP, small businesses must secure matching funds from an eligible third party—another small business, a venture capital firm, individual investor(s), a non-SBIR federal, state, or local government source, or a combination thereof. Owners of the small business are not eligible.

[d]Matching fund amounts listed may be less than award amounts because awards may include fees and a supplement of up to $50,000 from DOE's Technical and Business Assistance program.

[e]The 2024 CAPP awardees have been selected but their award details have not yet been finalized as of the date of our report.

How does DOE's Office of Science select CAPP awardees and track their progress toward commercialization?

Officials from DOE's Office of Science told us the application and award process they use for CAPP is similar to the one they use to select and manage all Phase II awards and ensure that statutory requirements for matching funds and awardee selection are met. Officials also told us that they track awardee progress toward commercialization throughout the duration of the award.

Application solicitation

DOE's Office of Science releases funding opportunity announcements to solicit Phase II awards twice a year. Officials told us they notify all eligible small businesses of the opportunity for a CAPP award via email before each solicitation cycle.[11]

Award selection

To select CAPP awardees, DOE's Office of Science has applications reviewed against a set of selection criteria.[12] Reviewers consider, among other things, whether the R&D activities planned by the small business will lead to commercialization and societal benefits, as required by the Small Business Act. As part of the application, small businesses must submit an updated commercialization plan detailing the progress accomplished through the project's previous Phase II awards, as well as the goals an applicant would pursue with a CAPP award. CAPP applications also include a technical narrative describing the technology and how it would benefit from additional R&D. For example, one awardee's commercialization plan and technical narrative described its success using previous Phase II awards to develop custom-built particle accelerator components. This awardee also conveyed its plans to use a CAPP award to refine its technology for sales to the industrial radiography market.

DOE officials told us the Office of Science evaluates CAPP applications using a weighted scoring system that includes the following:

- The technical, economic, and societal benefits of the project
- The likelihood the project would lead to a marketable product or process
- The expectations of the third-party investor providing the matching funds
- The likelihood the project would attract non-SBIR funding in addition to matching funds

According to DOE's Office of Science, the potential impact of a project has the greatest weight, and applications that score poorly in terms of commercial potential are not selected for an award. Within DOE's Office of Science, all Phase II applications are ranked in order of the highest quality and strongest program relevance based on the results of the evaluation. Selections are made from this ranked list until the SBIR Phase II budget is exhausted.[13] According to agency officials, the Office of Science does not have a CAPP-specific budget, only a Phase II budget. CAPP applicants therefore compete against first and second Phase II award applicants for funding. DOE officials told us that they limit the CAPP award amount to up to $1.1 million. Program officials and awardees negotiate the award amount based on the proposed cost of the project and require CAPP applicants to submit a letter of commitment from their third-party investor.[14]

Monitoring commercialization progress

Once CAPP awards are issued, DOE's Office of Science has a process in place to monitor the progress of its awardees toward commercialization. Throughout the Phase II award life cycle, including CAPP, DOE requires awardees to submit a research performance progress report every 6 months. These reports detail project goals, accomplishments, challenges, and results, among other things. DOE officials said that DOE typically disburses CAPP funds over a 2-year period and said they use awardees' second report during the CAPP award to decide whether to disburse the second year of CAPP funding.[15]

According to DOE officials, it is too early to measure the commercialization outcomes of CAPP awards. This is because the first CAPP awards ended in

2022, and awardees typically spend many years commercializing their research after they complete the R&D phase of a project.

How do the characteristics of CAPP awardees compare to those of other DOE Office of Science second Phase II award recipients?

CAPP awardees are demographically similar to other DOE Office of Science second Phase II award recipients, as shown in table 3.[16] However, due to the small populations of CAPP awardees and small businesses that applied for but were not selected for a CAPP award ("unsuccessful applicants"), comparisons between these groups, and other eligible small businesses, are not statistically reliable.[17]

Table 3: Demographic Characteristics of Department of Energy Office of Science Commercialization Assistance Pilot Program (CAPP) Awardees, Unsuccessful Applicants, and Other Eligible Small Businesses

Category	Located in a historically underutilized business zone[a]	Owned by person(s) from socially and economically disadvantaged groups[b]	Women-owned	Total (percent of total eligible small businesses)
CAPP awardees[c]	4 (40%)	0 (0%)	0 (0%)	10 (7%)
Unsuccessful applicants	1 (9%)	0 (0%)	1 (9%)	11 (7%)
Other eligible small businesses	9 (8%)	7 (6%)	9 (8%)	115 (85%)
Total eligible small businesses	14 (10%)	7 (5%)	10 (7%)	136 (100%)

Source: GAO analysis of data from the Small Business Administration (SBA) (downloaded February 2024). | GAO-24-107155

Note: Percentages are rounded to the nearest 1 percent. Small businesses self-report their demographic characteristics to SBA.

[a]SBA designates economically distressed areas as historically underutilized business zones based on data such as unemployment and poverty rates.

[b]Socially and economically disadvantaged-ownership status data were missing for one small business.

[c]CAPP awardees includes the awardees selected in FY 2024. Award details have not been finalized for these awardees.

Half of CAPP awardees and most unsuccessful applicants and other eligible small businesses had 20 or fewer employees, as shown in table 4. The number of employees at a small business can be one indicator of progress toward commercialization, but not in all cases. A small business may commercialize a technology without hiring new personnel.

Table 4: Employee Count of Department of Energy Office of Science Commercialization Assistance Pilot Program (CAPP) Awardees, Unsuccessful Applicants, and Other Eligible Small Businesses

Category	20 or fewer	21-100	101-500	Total (percent of total eligible small businesses)
CAPP awardees[a]	5 (50%)	4 (40%)	1 (10%)	10 (7%)
Unsuccessful applicants	8 (73%)	3 (18%)	0 (0%)	11 (8%)
Other eligible small businesses[b]	77 (68%)	28 (25%)	9 (8%)	114 (85%)
Total eligible small businesses	90 (67%)	35 (26%)	10 (8%)	135 (100%)

Source: GAO analysis of data from the Small Business Administration (SBA) (downloaded February 2024) and testimonial evidence from small businesses. | GAO-24-107155

Note: Percentages are rounded to the nearest 1 percent. Small businesses self-report their demographic characteristics to SBA.

[a]CAPP awardees includes the awardees selected in FY 2024. Award details have not been finalized for these awardees.

[b]Employee count data were missing for one small business.

Have CAPP awards helped small businesses grow and commercialize their research?

DOE's CAPP awards helped small businesses advance their R&D toward commercialization, according to awardees we interviewed, but the full impact of the program is not yet known due to limited data and other factors.

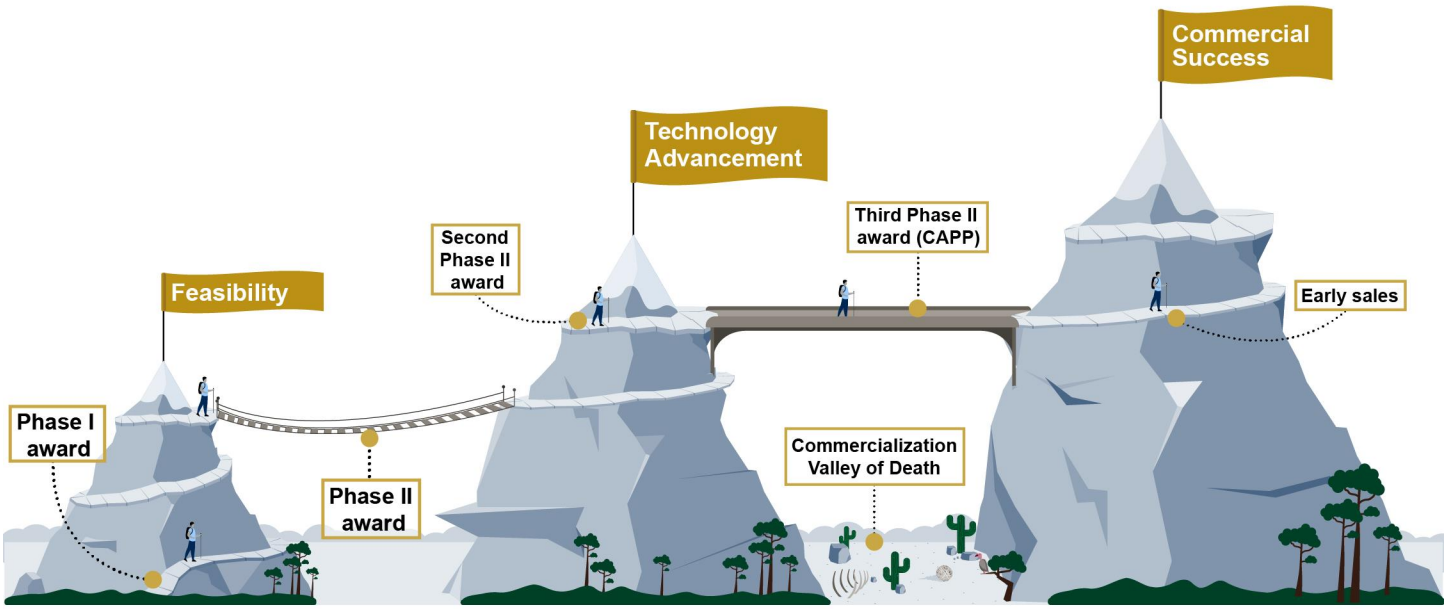
Some awardees said their CAPP award helped them make initial sales and acquire new investments. CAPP awards also helped two small businesses scale up production and increase their capacity to make sales. For example, one small business told us their CAPP award set them on a path to increase production to a point where they can sell enough of their product to sustain the company without federal funding. Some awardees also said that their CAPP award helped them hire or retain employees.

In addition, CAPP awards helped some awardees remain in business long enough to complete key R&D activities. A representative of one of these small businesses said SBIR funding allowed their facility to become the nation's only source of high-quality gallium nitride substrate—a key material for certain semiconductors. These awardees told us they are still seeking additional sources of funding to help them advance their technologies enough to allow them to make substantial sales.

In some cases, CAPP awards led to new market opportunities for small businesses. Two awardees developing devices for scientific research said their CAPP award helped them explore applications for their devices in new markets. In addition, some awardees said they received non-SBIR federal funding for related research. For example, one awardee received Department of Defense (DOD) funds to develop a medical device that applies their DOE CAPP-funded technology.

By providing an additional opportunity for federal funding, a CAPP award might help awardees bridge the gap between the end of SBIR funding and the receipt of funding from investors, sales, or other sources (see fig. 2). This gap is often referred to as the "valley of death" because without new funding, small businesses may not be able to sustain their progress long enough to commercialize after their government funding ends. DOE officials said awardees may work on "deep-tech" projects—research with long development timelines.

Figure 2: Commercialization Assistance Pilot Program (CAPP) Awards and the Valley of Death



CAPP = Commercialization Assistance Pilot Program

Source: GAO (analysis and illustrations). | GAO-24-107155

Accessible Data for Figure 2: Commercialization Assistance Pilot Program (CAPP) Awards and the Valley of Death

Illustration of small businesses going through award phases, using the Commercialization Assistance Pilot Program award to avoid the commercialization valley of death.

Source: GAO (analysis and illustrations). | GAO-24-107155

A few factors limit further analysis of the effects of CAPP:

- **Few CAPP awards have been made.** Due to the small population of awards, an analysis of the commercialization outcomes of CAPP is unlikely to provide statistical evidence on the effectiveness of the program. It would be difficult to determine whether growth and commercial outcomes, such as increases in employees or product sales, are the result of receiving a CAPP award or are better explained by other factors, such as market conditions.
- **Awardees have not had sufficient time to commercialize their research.** Achieving commercialization, especially for high-tech products, may take many years. For example, one awardee noted that full development of their product is expected to take 20 years.
- **Typical measures of commercialization provide limited insight.** As we have previously reported, SBIR funding may lead to indirect benefits that are difficult to measure.[18] For example, an awardee may develop expertise that leads to the commercialization of a different product than the one for which it received SBIR funding. In addition, a SBIR-funded project may yield a product with value to research scientists or to society at large, which may not be captured by available measures, such as sales, as the National Academies of Sciences, Engineering, and Medicine previously reported.[19] DOE officials noted that some CAPP awardees serve niche areas, such as nuclear security and advanced instrumentation for discovery science, that do not have large commercial markets.
- **Commercialization data may be incomplete or unavailable.** Private-sector and government databases have some commercialization

information, but these data may be self-reported and difficult to verify, or incomplete. Small businesses are not required to report commercialization data to private sector databases and are only required to submit such information to SBA under certain circumstances. Prior Phase II awardees are required to submit commercialization reports on the outcomes of their Phase II awards when applying for new Phase II awards, and upon completion of those awards. So far, fewer than half of DOE's seven CAPP awardees have reported the commercial outcomes of their CAPP awards to SBA.

Have unsuccessful CAPP applicants developed and commercialized their research?

Most of the 11 unsuccessful applicants for DOE's CAPP awards continued to work toward commercializing their technologies, according to representatives of these small businesses. However, they said they would have been able to progress toward commercialization more quickly with a CAPP award. These small businesses applied for a CAPP award to continue R&D of technologies in areas such as nanomaterials, semiconductors, renewable energy, and software for scientific research.

In some cases, unsuccessful applicants said they made steady progress toward commercialization without a CAPP award. A few made sales or received non-SBIR investments following their second Phase II awards. One unsuccessful applicant said that they have been able to move forward with testing their product with potential customers, though a CAPP award would have enabled them to do so close to a year earlier. Similarly, a representative of another small business said that a CAPP award would have helped advance their project faster, but they received investments from several other sources following their second Phase II award to support continued R&D and commercialization efforts.

Some small businesses reported negative consequences after DOE's Office of Science did not select them for a CAPP award. Three unsuccessful applicants said a CAPP award would have helped them afford to retain employees and maintain their progress toward commercialization. In addition, three said they had planned to use the award to specialize their product for sales to specific customers, but these plans were stalled when they were not selected for the award.

A few unsuccessful applicants used other federal agency funding opportunities to continue their research, but CAPP could have reduced gaps in funding, given that it is disbursed closely following the second Phase II award. For example, one unsuccessful applicant anticipated finalizing a contract with a federal government lab to complete R&D and deliver its product to its intended customer, but progress has been delayed as it awaits funding. In addition, a few of these applicants have shifted focus to related research and applied for new SBIR Phase I awards with the goal of being eligible for Phase II awards again within the next few years.

A reliable comparison between awardees' and unsuccessful applicants' growth and commercial success is not possible due to the data challenges described previously.

What did stakeholders say about the benefits and challenges of CAPP?

Most agency officials and CAPP applicants—both CAPP awardees and unsuccessful applicants—told us that SBIR Phase II programs, including CAPP, can help small businesses progress toward their commercialization goals. CAPP applicants told us SBIR funding is important because private funding

opportunities are limited due to long development timelines and niche customer bases for their technologies. Some CAPP applicants told us that if the pilot is not reauthorized, fewer small businesses will survive the valley of death.

DOE officials we spoke with said that CAPP helps small businesses that require longer R&D timelines to mature their technologies for commercialization. Though officials were aware that CAPP is intended for rapid progression toward commercialization, they noted that companies that can achieve rapid commercialization would not need the additional time and funding for R&D that CAPP provides. Many of the technologies funded by CAPP have significant scientific and engineering challenges to overcome, which can extend the investment required to progress a technology from R&D to sales. This effect can be compounded for small businesses that are attempting to create a market for a niche technology.

While CAPP can help small businesses, agency officials and small business representatives we spoke with had mixed views about some of the program requirements.

Matching funds

Some agency officials and CAPP applicants said that the requirement that small businesses secure matching funds from an eligible third-party investor as a condition of a CAPP award was a beneficial aspect of the program, while others viewed it as a challenge to applying for an award. As noted earlier, according to the Small Business Act, small businesses cannot use internal R&D funds or additional investments from owners, among other ineligible sources, to meet the CAPP matching funds requirement.[20]

Benefits of the requirement. In some cases, the requirement to secure a third-party investor provided additional opportunities for small businesses and demonstrated the promise of their research. According to two awardees, CAPP helped them attract new private investors, because federal funding gave the investors more confidence in the investment. They said federal support of a project is particularly important in cases where technologies are too new or risky to provide a short-term return on investment. In addition, two awardees told us they worked with their matching fund partners on new applications of their technologies. Officials from several agencies we spoke with see a small business's ability to secure third-party funding as evidence of a technology's commercial potential.

Challenges. Some agency officials and CAPP applicants agree that the restrictions on the types of parties that can provide matching funds for a CAPP award might pose a challenge to applying. Some CAPP applicants said they should be allowed to use internal funds or additional investments from their owners to match a CAPP award because attracting new funding is difficult. Further, accepting new third-party investment may not be favorable to current owners because it may dilute their share of ownership. One CAPP applicant said that if the purpose of the matching funds is to serve as a signal of commercial potential, the program could require other signals that may be easier for some small businesses to provide, such as letters from potential customers. In addition, officials from SBA, DOE, and the Department of Homeland Security told us the requirement might deter small businesses from applying for a CAPP award.

Award timing

Some agency officials cautioned that the timing requirements for CAPP applications could make it difficult for eligible small businesses to apply for an award, but CAPP applicants expressed varying perspectives on this subject. The

Small Business Act requires that CAPP awards be disbursed during Phase II.[21] As a result, in DOE's Office of Science SBIR program, eligible small businesses must apply for a CAPP award during the solicitation cycle that closes a few months before the end of their second Phase II award.

Benefits of the requirement. Some CAPP applicants said that CAPP application timing requirements enable continuous funding, which is key for retaining employees and continuing R&D. They told us that if the CAPP solicitation cycle were later, it might create a lapse in funding that could stall awardees' progress toward commercialization.

Challenges. Some CAPP applicants found it challenging to submit a CAPP application before their second Phase II award was complete. This was because they were still pursuing the R&D goals they outlined for their second Phase II award, and therefore they could not report on the complete outcome of their second Phase II R&D efforts.

Why have most agencies not implemented CAPP?

Most SBIR participating agencies did not implement CAPP because they do not offer second Phase II awards, and therefore do not work with any small businesses eligible to receive a CAPP award. In addition, two agencies that infrequently offered second Phase II awards told us it would be challenging to implement CAPP because they work with too few eligible small businesses. Some agencies did not implement CAPP because they use other programs to support the commercialization of SBIR-funded research.

The Small Business Act requires all SBIR participating agencies to implement CAPP unless excepted by SBA. SBA officials told us that each component within a SBIR participating agency that offers a second Phase II award is required to implement CAPP unless SBA grants it an exception for operating a sufficiently similar program. According to SBA, each component can meet the requirement either through department level implementation that includes the component, or at the individual component level. For example, within the Department of Health and Human Services, five components participate in SBIR, but only one, the National Institutes of Health (NIH), issues second Phase II awards. NIH applied to SBA for, and received, an exception from participating in CAPP because SBA determined it has a comparable program in place. Additionally, DOE's Office of Science and Advanced Research Projects Agency-Energy (ARPA-E) both issue second Phase II awards, but only the Office of Science implemented CAPP. Table 5 shows the implementation status of CAPP for SBIR participating agencies.

Table 5: Commercialization Assistance Pilot Program (CAPP) Implementation Status by Small Business Innovation Research (SBIR) Participating Agencies and their Components

CAPP implementation status	CAPP implementation status information	SBIR participating agency
Implemented		Department of Energy (DOE): Office of Science[a]
Not Implemented	Not implemented: excepted by the Small Business Administration (SBA) for "sufficiently similar" programs	• Department of Health and Human Services (HHS): National Institutes of Health[b] • National Aeronautics and Space Administration

CAPP implementation status	CAPP implementation status information	SBIR participating agency
Not Implemented	Unable to implement: does not offer second Phase II awards	• Department of Commerce • Department of Education • HHS: Other Components[b] • Environmental Protection Agency • National Science Foundation • U.S. Department of Agriculture
Not Implemented	Not implemented: inconsistently offers second Phase II awards	• Department of Homeland Security • Department of Transportation

Not Implemented	Not implemented: uses other commercialization assistance programs and has not received an exception	• Department of Defense (DOD)[c]
		  ○ Department of the Army
		  ○ Department of the Navy
		  ○ Department of the Air Force
		  ○ DOD: Other Components
		• DOE: Advanced Research Projects Agency-Energy (ARPA-E)[a]

Source: GAO analysis of information from SBA and SBIR participating agencies. | GAO-24-107155

[a]DOE is the SBIR participating agency. See 15 U.S.C. § 638(e)(2), (uu)(10)(A), 5 U.S.C. § 105.

[b]HHS is the SBIR participating agency. See 15 U.S.C. § 638(e)(2), (uu)(10)(A), 5 U.S.C. § 105.

[c]The Department of Defense (which has 12 components that operate SBIR programs) and the departments of the Army, Navy, and Air Force are each individual SBIR participating agencies. See 15 U.S.C. § 638(e)(2), (uu)(10)(A), 5 U.S.C. § 102, 105.

SBA excepted two agencies from implementing CAPP. The National Aeronautics and Space Administration (NASA) and the Department of Health and Human Services, NIH (the only component of the department that offers second Phase II awards and can implement CAPP) both applied for and were granted an exception from implementing CAPP. SBA's SBIR office granted these exceptions after determining that each entity had sufficiently similar programs to CAPP. For example, NASA's application detailed multiple commercialization assistance programs that collectively provide small businesses with similar opportunities as CAPP.[22]

Most agencies lack eligible small businesses. Most agencies do not offer second Phase II awards and therefore do not have a population of eligible applicants for CAPP awards.[23] CAPP requires eligible applicants to have received a second Phase II award from the agency to which it is applying for a CAPP award.[24] The language of the Small Business Act does not include an exception to agencies from implementing a CAPP on this basis. SBA therefore provided guidance to agencies that do not offer second Phase II awards, stating that such agencies do not meet the eligibility requirements to implement CAPP but they must notify SBA if they do start offering second Phase II awards.

Two agencies inconsistently offered second Phase II awards. The Departments of Transportation and Homeland Security have each selected a few projects to receive second Phase II awards in recent years, but they did not regularly offer or award second Phase II awards.[25] Both agencies told us it would be challenging for them to implement CAPP given their small pools of eligible applicants.

DOD and ARPA-E operate other commercialization assistance programs. Both DOD and ARPA-E offer second Phase II awards but had not implemented CAPP or applied to SBA for an exception when we began our work. However, during our review, both DOD and ARPA-E told us they would work with SBA to receive an exception for programs they operate and believe to be sufficiently similar to CAPP.

DOD and the Departments of the Army, Navy, and Air Force each implement the Commercialization Readiness Program, which predates CAPP.[26] The purpose of the program is to accelerate the transition of SBIR funded technologies to Phase III, with an emphasis on increasing the number of Phase II technologies that DOD may choose to acquire for its own use. Some of these agencies told us they can disburse funds more effectively with their existing programs than the CAPP requirements would allow them to.

ARPA-E operates the Seeding Critical Advances for Leading Energy technologies with Untapped Potential (SCALEUP) Program, which is exclusive to previous ARPA-E awardees and has a goal of advancing R&D and commercialization efforts.

Agencies with a smaller SBIR program budget face challenges with implementing CAPP. Seven of the eight agencies that did not offer, or did not consistently offer, second Phase II awards also told us their SBIR program budgets are too small to support significant CAPP awards. For example, some agencies told us there are trade-offs between the number of awards and amount of funding provided.[27] Specifically, funding projects at larger amounts over the course of several awards comes at the cost of funding fewer projects overall, since their SBIR awards are granted from a single budget (see fig. 3). Additionally, we found that agencies with smaller SBIR program budgets may not be able to offer CAPP awards, or only a few, equal to their median Phase II award size while adhering to the limit of 5 percent of total SBIR funding (see table 6).

Table 6: Number of Commercialization Assistance Pilot Program (CAPP) Awards Possible Given Small Business Innovation Research (SBIR) Participating Agencies' Budgets and CAPP's Statutory Funding Limitation, Fiscal Year 2021.

SBIR participating agency	Total value of SBIR awards, in millions	Approximate maximum CAPP budget based on statutory limit, in millions[a]	Median Phase II award amount, in millions	Number of CAPP awards possible at agency's median Phase II award amount
Department of Defense (DOD)				
Department of Defense (DOD): Department of the Air Force[b]	$506.9	$25.3	$0.7	36
Department of Defense (DOD): Department of the Navy[b]	$351.9	$17.6	$1.1	16
Department of Defense (DOD): Other Components[b,c]	$341.2	$17.1	$1.2	14
Department of Defense (DOD): Department of the Army[b]	$107.7	$5.4	$0.7	7
Department of Health and Human Services	$986.0	$49.3	41.7	29
Department of Energy	$309.7	$15.5	$1.1	14
National Science Foundation	$179.6	$9.0	$1.0	0
National Aeronautics and Space Administration	$174.2	$8.7	$0.7	12
U.S. Department of Agriculture	$27.7	$1.4	$0.6	2
Department of Commerce	$22.2	$1.1	$0.4	2
Department of Homeland Security	$17.2	$0.9	$1.0	0
Department of Transportation	$14.8	$0.7	$0.5	1
Department of Education	$13.5	$0.7	$0.9	0
Environmental Protection Agency	$5.9	$0.3	$0.4	0

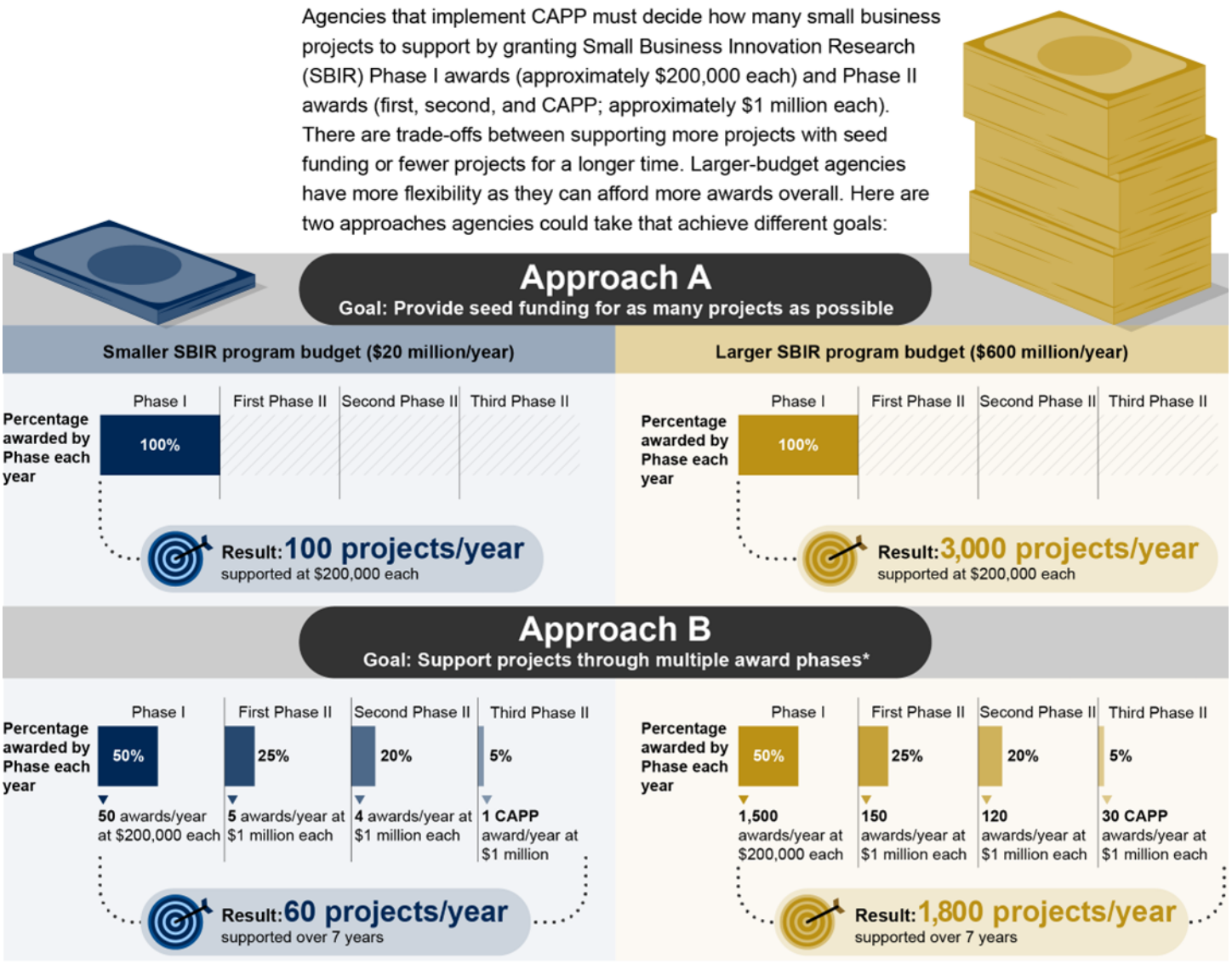
Source: GAO analysis of data from the Small Business Administration (downloaded February 2024). | GAO-24-107155

[a]SBIR participating agencies may spend a maximum of 5 percent of SBIR allocated funding on CAPP awards. 15 U.S.C. § 638(uu)(2). The maximum CAPP budget shown here is approximate because we reported total SBIR award dollars in this table rather than SBIR allocated funding.

[b]Analysis in this row is affected by missing data. Database entries totaling $16.7 million did not identify which military department reported the SBIR award, so we excluded these entries from our calculations.

[c]This row represents non-Army/Navy/Air Force SBIR dollars within DOD.

Figure 3: Notional Budgetary Trade-Offs Made by Agencies That Could Implement the Commercialization Assistance Pilot Program (CAPP)



Source: GAO (analysis and illustrations). | GAO-24-107155

Figure 3: Notional Budgetary Trade-Offs Made by Agencies That Could Implement the Commercialization Assistance Pilot Program (CAPP)

Agencies that implement CAPP must decide how many small business projects to support by granting Small Business Innovation Research (SBIR) Phase I awards (approximately $200,000 each) and Phase II awards (first, second, and CAPP; approximately $1 million each). There are trade-offs between supporting more projects with seed funding or fewer projects for a longer time. Larger-budget agencies have more flexibility as they can afford more awards overall. Here are two approaches agencies could take that achieve different goals:

- Approach A: Provide seed funding for as many projects as possible.
    - Smaller SBIR program budget ($20 million/year) result: 100 projects a year supported in Phase 1 at $200,000 each
    - Larger SBIR program budget ($600 million/year) result: 3,000 projects a year supported in Phase 1 at $200,000 each
- Approach B: Support projects through multiple award phases
    - Smaller SBIR program budget ($20 million/year) result: Phase I - 50 awards/year at $200,000 each, Phase II - 5 awards/year at $1 million each, Second Phase II - 4 awards/year at $1 million each, Third Phase II - 1 CAPP award/year at $1 million
    - Larger SBIR program budget ($600 million/year) result: Phase I - 1,500 awards/year at $200,000 each, Phase II – 150 awards/year at $1 million each, Second Phase II – 120 awards/year at $1 million each, Third Phase II – 30 CAPP awards/year at $1 million each

Over multiple years, an agency using approach B may grant one or more CAPP awards. CAPP awardees may receive millions of dollars over the course of several years.

Source: GAO (analysis and illustrations). | GAO-24-107155

What actions has SBA taken to oversee and report on agencies' implementation of CAPP?

SBA took steps to guide SBIR participating agencies' implementation of CAPP but conducted limited oversight and reporting on CAPP after 2020.

SBA met its CAPP-specific responsibilities under the Small Business Act. Regarding CAPP, SBA was to:

- Determine whether a SBIR participating agency has a sufficiently similar program that excepts the agency from the CAPP implementation requirement.[28] In 2019, SBA's SBIR program office provided an initial deadline to SBIR participating agencies seeking an exception, received applications from two agencies, and determined that those agencies had sufficiently similar programs to merit exceptions. As of June 2024, SBA told us that they would still accept and make determinations on exception applications from agencies.
- Require, as a condition of award, that matching funds, equal to the award amount (excluding any fees collected by the small businesses) be provided from an eligible third-party investor.[29] SBA provided guidance in its 2019 policy directive specifying that matching funds from an eligible third party are required.

In addition, the Small Business Act authorizes SBA to, among other things, independently survey and monitor the operation of the SBIR programs of participating agencies.[30]

We found that SBA provided guidance to SBIR participating agencies on CAPP implementation requirements shortly after the law was established. In 2019, SBA officials communicated with program officials at all SBIR participating agencies

about CAPP and provided guidance in 2020 on how to meet their responsibilities. The guidance instructed agencies to implement CAPP or to apply for an exception if they have a sufficiently similar program. SBA also told agencies that they are not eligible to implement CAPP unless they offer second Phase II awards. In addition, according to SBA officials, in April 2020 they briefed SBIR participating agencies on all SBIR requirements, including CAPP.

However, following these interactions, SBA did not attempt to guide individual agencies to comply with CAPP requirements or periodically collect information on their implementation status. For example, agencies that might have "sufficiently similar" programs for which they could be granted an exception from implementing CAPP did not apply for such an exception, nor did they have conversations with SBA about doing so until after our review began in 2024. As of August 2024, DOD and ARPA-E had begun the process to apply to SBA for an exception from implementing CAPP. SBA told us that they do not consider it their duty to continuously encourage participating agencies to implement CAPP or request an exception.

SBA and SBIR participating agencies are not required to separately report CAPP implementation status or awards data. Some agencies we interviewed told us they do not report any information unless they are specifically required to do so, as with, for example, a statutory requirement for DOD to submit information to SBA on the number and status of every SBIR project funded through DOD's Commercialization Readiness Program (CRP). Collecting such information from SBIR participating agencies about CAPP would be consistent with SBA's monitoring for other commercialization programs.[31] For example, SBA includes an accounting of funds, initiatives, and outcomes under CRP in its annual report to Congress on the small business research programs—SBIR and Small Business Technology Transfer (STTR).[32] Further, doing so can help SBA to meet its broader oversight responsibilities for the SBIR program, and SBA officials agreed there could be value in doing so. It would also provide SBA with information on agencies' implementation status, awards made, and challenges faced with the pilot. SBA, in turn, could provide such information to Congress, such as through its annual report on the SBIR/STTR programs, to assist congressional oversight and provide insights to shape the future of the pilot.

Conclusion

Small businesses may benefit from the additional time and funding that a CAPP award provides, especially to continue work on technologies with long development timelines. However, though required by law, most agencies were unable to implement CAPP due to a lack of small businesses eligible to apply for a CAPP award from the agency. As a result, only a few awards were made by one agency component—the DOE Office of Science. Some agencies have similar programs in place and were excepted from implementing CAPP. Congress has an opportunity to consider these situations if the pilot is reauthorized.

Following 2020, SBA's efforts to guide and oversee agencies' implementation of CAPP were minimal. Further action, such as collecting and reporting information from SBIR participating agencies on CAPP implementation status, can provide transparency about the extent to which agencies implemented CAPP and provide important insights to guide the future of the pilot. SBA's annual SBIR/ STTR reports to Congress would be a mechanism to do so.[33]

Matter for Congressional Consideration and Recommendation for Executive Action

We are recommending the following matter for congressional consideration and making one recommendation to SBA:

If Congress wishes to reauthorize CAPP, it should consider clarifying which agencies are required to implement CAPP because not all SBIR participating agencies offer sequential Phase II awards (Matter for Consideration 1).

If the CAPP program is reauthorized, the Administrator of SBA should direct the SBIR Program Office to collect and report information from SBIR participating agencies on CAPP—such as implementation status, number of awards, and dollars awarded (Recommendation 1).

Agency Comments

We provided a draft of this report to SBA and the 11 participating agencies for review and comment.

In response to our draft report SBA and DOT provided one technical comment each, which we incorporated as appropriate. The nine other agencies had no comments. In its response to our draft report, SBA concurred with our recommendation (see Appendix 1).

How GAO Did This Study

We reviewed laws governing SBIR in general and CAPP specifically. We also reviewed SBA's policy directive and guidance sent to agencies about CAPP.

We obtained and analyzed data from multiple sources to answer our research objectives. We examined DOE data on all CAPP applications and awards from FY 2019 through FY 2024, given that DOE's Office of Science is the only agency that implemented the program. We received data elements such as contract number, company name, and source of matching funds. We also confirmed DOE's list of CAPP awardees with data we requested and received from SBA.

We downloaded publicly available award-level data from SBA's SBIR.gov web page in February 2024 and used associated contract numbers and agency tracking numbers for each CAPP-funded project to identify each project's Phase I and Phase II awards (including CAPP awards). We examined data elements for these awards (e.g., award year, award amount, demographic information) from FY 2015, the year the first Phase I award in our dataset was made, to FY 2023, the most recent year with available data at the time of download. In addition, we identified small businesses that would have been eligible for CAPP awards but did not apply (small businesses in DOE's Office of Science SBIR program that received a first and sequential Phase II award for the same project, the second of which was made in 2017–2022) and reviewed relevant data.

To assess the reliability of these data, we examined them for missing data and outliers. We found the data elements we used for this report to be sufficiently reliable for identifying and describing SBIR awards. We confirmed matching fund sources and small businesses' number of employees during interviews with awardees and unsuccessful applicants and updated our data accordingly. We also confirmed matching fund sources using commitment letters from these sources provided by DOE.

We reviewed SBA's commercialization report database to determine the extent to which it could be used to measure commercialization outcomes of CAPP-awarded projects. However, we found that these data were not sufficiently reliable to measure commercialization outcomes because data were missing for most awards in our dataset.

We conducted interviews with or received written responses from all 11 SBIR participating agencies (the Departments of Commerce, Defense, Energy, Health and Human Services, Homeland Security, Education, Transportation, and Agriculture, as well as the Environmental Protection Agency, National Aeronautics and Space Administration, and National Science Foundation) to a

set of questions about their SBIR programs and implementation of CAPP. We also interviewed SBA about their oversight of CAPP. In addition, we reviewed agency documentation from DOE about the agency's CAPP solicitation, application review, and monitoring processes.

We contacted 18 of 21 CAPP applicants by email and phone to request a voluntary interview via phone or email (the three most recent applicants were identified after we had requested interviews). Six of the eight CAPP award-selected small businesses and nine of the 11 unsuccessful CAPP applicants we contacted volunteered for an interview. Questions covered various topics, including the characteristics, technologies, and target commercial markets of the small business applicant; how the small business used its sequential Phase II award; how it used or expected to use its CAPP award; and opportunities and challenges that the small business experienced with CAPP. We did not interview any small businesses that were eligible for, but did not apply for a CAPP award.

We conducted this performance audit from November 2023 to September 2024 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

List of Addressees

The Honorable Jeanne Shaheen
Chair
The Honorable Joni Ernst
Ranking Member
Committee on Small Business and Entrepreneurship
United States Senate

The Honorable Frank Lucas
Chairman
The Honorable Zoe Lofgren
Ranking Member
Committee on Science, Space, and Technology
House of Representatives

The Honorable Roger Williams
Chairman
The Honorable Nydia M. Vel?zquez
Ranking Member
Committee on Small Business
House of Representatives

We are sending copies of this report to the appropriate congressional committees, the Secretaries of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, and Transportation; the Administrators of the SBA, the Environmental Protection Agency, and NASA; the Director of the National Science Foundation; and other interested parties.

GAO Contact Information

For more information, contact: Candice N. Wright, Director, Science, Technology Assessment, and Analytics, WrightC@gao.gov, (202) 512-6888.

Sarah Kaczmarek, Managing Director, Public Affairs, KaczmarekS@gao.gov, (202) 512-8590

A. Nicole Clowers, Managing Director, Congressional Relations, ClowersA@gao.gov, (202) 512-4400.

Staff Acknowledgments: Tind Shepper Ryen (Assistant Director), Atiya Siddiqi (Analyst-in-Charge), Victoria Aysola, Anika McMillon, Alec McQuilkin, Amy Pereira, Katherine R. Shlepr, and Rachel Wexler.

Appendix 1: Comments from the Small Business Administration

September 12, 2024

Candice Wright
Director
Science, Technology Assessment, and
Analytics
U.S. Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

Dear Candice Wright:

Thank you for providing the U. S. Small Business Administration (SBA) with a copy of the Government Accountability Office (GAO) draft report titled "Small Business Innovation Research: Most Agencies Did Not Implement Required Commercialization Pilot", GAO-24-107155.

The GAO report establishes that the SBA properly and fully met its statutory requirements to implement the provisions of the Commercialization Assistance Pilot Program (CAPP), including providing guidance to all SBIR participating agencies, reviewing and making determinations for sufficiently similar programs, and updating the SBIR/STTR Policy Directive in 2019 to reflect the requirements of CAPP. The GAO report also raises important considerations for Congress to consider as it determines the future of the CAPP, which is set to expire on September 30, 2025.

Recommendation 1: If the CAPP program is reauthorized, the Administrator of SBA should direct the SBIR Program Office to collect and report information from SBIR participating agencies on CAPP—such as implementation status, number of awards, and dollars awarded.

SBA Response: Concur.

Thank you for the opportunity to comment on this draft report.

Sincerely,
ERICK PAGE-LITTLEFORD
Digitally signed by ERICK PAGE-LITTLEFORD
Date: 2024.09.12 14:58:25 -04'00'
Erick Page-Littleford
Director, Small Business Innovation Research and Technology Transfer (SBIRTT)
Office of Investment & Innovation
U.S. Small Business Administration

Accessible Text for Appendix 1: Comments from the Small Business Administration

September 12, 2024

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Director
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SBA Response: Concur.

Thank you for the opportunity to comment on this draft report

Sincerely,

Erick Page-Littleford
Director, Small Business Innovation Research and Technology Transfer (SBIRTT)
Office of Investment & Innovation
U.S. Small Business Administration

Endnotes

[1]John S. McCain National Defense Authorization Act for Fiscal Year 2019, Pub. L. 115–232, div. A, tit. VII, subt. F, § 860, 132 Stat. 1636, 1893-1895 (2018) (codified at 15 U.S.C. § 638(uu)).

[2]15 U.S.C. § 638(uu)((1). The Small Business Innovation Development Act of 1982 established the SBIR program. Pub. L. No. 97-219, 96 Stat. 217. This Act amended section 9 of the Small Business Act, Pub. L. No. 85-536, 72 Stat. 384 (1958), codified as amended at 15 U.S.C. § 638. The SBIR program was most recently reauthorized by the SBIR and STTR Reauthorization Act of 2022. Pub. L. No. 117-183, 136 Stat. 2180.

[3]While SBA generally refers to the 11 participating agencies, this includes the Department of Defense and the Departments of the Army, Navy, and Air Force as one agency, however, these are each individual federal agencies pursuant to the SBIR provisions of the Small Business Act. The Small Business Act requires federal agencies with a fiscal year extramural budget for research or research and development in excess of $100 million to implement a SBIR program. 15 U.S.C. § 638(f)(1). The act defines a federal agency as an executive agency as defined in 5 U.S.C. §105 or a military department as defined in 5 U.S.C. § 102 but does not include agencies within the Intelligence Community. 15 U.S.C. § 638(e)(2).

[4]This second Phase II award is referred to as a sequential Phase II award and is issued under 15 U.S.C. § 638(ff)(1).

[5]In addition to second Phase II awards issued under 15 U.S.C. § 638(ff), agencies may issue additional Phase II funds through special or supplemental awards. Special or supplemental awards add funds to an existing Phase II award, up to the Phase II funding limit of $2,045,816. If a small business has received a special or supplemental award, but not a second Phase II award, it is not eligible for a CAPP award.

[6]Eligible third-party investors include other small business concerns, venture capital firms, individual investors, and non-SBIR federal, state or local governments. These investments cannot include funds from ineligible sources including owners of the small business concern or the family member or affiliates of such owners. 15 U.S.C. § 638(uu)(5), (10).

[7]The current cap for Phase II awards, including modifications, is $2,045,816. Phase II awards exceeding this amount require the awarding agency to seek SBA approval and cannot exceed this amount by more than 50 percent. See 15 U.S.C. § 638(aa)(1), (uu)(6).

[8]Two offices within DOE, the Office of Science and the Advanced Research Projects Agency-Energy (ARPA-E), make SBIR awards. Only the Office of Science implemented CAPP.

[9]The Small Business Act limits SBIR participating agencies to using no more than 5 percent of the funds allocated for their SBIR program for CAPP awards. 15 U.S.C. § 638(uu)(2).

[10]SBA's award data typically do not include complete fiscal year data until at least a few months after the fiscal year ends (e.g., FY 2024 data are not expected to be complete until March 2025).

[11]DOE refers to its SBIR award phases as Phase I, Phase II, Phase IIA or Phase IIB (sequential Phase II, or second), and Phase IIC (subsequent Phase II, or CAPP, award).

[12]DOE uses external reviewers with technical expertise and specialized experience in the agency's mission areas. 15 U.S.C. § 638(uu)(8) lists selection criteria agencies are to consider when selecting CAPP awardees.

[13]According to DOE officials, the Selection Official may also consider program balance of funds distribution, needs of the technical programs, risk reviews, and the applicant's performance under prior DOE SBIR/STTR awards including timely submittal of all reports as Program Policy Factors.

[14]Some DOE third Phase II award amounts may exceed $1.1 million, as DOE may award an additional amount up to $50,000 per Phase II award for Technical and Businesses Assistance (TABA). TABA supports non-R&D activities related to commercialization, such as market research.

[15]This is done at the 9-month mark of the award as reports are required on a 6-month cycle after the first 3 months of the award.

[16]SBA tracks participation in the SBIR program by women and socially or economically disadvantaged persons because one goal of the SBIR program is to increase participation in entrepreneurship by members of under-represented groups.

[17]"Other eligible small businesses" refers to small businesses that were eligible to apply to DOE's Office of Science for a CAPP award but did not. Small businesses in the Office of Science's SBIR program that received a sequential, or second Phase II award in July 2017 through August 2022 have been eligible to apply for CAPP awards.

[18]GAO, *Small Business Research Programs: Increased Performance Standards Likely Affect Few Businesses Receiving Multiple Awards*, GAO-24-106398 (Washington, D.C.: Mar. 29, 2024).

[19]National Academies of Sciences, Engineering, and Medicine, Review of the SBIR and STTR Programs at the Department of Energy (Washington, D.C.: The National Academies Press, 2020).

[20]15 U.S.C. § 638(uu)(5), (10)(C)-(D).

[21]15 U.S.C. § 638(uu)(6).

[22]Within a year of CAPP becoming law (15 U.S.C. § 638(uu)), SBA informed SBIR participating agencies of the new requirements and set the deadline for agencies to notify SBA of their intent to apply for an exception of July 12, 2019. NASA and the Department of Health and Human Service's National Institutes of Health were the only two agencies to apply for an exception, and both requests were granted by the Administrator of SBA. NASA's programs include its Civilian Commercialization Readiness Pilot Program, which requires a one-to-one funding match from a third-party investor; participation in the Innovation Corps, which is a training program for small business leaders that was created by the National Science Foundation; and the funding it offers to small businesses through its Phase II Extended award program. Like NASA, the National Institutes of Health cited multiple programs as being collectively similar to CAPP: its second Phase II award program, called Phase IIB; its Civilian Commercialization Readiness Pilot Program; its Commercialization Accelerator Program, which provides mentoring and assistance to Phase II and IIB awarded companies to help them progress to commercialization; its Niche Assessment Program, which is the agency's Technical and Business Assistance program; and its participation in the National Science Foundation's Innovation Corps through the Innovation Corps at the National Institutes of Health.

[23]For the CAPP statutory definition of "eligible entity", see 15 U.S.C. § 638(uu)(10)(B).

[24]See 15 U.S.C. § 638(uu)(10)(B).

[25]Between fiscal years 2020 and 2024, the Department of Transportation made 12 second Phase II awards. Between fiscal years 2019 and 2023, the Department of Homeland Security told us they made two second Phase II awards, both in fiscal year 2019. The number of second Phase II awards made by each agency represents the maximum number of small businesses that could have been eligible to apply for a CAPP award had these agencies implemented the pilot program.

[26]The Commercialization Pilot Program was originally initiated as a pilot program within the Department of Defense and each military department (Army, Navy, Air Force) in 2006 as part of the National Defense Authorization Act for Fiscal Year 2006 (Pub. L. No. 109-163, tit. II, subt. E, § 252, 119 Stat. 3136, 3177-79.). The program was changed from a pilot program to the Commercialization Readiness Program in the SBIR/STTR Reauthorization Act of 2011 (Pub. L. No. 112-81, div. E, 125 Stat. 1822 (codified at 15 U.S.C. § 638(y))). Each military department is permitted to spend up to 1 percent of its SBIR funds on expenses incurred to administer the Commercialization Readiness Program.

[27]For example, DOT officials told us that their SBIR funding total is decentralized across the Department (i.e., each of the participating operating administrations contributes their own 3.2% set-aside budget for their own awards). This decentralized model determines the number and funding level of each award. For example, in FY 2021, each operating administration's annual set-aside ranged from $200,000 to $4 million, making it impossible to secure funding for a CAPP award without impacting the possibility for a first or even second Phase II.

[28]See 15 U.S.C. § 638(uu)(1).

[29]15 U.S.C. § 638(uu)(5)(A).

[30]15 U.S.C. § 638(b)(6).

[31]15 U.S.C. § 638(y)(6).

[32]We previously reported on the delays of SBA's required reports in GAO, *Small Business Research Programs: Reporting on Award Timeliness Could Be Enhanced*, GAO-23-105591 (Washington, D.C.: Oct. 12, 2022). We recommended that SBA should identify and implement actions to improve timely issuance of its annual report. In August 2023, SBA officials described some steps taken to implement it, including timely collection of agency award data, efforts to review all parts of the process, and convening an annual meeting with agency representatives to discuss opportunities to streamline the annual report. We will reassess the status of this recommendation when SBA provides additional information on its implementation. We elevated this to a priority recommendation in May 2023, see *Priority Open Recommendations: Small Business Administration,* GAO-23-106377 (Washington, D.C.: May 15, 2023).

[33]15 U.S.C. § 638(b)(7).