SBIR

Enhancing the
Small Business Innovation Research (SBIR)
Program in Maine

Maine Science and Technology Commission
September 1988

MAINE SCIENCE AND TECHNOLOGY COMMISSION

September, 1988

On behalf of the Maine Science and Technology Commission, I am pleased to present the results of the Commission's study to determine how Maine businesses can obtain more federal Small Business Innovation Research (SBIR) grants. This study follows a preliminary report which was used in developing components of the state's new economic development program.

The Commission believes that the SBIR program is a very important source of financing for new product development. The program can be a useful source of seed capital for new technology-oriented companies in Maine who could not otherwise support aggressive R & D spending.

Maine has already seen results from the increased efforts of several SBIR support programs. The number and breadth of grants to Maine businesses has increased over the past year. Hopefully, the recommendations in this report will further increase the number of businesses applying for the grants and improve the success rate in turning applications into awards.

The Commission is committed to supporting the growth of the SBIR program in Maine. We plan to continue working actively with businesses and the economic development community to improve Maine's capacity to help businesses obtain financing through this important program.

Sincerely,

David M. Coit
Chairman

DMC/abb

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September, 1988

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Enhancing the Small Business Innovation Research (SBIR) Program in Maine

Overview

The Maine Science and Technology Commission (MSTC) initiated this study to determine how the state could help Maine businesses secure more Small Business Innovation Research (SBIR) grants. This report is based on the results of personal consultations with over forty individuals involved with research and development in Maine and analysis of what is being done with the SBIR program nationally.

The purpose of this study is to evaluate the appropriate role for the state in the federal SBIR program and to base any resulting programs on the experiences of people most directly involved with the grant program.

What Is the SBIR Program?

The enactment of the federal Small Business Innovation Development Act in 1982 established a process whereby federal agencies with large external research and development budgets were required to provide a portion of their research grants to small businesses. Contracts are awarded on a competitive basis to private companies that respond to notices of solicitation issued under the name "Small Business Innovation Research" (SBIR) program. A brief description of the program that was used in this survey is included as Appendix I.

Since its inception in 1982, the SBIR program has resulted in approximately 6600 awards totalling nearly $2.5 billion. A significant number of these grants have been for Phase I awards of up to $50,000 with the rest being Phase II awards of up to $500,000. Phase III of the program, which is the product or service commercialization phase, does not involve federal grant funds.

The best available records indicate that 37 grants were made to Maine businesses through 1987. Fourteen different companies received awards for projects having 21 different principal investigators. Three companies received multiple awards. Fiber Materials of Biddeford received twenty grants. Several additional Phase I and Phase II grants were awarded in the first half of 1988 and many grant applications are pending.

Study Process

The study is principally based on telephone consultations with key persons involved with the SBIR program. There were four groups of prospective respondents as follows:

(1) Successful SBIR Applicants

(2) Unsuccessful SBIR Applicants

(3) Potential SBIR Applicants

(4) Economic Development Practitioners

Lists of prospective respondents were developed from public records and consultations with persons involved with the program.Prospective respondents were sent a cover letter informing them that they would be surveyed by telephone and a copy of the questionnaire.

In addition to the surveys, the study evaluated research that has been done by the federal government and other state governments on the SBIR program and the methods that different states are using to support the program. This information has been incorporated into the report.

SURVEY OF SUCCESSFUL APPLICANTS

Because of the small size of the universe of respondents, it is not appropriate to present data in statistical form. Rather, the responses have been summarized based on consensus and general conclusions with anecdotal responses regarding significant items. For the purposes of this summary, the responses have been consolidated into thematic groups.

Most of the successful applicants applied to support research into new products or processes within their specialty but which they could not afford to attempt to develop on their own. No Maine applicants reported that they were attempting to develop new products or processes simply as a response to a grant solicitation. With few exceptions, the companies were already working in the area for which they submitted an application.

Some respondents expressed concern, echoed in other studies of the SBIR program, that there are numerous SBIR "boiler rooms" whose sole business is generating SBIR projects. These operations develop excellent grantsmanship skills and tend to out-compete companies that may have outstanding research records, but which are not sophisticated grant writers. For companies with a competent technical staff and a reasonable record of accomplishment, this should not, however, be a serious impediment to winning SBIR grants. One Maine company solicited the help of one of these SBIR "mills" and got its first grant after several failures!

Value of the SBIR Program

There was a strong endorsement for the positive impact of the SBIR program on the companies. A couple of companies that failed to get Phase II grants did not think that they got much value out of it except that it provided an income for a period of time. All companies said that they were able to do work that they otherwise would not have been able to do with conventional sources of financing because of the inordinate risk. A couple of smaller companies cautioned about becoming overly reliant on SBIR funding and not paying attention to regular sales that generate steady income.

The SBIR grants essentially provide equity-like capital without having to share in the ownership of the company. Other benefits include providing companies with an opportunity to evaluate strategic alliances with other firms or researchers and provide funds to purchase equipment that can help the company grow.

Most of the companies remain on the project solicitation mailing list and continue to look at announcements for new projects. They report that once they received a grant, they got into the SBIR loop and tended to get more information about grant programs from the government and third parties. Many recipients have been contacted by other businesses about their work. Receiving an SBIR award raised their profile and provided legitimacy for other contract work.

A general value to the state not directly mentioned by any respondent is the improvement to the state's balance of payments position with the federal government. The SBIR grant funds represent national capital that is imported into Maine and is subject to the same local multipliers as other imported capital.

Application/Grant Process

Most applicants reported that the application itself was straightforward and readily understandable. Companies with experience in government contracting or with researchers who had prior university-related grant experience had the easiest time with the application. Small businesses without university grant seeking or federal procurement experience reported some difficulty with the applications. The only technical problems encountered were with the financial reporting sections of the application.

The substance of the application is the research project description. The principal problems encountered here were targeting the proposal to the agency's desires and style. Most of the applicants, and particularly those who have submitted multiple applications, report that it is very important to tailor the proposal for the audience. The contracting officers for the agencies were sometimes helpful in describing the agencies' needs to prospective applicants.

Many federal agencies have apparently evolved "personalities" that filter the proposals. For example, one agency that has historically dealt principally with university research prefers to select applications from companies that have affiliations with a university PhD. Companies submitting proposals to that agency without such an affiliation, whether it is critical to the project or not, would have a difficult time getting funded.

An unexpected finding of the survey was the number of successful applicants who had previously submitted unsuccessful applications. Six of the applicants had at least one failure before receiving an award. One had eight failures before receiving two grants in a row. Those that had submitted more than one application reported a definite "learning curve" effect. Although tenacity itself may pay, there are indications that the companies with multiple submissions got better at targeting their applications to their audience.

The time and expense required to submit an application varied from three-four days and no cash expense to up to three hundred person hours and $1000 in cash expenses. A couple of first time successful applicants reported spending less than a week on their applications, but a couple of other first time successful applicants reported spending four to six weeks full time. The average time would appear to be two to three weeks, but it appears to be principally dependent on how much prior work had been done in the project area. The national average is reportedly two hundred hours for a successful application.

There was some correlation between the length of time spent on the application and the ultimate success, but there are too many variables to attach any significance to that observation. Most applicants incurred only nominal direct cash expenses on anything other than personnel time. Several applicants involved other contractors at no expense on the speculation that they would be part of the project if the application was successful.

Fiber Materials, Maine's most successful SBIR awardee with over twenty grants and which is no longer eligible for SBIR's because it has grown too large, represents a special case. A large number of its SBIR contracts were solicited by the Department of Defense because of Fiber Material's cutting edge work on defense-related materials projects. Fiber Materials already had a strong working relationship with the Department of Defense and was available to help the agency meet its SBIR obligations.

This situation highlights a complaint about the SBIR process expressed by several recipients. It appears that many of the agencies develop projects for the SBIR program solicitation for which they already have a contractor in mind. This results in many firms submitting applications for projects that they are not likely to get. This is where knowledge of the "personality" of the agency comes in handy. This is understandable on the agency's part since they are evaluated on the success of a project and they would naturally prefer to work with someone who has a known capacity to produce results.

Grant Notification Period

Most of the applicants reported that they received a response to their applications in about six months, which is the national norm. A few recipients indicated that there was sometimes a delay of three or four months between the announcement of the award and the receipt of their first cash. This created a hardship on the small, poorly capitalized companies that were depending on the grant for most of their income.

Types of Assistance Desired

Respondents were asked a series of questions about possible types of assistance and also asked to describe what they thought would do the most to get more SBIR grants awarded to Maine businesses. The following is an summary of responses.

(A) Application Assistance

Most of the successful applicants had not used any of the public programs that are available to help with the grant program, but those that did seek help were generally pleased with the results. Specifically mentioned were the Maine Procurement Assistance Center at the Eastern Maine Development Corporation, the University of Maine's Center for Innovation and Entrepreneurship, Coastal Enterprise Incorporated's Small Business Development Center, and the Maine Science and Technology Commission. Many of the respondents, however, did not know of the services available.

Almost all of the successful applicants reported that there was a definite need for publicly-assisted application assistance. Most were careful to point out that the need was for limited types of "grantsmanship" assistance or general business advisory assistance as opposed to technical assistance in their respective fields.

Drafting successful applications is as much art as it is good science. The key is to say much in a few words because of the size limits on the application. Good, tight, technical writing is mandatory and editorial assistance would be beneficial for many applications.

(B) Project Technical Assistance

Most of the respondents, with the exception of a few, small, early stage businesses, thought that they knew how to find the technical assistance they needed through their own professional contacts. The smaller, early stage companies, however, thought that they might use a technical referral service that could put them in touch with research talent from universities, private research facilities, or other business that might be interested in joint venturing a project.

This represents a competitive factor, since the established companies with strong linkages to the R & D community in their respective field are more likely to qualify for a grant because they will have stronger credentials. The beginning firm may have smart principals, but their linkages to the discipline may not be as strong. The latter people can use help in connecting to the proper research networks at this early stage.

(C) Pro-active State Role

There was general support for the state taking a pro-active role in encouraging eligible companies to become involved in the SBIR and similar programs. This included strong support for the state to heavily promote the programs and increase the general awareness of the availability of the funding. The concept of developing a data base of companies and their research activities was supported by some, but there was concern about the overall productivity of such an effort. Many firms would be missed, many firms' research activities are constantly changing, and it would be difficult for a third party to become skilled in matching research interests with grant programs. Most firms did not think that it was feasible for a clearinghouse manager to become sufficiently proficient at matching grant announcements and prospective companies to pay for the cost.

A simple clearinghouse where such material was cataloged and available was strongly supported. The existing Maine Procurement Assistance Center at EMDC in Bangor fills some of this role currently. The greatest impact would come from promotion of the availability of this type of funding. Respondents generally thought that despite its history, the SBIR program was not well known even to companies with an R & D focus.

The clearinghouse should have access to experienced grant writers who could help critique applications and provide grantsmanship assistance. Several respondents suggested having a peer review board affiliated with the clearinghouse that would review proposals much like the SBIR's formal peer review system and provide applicants with some preliminary troubleshooting assistance. Absent a preliminary peer review, it would be helpful to simply have an experienced grant writer who could provide editing and formatting assistance.

(D) Promotion of Research and Development

Several respondents were concerned that there is not enough promotion of the state's general research and development capacity. Although R & D is not a huge industry in Maine, there is a small critical mass of quality companies that form the kernel of a strong growth industry. Businesses and institutions like Fiber Materials, Gorham International, Jackson Lab, National Semiconductor, etc. and a host of early stage companies with a large R & D focus like Agritech, Binax, Artel, etc. are indicative of the potential for Maine to support growing technology-based businesses.

(E) MSTC Sponsored SBIR Workshops

Many of the applicants had attended SBIR grant writing workshops similar to the one held in Bangor a little more than a year ago. Most of those who had attended one of these workshops spoke very highly of their value. These seminars were most important for their information on grant writing strategy and for their assistance in describing the "personalities" of the various federal agencies. Almost all of the respondents expressed a willingness to serve as a technical resource person for future Maine training sessions.

(F) Financial Support

Respondents saw a role for the state to become involved in financially supporting companies in their R & D efforts. The types of involvement desired varied, but tended to focus on a few areas as providing greater value than others. Following is a discussion of the major types of support discussed.

(1) Application Support

The smaller firms tended to support some form of financial assistance during the application period for Phase I grants. Cash is so dear to the small, one and two person firm that they find it difficult to finance even their personal service time to put together an application. Forgoing four-six weeks of earnings for a possible $50,000 project six months in the future is difficult to justify when the firm might not be alive long enough to enjoy the grant. Supporters of application grants cautioned against making the application for the application assistance too complex.

For the larger firms with existing products or services and reasonable cash flow, the cost of putting together an application was not as significant an issue. Most, however, thought that financial assistance for applications would induce additional applications, especially from smaller firms.

One grantee, who received a grant the first time on a application that took two days to complete, did not think the application was an issue! This applicant, however, was an experienced government contractor.

(2) Phase I Subsidy

There was very little interest in having the state provide an additional subsidy to Phase I grants. Most thought that a $50,000 grant to fund a six months preliminary feasibility study was adequate financing. Several also thought funding private research at such a speculative stage was more appropriately the responsibility of the federal rather than the state government.

(3) Bridge Grant Between Phases I and II

Several states have developed financial assistance programs to "bridge" the time and funding gap between completion of the Phase I research and the award of Phase II contracts. This gap is generally reported to be from six to nine months for the Maine companies that have received Phase II awards, which parallels the national experience. This type of funding is most important for the smaller company that has few other sources of financing to carry it though the interlude. Such financing could keep the project team together and permit some preparatory work for Phase II, for which grants of up to $500,000 are awarded. It would, however, be very difficult for the state to make a meaningful grant considering the amount of money included in the Phase II federal awards.

A few respondents did not support bridge grants on the grounds that they were very speculative. Since only one out of four or five Phase I recipients receive a Phase II award, the state could end up investing in many projects that would never get completed for the lack of Phase II funding.

(4) Phase III Search for Financing Assistance

Although there was no specific question about this type of help, many respondents indicated that there may be a significant role for the state to help in lining up the private financing required for Phase III of the program. Phase III is not functionally a part of the SBIR program since it does not involve any federal funds; however, providing evidence of Phase III funding has quickly evolved to become perhaps the most significant competitive factor in receiving Phase II grants.

Although the program does not require that the applicant have any follow-on financing lined up to commercialize the product at the end of Phase II in the Phase II application, applicants are "encouraged" to identify commitments for such financing. Companies without actual commitments at this stage are simply not competitive! The agencies and the program are evaluated by Congress based on the productivity of the program in terms of ultimately adding value to the economy. Those applicants who appear to have the best shot at a viable product, as evidenced by the commitment of private capital to the deal, are going to receive the most Phase II grants.

Raising significant amounts of private capital for the commercialization of new products is not the forte of most Maine companies. Several respondents indicated that there was a desperate need for improving the access of companies with strong products or processes to sources of follow-on capital.

Pine Tree Partnership

Three SBIR recipients had never heard of it, three had applied and received funding and one had applied and not received funding. The remaining five had not considered it because $5000 was too small an amount of financing to support the type of research that they performed.

Responses varied directly with the size of the firm with the smaller firms having applied and the larger ones reporting no interest. Even among the successful Pine Tree Partnership grantees, there was a general conclusion, that although the funding could be helpful in certain situations, it was really not a sufficient amount of money to support product development.

SURVEY OF UNSUCCESSFUL SBIR APPLICANTS

Seven companies were identified that had applied for SBIR grants, but which had not yet been successful. Principals of all of these companies were surveyed for reports of their experiences with the program and their attitudes toward improving the number of grants awarded to Maine companies.

Of the seven, three had applied just once and were not seriously considering it again. One had previously applied only once, but is currently working on a second application. The remaining three had applied three separate times in the past and each had at least one new application pending. One of the latter had previously worked on successful applications while working at a different company in Maine.

The three who had applied just once were only lukewarm supporters of the program principally because of the time and expense of putting together a speculative application. Two of the three reported that they had access to alternative sources of product development financing that could be directly targeted toward specific products in their line. All three, however, saw value in the program for early stage companies just developing products.

The four who have applied previously and were still working on applications were optimistic about eventual success and were strong supporters of the program because of the potential access to capital for high risk projects which would be difficult to finance through other channels. Three of the four had followed up on their rejections to troubleshoot their applications and all thought that they were learning to target their proposals to the reviewers. They all recognized the need to strategically structure their proposals to correspond to specific needs of the various agencies.

There was a common concern that the National Institutes of Health were not oriented toward working with businesses on specific commercial product development projects. This same concern has also been identified as a key issue nationally, so the experience of Maine companies is not a surprise. This is troublesome for Maine to a certain extent because of the number of biotechnology companies operating here. The National Institutes of Health are the principal SBIR participating agencies that finance biotechnology projects.

Four of the applicants had used the Maine Procurement Assistance Center at the Eastern Maine Development Corporation and were pleased with the service they received. All applicants had approached higher education institutions in the state for technical help, project consultants, or other services. They found the University of Maine accessible but frequently had difficulty in finding resources that were specific for their field. The larger the company, the easier it was to find suitable resources. Companies with fairly narrow specialties tended to have a more difficult time in finding university resources that were germane to their work.

All of the respondents saw a role for the state in fostering increased SBIR activity. Strongest support was for editorial review and comment on the "grantsmanship" aspect of the proposal by persons experienced in drafting proposals for specific agencies and advance workshops on targeting the proposals to the specific audiences. Both of these services are aimed at the need to strategically target the application to the agency reviewers. They all recognized that having a technically sound idea was not sufficient. Application workshops and editorial review had to be specific and of high quality. These companies did not have any time to spare participating in events which were not directed toward winning contracts.

There was considerable support for a service bureau that would perform the above functions as well as provide other support services such as assist with literature searches and help build project teams. Because of the academic orientation of most of the SBIR agencies, it is critical to include a quality literature search in the proposal. It sometimes takes considerable time and money to get access to the hard copy of recent literature. Only a few respondents were aware of the computerized literature search services at the university campuses.

The service bureau could also help with referrals to academic and business resources. Most companies are generally up to date with the key technical resources nationally in their fields, but many reported difficulty in making contacts with Maine-based business and academic people who could provide assistance or help complete their project teams. This team building through referral and network building was strongly supported.

The larger companies did not think that providing financial subsidies for their own applications would be an inducement to apply. They generally believed, however, that the application subsidies would be valuable for very small and start-up companies that had no other financial resources. The question of which was most appropriate assistance to provide turned on the question of whether the goal was to get more starters or to improve the quality of applications. Application grants would probably generate more applications, but the workshops and service bureau would improve the quality of applications.

There was universal support for increased marketing of the SBIR program. A simple strategy of constantly reinforcing the availability of the grants to prospective applicants was preferred to attempting to match specific companies with grant opportunities. The latter function is very difficult for an independent party to accomplish.

SURVEY OF POTENTIAL SBIR APPLICANTS

Based on consultations with business advisors and a review of participants in workshops and seminars on technology matters, a list of fifteen companies that might have an interest in the SBIR program was developed. Although ten of these fifteen were subsequently interviewed, only six had substantive comments on the program. One was too large, one was foreign owned, one no longer did any R & D work, and one only works for private businesses and would never consider doing government contract work.

The six respondents with substantive comments all thought that the SBIR contracts were an excellent source of R & D funding and they all had given some thought to applying. The principal impediments for each were the absence of the right topic and the lack of time to put together an application.

They all thought that the state could play a key role in helping them prepare competitive applications. The most important services were grant writing assistance, information searching, and referral services to prospective joint venture partners and technical resources. Since many of these companies did very little, if any, government proposal writing, they were concerned about their ability to translate their product concepts and technical knowledge into a "grant format" that would be competitive with companies that specialized in government R & D work.

The larger companies did not think that an application grant would be a factor in their decision to seek a contract. If they were sufficiently interested in a project, they could find the resources. One fairly small company did not think a grant would make much difference either because they simply did not have enough senior management time to put into a project and they did not think that outside technical help could take the lead with a proposal. A couple of smaller companies, however, thought that a application grant would be helpful, although not sufficient inducement in itself to prepare an application.

There was general support for a service bureau that developed the grantsmanship expertise to help target applications to the contractor and to provide editorial oversight services to businesses. The service bureau could also be helpful in finding joint venture partners and other technical resources; however, there was some caution about companies sharing too much proprietary information with a publicly assisted service bureau. It would also be helpful if there was a central repository for information about general R & D activity in the state so that companies could be more aware of what is going on throughout the state.

SURVEY OF ECONOMIC DEVELOPMENT PRACTITIONERS

Twelve economic development practitioners from federal and state government agencies, non-profit development organizations, and the University of Maine system were consulted to determine the current level of SBIR support activity and to generate ideas regarding support programs. The general consensus was that the state has only heretofore nominally supported the SBIR program and that much more ought to be done to encourage businesses to access this important source of capital.

The Existing Service Network

Under the federal program guidelines, the Small Business Administration is the coordinating agency for the program. The SBA district office in Augusta, which is responsible for Maine, has contracted its information and referral responsibilities to the Small Business Development Center (SBDC) at the University of Southern Maine. The SBA refers all inquiries to the SBDC for action.

The SBDC responds to inquiries by providing the inquirer with basic materials that will get them onto the mailing list for the quarterly grant pre-solicitation announcements. The staff person in charge will attempt to refer program or technical questions to appropriate resources such as the Maine Procurement Assistance Center at EMDC or perhaps MSTC. The SBDC averages only 2-4 inquiries per quarter and almost all are referrals from the SBA. The SBDC acknowledges that the SBIR program warrants greater support and has recently upgraded the importance of the program by appointing one of the part-time Portland business counselors to be the lead contact for all SBIR inquiries.

The Maine Science and Technology Commission has been actively promoting the program to businesses by generating several business magazine articles about the program and developing a mailing list of technology based companies that are interested in SBIR grants and other R & D funding programs. The MSTC principally provides an information and referral service and refers clients to an appropriate technical resource for direct assistance.

The technical resources currently used most are the Maine Procurement Assistance Center at EMDC, the Center for Innovation and Entrepreneurship and the Public Service Office at the University of Maine, the Production Technology Program at the University of Southern Maine, and the Small Business Development Sub-center at Coastal Enterprises, Inc.

The Maine Procurement Assistance Center and Coastal Enterprises, Inc. are available to provide some direct technical and grantsmanship assistance. Both have personnel with considerable technical and federal procurement backgrounds. The other university-related contacts principally assist with referring clients to the appropriate university resources such as faculty members.

The most valuable public resources are the libraries at the university campuses. They have available computerized information search services that offer clients quick access to most of the worldwide databases at very nominal costs. It is very important to include current research data in the SBIR applications.

Survey Results

The practitioners with substantial knowledge of the SBIR program tended to offer similar suggestions regarding supporting the program. Everyone recommended improved marketing and image building for the SBIR program. The need for this is reinforced by the fact that many economic development practitioners themselves have only a minimal working knowledge of the program. It should be noted, however, that very few of the businesses that are generally served by the public business assistance programs are potential SBIR applicants.

Those respondents with the most knowledge of the program recommended a pro-active, one-on-one marketing effort to businesses that might be eligible for the grants. Continuously reinforcing the availability of the grant funds would keep potentially eligible companies thinking about the program when doing their internal budgeting and project planning.

The increased use of seminars to promote the program and teach basic grant writing skills was strongly recommended by several respondents. The most experienced procurement specialists noted the need for helping companies to develop technical writing and grant writing skills. Many of the smaller companies have not had sufficient proposal writing experience to craft a tightly written, responsive application.

Another widely supported suggestion was to create some form of peer review function in which experienced grant writers could be made available to review completed applications before they are submitted to the SBIR agency. This could help the company fine tune their approach without having to go through the learning curve of having two or three rejections before they craft a winning proposal.

Reliance on university faculty to spawn SBIR eligible companies or to serve as principal investigators for businesses was minimized by several respondents. Faculty do not generally think in terms of exploiting economic opportunity and they do not receive any academic credit for private work that does not lead to academic publishing. Faculty are perhaps best used as technical advisors to businesses.

The general conclusion of most respondents is that the universe of potential SBIR applicants is relatively small in Maine and that a significantly strengthened marketing and support system is only going to add incrementally to the number of successful applicants. These types of businesses are, however, a very important segment of the economy because of their great potential economic multiplier impact and positive impact on the economy of the future. These companies are inherently on the cutting edge of technology, highly export oriented, and generators of good paying jobs.

CONCLUSIONS

(1) The SBIR program, which has provided over $2.5 billion to small businesses for product development nationally over the past five years, is an overlooked source of capital for Maine businesses. It is an inexpensive source of seed capital for start-up enterprises and can serve as the catalyst for the spin-off of new enterprises from existing firms.

(2) There is a difference in the SBIR application assistance needs of the more experienced firms and the start-up firms and there is a significant difference in the needs of firms with former academic researchers on staff than business oriented researchers.

(3) SBIR application skills can definitely be taught and success may be as much dependent on an application strategy as it is on good research and development capacity.

(4) A concerted effort to support applications would probably pay off with an increase in grant awards in Maine. At a minimum it would help Maine keep up with what other states are doing. A few respondents reported being solicited by other states to relocate there because of a superior technology and financial support system. It is expected that states will increase their industrial recruitment of SBIR recipients since they are perceived as the potential growth companies of the future.

(5) As the SBIR program becomes more competitive, the early stage companies are going to get passed over in favor of firms that have products in production. It will become less start-up company seed capital and more product development capital for existing firms.

(6) The SBIR program is going to become more competitive and Phase II grants will become increasingly reserved to those companies that can demonstrate Phase III commitments, even though it is not required in the program.

(7) It will become increasingly necessary for SBIR competitors to develop good business planning and management skills to augment their R & D skills because grants are going to be increasingly focused on companies that have a demonstrated capacity to market products or services.

(8) Tenacity pays off. If applicants persist and refine their approach, they will be successful. It frequently pays to submit the same or similar proposals to more than one agency.

(9) A significant number of the applicants had prior grant writing experience which gave them some familiarity with the process. Those without prior grant writing experience tended to have more problems with the application.

(10) There was a general conclusion that companies with a product focus were more successful in getting awards than companies that were pure R & D.

(11) Smaller Maine companies may be at a disadvantage for receiving Phase II SBIR grants because of the difficulty in attracting Phase III commitments for commercialization of the product from the private capital markets.

RECOMMENDATIONS

(1) Create a state clearinghouse program for SBIR support. It should be coordinated by the Maine Science and Technology Commission with technical services delivered by the Small Business Development Center and the Maine Procurement Assistance Center. For logistical purposes it is necessary to have technical support centers in both Portland and Bangor. The existing procurement center in Bangor should be provided with additional capacity to do more SBIR support work and the SBDC program should develop a strong SBIR support capacity at its Portland sub-center as well as develop a strong networking capacity among all of the sub-centers. Within the SBDC system, cases should be referred to the technicians best able to provide the type of assistance required. The two technical service centers should have copies of all SBIR announcements and support material, samples of successful applications, extensive lists of public and private sector resource people, and access to federal R & D grant writing technicians. The MSTC should develop the capacity to coordinate all SBIR activity and take the lead in monitoring the program within the state and nationally. The MSTC should also develop sufficient knowledge about R & D activities in the state to enable it to make referrals among companies and take a proactive role in keeping companies generally informed about what is going on in R & D in Maine.

(2) Promote the SBIR program by mailings to R & D firms, press releases and planted stories about successful companies. The Maine Science and Technology Commission should develop a list of firms performing research and development or product development in the state and market the SBIR to them. It is very important to keep the program in the business public eye. People and priorities in businesses change constantly. Improved promotion will most likely have the greatest impact on the number of applications from Maine. Several states retain private marketing firms to promote the SBIR program.

(3) Provide periodic reinforcement regarding the availability of SBIR grants through bankers, accountants, business consultants, and the entire business support network and conduct training programs to increase their knowledge of the program. This is an effective way to reach more businesses.

(4) Conduct training sessions for economic development practitioners and especially the SBDC sub-centers to inform practitioners and counselors about the SBIR program and how to refer a client to the appropriate source of technical assistance.

(5) Sponsor periodic, perhaps twice a year, seminars that provide hands-on grantsmanship training. Incorporate federal agency people, prior successful grantees, procurement specialists etc. to provide real value to the clients . These should not just be show and tell sessions. Most of the businesses surveyed said that they would participate in a seminar as a resource person.

(6) Find an answer to the Phase III funding problem. This is difficult for the state to handle because it deals with sophisticated capital raising strategies. It is more of an investment banking function than a business financing assistance program. As the SBIR program matures, however, assistance in helping Maine companies find Phase III funding will be the most critical ingredient in whether a company gets the follow-on Phase II funding, which is where the serious R & D money (up to $500,000) is.

(7) Create an SBIR task force of R & D people to provide visibility to SBIR program and perhaps serve as a peer review body for research proposals that are under consideration for submission to SBIR. The desire for confidentiality by some potential SBIR applicants way not make this suitable for everyone, but it could help many early stage companies.

(8) Establish a research and development committee of the Maine Science and Technology Commission that is responsible for promoting awareness of the research and development capacity in Maine. It could serve as the coordinating committee for the SBIR training workshops and other SBIR support initiatives. It should, however, have a broader focus that just SBIR support. The recently created Research Excellence Partnership may perform this function.

(9) Promote the computer information search capability that exists at the universities. Computerized information searching levels the field for small R & D companies and provides equal access to research data with the most sophisticated companies.

(10) Promote the availability of university resources, such as the University of Maine's Department of Industrial Cooperation and the University of Southern Maine's Production Technology Center to name just two relevant programs. Many successful SBIR applicants nationwide incorporate university resources into their projects.

(11) Develop a list of experienced procurement specialists, including grant writers who have been successful with each federal agency, and retain them through the SBDC program on a case by case basis to help critique SBIR applications. There may be a few retired or semi-retired procurement specialists in Maine who would be interested in working occasionally with a small business.

(12) Create an SBIR application grant program that would provide a nominal stipend, in the order of $2500-5000, that would defray part of the costs of drafting an application. This should have a very simple and expeditious application and review procedure. The application should take less than one day to complete and the grants should be available periodically throughout the year. The fastest way to implement such a program would be to allocate more funding to the existing Pine Tree Partnership program and establish a special Pine Tree Partnership grant category for SBIR application assistance. Although the Pine Tree Partnership Board recently decided to do this, it was subsequently determined to require new legislation. Several other states have SBIR application grant programs.

(13) A grant program to bridge the gap between Phase I and Phase II of the SBIR program is not recommended at this time. It would be difficult for the state to provide a meaningful amount of money when compared to the federal funding provided. Because fewer companies are going to qualify for Phase II awards, the state would end up financing many projects that would not be completed. The state's effort is far better spent getting more "starters" into the program and then letting competitive and market forces determine the successful projects.

(14) Coordinate the SBIR assistance activities with the business development services of the SBDC program to ensure the availability of business plan and management development services to early stage companies. As competition grows for Phase II grants, only those companies with good business plans and a demonstrated capacity for product development will receive funding. These are the companies that will be most suitable for Phase III funding from private sources.

Appendix I

Summary Description

The Small Business Innovation Research (SBIR) Program

The SBIR program is a federal program that requires eleven federal agencies to award research contracts to eligible small businesses on a competitive basis. Any for-profit business with less than 500 employees and a strong research or R & D capability in science and engineering is eligible to apply. Generally, the business must have its own research facility and the principal investigator must be employed by the small business and must not have another full-time job.

The program involves three phases as follows:

Phase I - Contracts of up to $50,000 for six-month preliminary feasibility studies.

Phase II- Contracts of up to $500,000 for second stage development of projects that received Phase I awards for contract periods of up to two years.

Phase III- Commercialization of products and processes developed under Phases I and II. There are no SBIR funds for this phase, but there may be non- SBIR procurement contracts from federal agencies. Most firms are expected to secure private financing for commercially feasible products.

Each of the eleven participating federal agencies publishes a project solicitation annually, at staggered times throughout the year, in which they describe project ideas that are a priority for the agency. Most agencies, however, will accept proposals for any project that falls within the agency's mission.

The solicitation includes deadlines and criteria for the submission of proposals. Anyone can get put on any agency's solicitation list. It generally takes about six months from the application deadline to get a response. Historically, about one out of eight proposals are awarded Phase I contracts.

Since the initiation of the program in 1982, Maine companies have been awarded thirty-five SBIR contracts, of which seven were Phase II awards. Multiple contracts have been awarded to three Maine companies, one of which, Fiber Materials, has received twenty contracts under both Phases I and II.

Companies retain the worldwide commercial rights to any patents for products or processes developed under the program except for rights for its own use which are retained by the government. If the company fails to exercise commercial rights expeditiously, however, certain other rights will accrue to the government.

SBIR

Enhancing the
Small Business Innovation Research (SBIR)
Program in Maine

Maine Science and Technology Commission
September 1988