SBIR

Small Business Innovation Research

FY2014

Program Solicitation: **NOAA 2014-1**

Opening Date: November 13, 2013 Closing Date: January 29, 2014

U.S. DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration
http://www.techpartnerships.noaa.gov

TABLE OF CONTENTS

DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PROGRAM SOLICITATION FOR SMALL BUSINESS INNOVATION RESEARCH (SBIR)

1.0 PROGRAM DESCRIPTION

1.1 Introduction

The Department of Commerce (DOC) National Oceanic and Atmospheric Administration (NOAA) invites small businesses to submit research proposals under this solicitation. Firms with the capability to conduct research and development (R&D) in any of the topic areas listed in Section 8 of this solicitation and to commercialize the results of that R&D are encouraged to participate. The Small Business Innovation Research (SBIR) Program is not a substitute for existing unsolicited proposal mechanisms. **Unsolicited proposals are not accepted under the SBIR program.**

The SBIR program was originally established in 1982 by the Small Business Innovation Development Act (P.L. 97-219). It was then expanded by the Small Business Research and Development Enhancement Act of 1992, extending the program to the year 2000 and then to 2008. The program was reauthorized under Public Law 112-81, Section E and extended through September 30, 2017.

Eleven federal agencies set aside a portion of their extramural R&D budget each year to fund research proposals from small science and technology-based firms. The objectives of the SBIR program are to: stimulate technological innovation in the private sector; strengthen the role of small business in meeting Federal R&D needs; foster and encourage participation by socially and economically disadvantaged persons and women-owned small business concerns in technological innovation; and increase private sector commercialization of innovations derived from federal research and development. The NOAA SBIR Program identifies and solicits proposals in subtopics that fall within NOAA's mission.

NOAA is not obligated to make any awards under this solicitation and all awards are subject to the availability of funds.

NOAA is not responsible for any costs expended by the proposer in the development of the proposal and prior to award of any contract.

1.2 Three-Phase Program

Legislation requires the Department of Commerce to establish a three-phase SBIR program by reserving a percentage of its extramural R&D budget to be awarded to small business concerns for innovation research. SBIR policy is provided by the Small Business Administration through the SBA Policy Directives.

The funding vehicles for NOAA's SBIR program in both Phase I and Phase II are contracts. While the Phase II proposal process is covered in this announcement, this solicitation is for **Phase I proposals only**. A separate solicitation will not be issued requesting Phase II proposal submissions. Unsolicited proposals will not be accepted through the SBIR Program. A Phase II proposal can be submitted **only** by a Phase I awardee. NOAA has the unilateral right to select SBIR research topics and awardees in both Phase I and Phase II and award several or no contracts under a given subtopic.

1.2.1 Phase I – Feasibility Research

The purpose of Phase I is to determine the scientific, technical, and commercial merit and feasibility of the proposed research and the quality of performance of the small business concern receiving an award. Therefore, the proposal should concentrate on research that will significantly contribute to proving the feasibility of the proposed research, a prerequisite to further support in Phase II. NOAA Phase I awards are up to $95,000 and up to a six (6) month period of performance. Proposers are encouraged to consider, and discuss in their proposal, whether the research or research and development being proposed to NOAA also has private sector potential, either for the proposed application or as a base for other applications.

1.2.2 Phase II – Research and Development

All firms that are awarded Phase I contracts under this solicitation will be given the opportunity to submit a Phase II proposal immediately following completion of Phase I. Phase II is the R&D or prototype development phase. It will require a comprehensive proposal outlining the research in detail, plan to commercialize the final product, and may require a company presentation to the panel. Instructions for Phase II proposal preparation and submission requirements will be provided to Phase I awardees toward the end of the Phase I period of performance. NOAA may also require delivery of the prototype. Phase II applicants will be required to provide information for the Small Business Administration (SBA) Database System (http://sbir.gov) when advised this system can accept their input.

Further information regarding Phase II proposals and SBA Database requirements will be provided to all firms receiving Phase I contracts. The following provides information for submitting a Phase II proposal to the Department of Commerce (DOC) National Oceanic and Atmospheric Administration (NOAA) SBIR program.

Phase II awards shall be for no more than **$400,000.** The period of performance for Phase II will depend upon the scope of the research, but should not exceed **24 months**. For planning purposes, historically NOAA Phase II awards are usually made in the month of June.

Each Phase II proposal will be evaluated against the criteria set forth in Solicitation NOAA 2014-1 (see Section 4.4). Phase II award decisions will be made based upon scientific and technical quality, commercial potential, and available funds. Final award decisions will be made by NOAA selection committees based upon rankings assigned by reviewers and consideration of other factors which includes possible duplication of ongoing research, and the importance of the proposed research as it relates to NOAA needs.

Phase II proposals should be more comprehensive than Phase I proposals and are **NOT** limited to 25 pages. One year after completing R&D activity the awardee shall be required to report on their commercialization activities.

1.2.3 Phase III – Commercialization

Under Phase III, the proposer is required to obtain funding from either the private sector, a non-SBIR Government source, or both, to develop the prototype into a viable product or non-R&D service for sale in the Federal government or private sector markets. SBIR Phase III refers to work that derives from, extends, or completes an effort made under prior SBIR funding agreements, but is funded by sources other than the SBIR Program. Phase III work is typically oriented towards commercialization of SBIR research or technology.

1.3 Manufacturing-related Priority

Executive Order (EO) 13329 “Encouraging Innovation in Manufacturing” requires SBIR agencies, to the extent permitted by law and in a manner consistent with the mission of that department or agency, to give high priority within the SBIR programs to manufacturing-related R&D. “Manufacturing-related” is defined as “relating to manufacturing processes, equipment and systems; or manufacturing workforce skills and protection.”

The NOAA SBIR Program solicits manufacturing-related projects through many of the subtopics described in this Solicitation. Further, NOAA encourages innovation in manufacturing by giving high priority, where feasible, to projects that can help the manufacturing sector through technological innovation in a manner consistent with NOAA’s mission. This prioritization will not interfere with the core project selection criteria described in Section 4.3.

1.4 Energy Efficiency and Renewable Energy Priority

The Energy Independence and Security Act of 2007 (P.L. 110-140) directs SBIR Programs to give high priority to small business concerns that participate in or conduct energy efficiency or renewable energy system R&D projects.

The NOAA SBIR Program solicits energy efficiency or renewable energy system R&D projects through many of the subtopics described in this Solicitation. Further, NOAA encourages innovation in energy efficiency or renewable energy system R&D by giving high priority, where feasible, to projects that conduct energy efficiency or renewable energy system R&D through technological innovation in a manner consistent with NOAA’s mission. This prioritization will not interfere with the core project selection criteria: scientific and technical merit and the potential for commercial success.

1.5 Eligibility and Limitations

Proposers for both Phase I and Phase II **must** qualify as a small business concern for research or research and development (R/R&D) purposes (Section 1.7.13) at the time of the award and at any other time set forth in the SBA's regulations at 13 CFR 121.701-121.705.

In accordance with guidance from the SBA, the NOAA SBIR Program is implementing the Phase I to Phase II Transition Rate benchmark required by the SBIR/STTR Reauthorization Act of 2011. This Transition Rate requirement applies to SBIR and STTR Phase I applicants that have received more than 20 Phase I awards over the past 5 fiscal years, excluding the most recently-completed fiscal year. For these companies, the benchmark establishes a minimum number of Phase II awards the company must have received for a given number of Phase I awards received during the 5-year time period in order to be eligible to receive a new Phase I award. This requirement does not apply to companies that have received 20 or fewer Phase I awards over the 5 year period.

Companies that apply for a Phase I award and do not meet or exceed the benchmark rate will not be eligible for a Phase I award for a period of one year from the date of the application submission. The Transition Rate is calculated as the total number of SBIR and STTR Phase II awards a company received during the past 5 fiscal years divided by the total number of SBIR and STTR Phase I awards it received during the past 5 fiscal years excluding the most recently-completed year. The benchmark minimum Transition Rate is 0.25.

SBA calculates individual company Phase I to Phase II Transition Rates daily using SBIR and STTR award information across all federal agencies. For those companies that have received more than 20 Phase I awards over the past 5 years, SBA posts the company transition rates on the Company Registry at SBIR.gov. Information on the Phase I to Phase II Transition Rate requirement is available at http://www.SBIR.gov/faq/performance.

Applicants to this solicitation that may have received more than 20 Phase I awards across all federal SBIR/STTR agencies over the past five (5) years should, prior to proposal preparation, verify that their company's Transition Rate on the Company Registry at SBIR.gov meets or exceeds the minimum benchmark rate of 0.25.

Each Phase I and Phase II awardee must submit a certification (See Section 2.4.1 and 9.5) stating that it meets the size, ownership and other requirements of the SBIR Program at the time of award, and at any other time set forth in SBA's regulations at 13 CFR 121.701-705.

In addition, the primary employment of the principal investigator (PI) must be with the small business at the time of the award and during the conduct of the research. More than one-half of the principal investigator's time must be spent with the small business for the period covered

by the award. **Primary employment with a small business precludes full-time employment with another organization.**

For Phase I, a minimum of two-thirds of the research and/or analytical effort must be performed by the awardee. For Phase II, a minimum of one-half of the research and/or analytical effort must be performed by the awardee.

For both Phase I and Phase II, all work must be performed by the small business concern and its subcontractors in the United States. "United States" means the fifty states, the territories and possessions of the United States, the Commonwealth of Puerto Rico, the District of Columbia, the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau. However, based on a **rare and unique circumstance**, for example, a supply or material or other item or project requirement that is not available in the United States, NOAA may allow that particular portion of the R/R&D work to be performed or obtained in a country outside of the United States. The small business concern shall contact the NOAA SBIR Program Manager prior to proposal submission for waiver approval by the Contracting Officer. **A request for waiver must be submitted, in writing, to the NOAA Contracting Officer and SBIR Program Manager where work or supplies outside the United States are being considered and a detailed rational explaining steps taken to locate potential United States sources; if any United States sources were located and any potential concerns for use of those sources; and any potential cost differences between United States sources and foreign sources (if applicable). This waiver request shall be submitted via email to the points of contact in paragraph 1.6 at least fourteen calendar days prior to the solicitation closing date. It is in the firm's best interest to submit these waiver requests as soon as possible. Waivers are only approved in rare and unique circumstances..**

NOAA elects to not use the authority that would allow venture capital operating companies (VCOCs), hedge funds or private equity firms to participate in the SBIR Program.

Unsolicited proposals or proposals not responding to subtopics listed herein are not eligible for SBIR awards. Only proposals that are directly responsive to the subtopics as described in Section 8 will be considered.

Potential awardees may not participate in the selection of any topic or subtopic nor in the review of proposals. All offerors, including Guest Researchers, contractors, Cooperative Research and Development Agreement (CRADA) partners and others working with NOAA may only submit a proposal if they:

- Had no role in developing or reviewing the subtopic
- Have not been the recipient of any information on the subtopic not available in the solicitation or other public means
- Have not received any assistance from DOC in preparing the proposal (including any 'informal' reviews) prior to submission.

NOAA may not enter into, or continue an existing CRADA with an awardee on the subtopic of the award.

1.6 Contact with NOAA

In the interest of competitive fairness, oral or written communication with NOAA or any of its components, other than the contacts provided immediately below, concerning additional information on the technical topics described in Section 8 of this solicitation **is strictly prohibited**.

For general information on the NOAA SBIR program contact:

Alan Rhodes, SBIR Program Manager 1305 East West Highway, Room 7604 Silver Spring, MD 20910

Telephone: (301) 713-3565 x184 Email: Alan.Rhodes@noaa.gov

For Information on the Solicitation and other Contractual Issues contact:

Joan Clarkston, Contracting Officer DOC/NOAA-EAD-KC 601 East 12th Street Kansas City, MO 64106

Telephone: (816) 426-7469 E-mail: joan.e.clarkston@noaa.gov

Additional scientific and technical information sources are listed in Section 7.

1.7 Definitions

1.7.1 – Commercialization

The process of developing products, processes, technologies, or services and the production and delivering (whether by the originating party or others) of the products, processes, technologies, or services for sale to or use by the Federal government or commercial markets.

As used here, commercialization includes both Government and private sector markets.

1.7.2 – Essentially Equivalent Work

Work that is substantially the same research, which is proposed for funding in more than one contract proposal or grant application submitted to the same Federal agency or submitted to two or more different Federal agencies for review and funding consideration; or work where a specific research objective and the research design for accomplishing an objective are the same or closely related to another proposal or award, regardless of the funding source.

1.7.3 – Feasibility

The practical extent to which a project can be performed successfully.

1.7.4 -Funding Agreement

Any contract, grant, or cooperative agreement entered into between any Federal agency and any small business concern (SBC) for the performance of experimental, developmental, or research work, including products or services, funded in whole or in part by the Federal Government.

For purposes of this Solicitation, NOAA intends to award contracts in accordance with the Federal Acquisition Regulation.

1.7.5 – Historically Underutilized Business Zone (HUBZone) Small Business Concern
(See 13 CFR Part 126 for additional details)

Status as a qualified HUBZone Small Business Concern is determined by the Small Business Administration.

1.7.6 – Joint Venture

See 13 CFR 121.103(h).

***NOAA HAS CHOOSEN NOT TO PERMIT MAJORITY-OWNED BY MULTIPLE VENTURE CAPITAL OPERATING COMPANIES, HEDGE FUND, OR PRIVATE EQUITY FIRMS*.**

1.7.7 – Phase I-Phase II Transition Rate

Benchmark sets the minimum required number of Phase II awards the applicant must have received for a given number of Phase I awards during a specified period.

1.7.8 – Principal Investigator (PI)/Project Manager (PM)

The one individual designated by the applicant to provide the scientific and technical direction to a project supported by a funding agreement.

1.7.9 – Primary Employment

The primary employment of the principal investigator/project manager must be with the SBC at the time of award and during the conduct of the proposed project. Primary employment means that more than one half of the PI/PM's time is spent in the employ of the small business concern. This precludes full-time employment with another organization.

1.7.10 – Research or Research and Development (R/R&D)

Any activity that is (a) a systematic, intensive study directed toward greater knowledge or understanding of the subject studied; (b) a systematic study directed specifically toward applying new knowledge to meet a recognized need; or (c) a systematic application of knowledge toward the production of useful materials, devices, systems, or methods, including design, development, and improvement of prototypes and new processes to meet specific requirements.

In general, the NOAA SBIR program will fund Phase I and Phase II proposals with objectives that can be defined by (b) and (c) in the above paragraph.

1.7.11 – SBIR Technical Data

All data generated during the performance of a SBIR award.

1.7.12 – SBIR Technical Data Rights

The rights an SBIR awardee obtains in data generated during the performance of any SBIR Phase I, Phase II, or Phase III award that an awardee delivers to the Government during or upon completion of a Federally-funded project, and to which the Government receives a license.

1.7.13 – Small Business Concern (SBC)

A concern that meets the requirements set forth in 13 CFR 121.702.

1.7.14 – Socially and Economically Disadvantaged Small Business Concern

See 13 CFR 124, Subpart B.

1.7.15 – Subcontract

Any agreement, other than one involving an employer-employee relationship, entered into by an awardee of a funding agreement calling for supplies or services for the performance of the original funding agreement.

1.7.16 – Women-Owned Small Business

An SBC that is at least 51% owned by one or more women, or in the case of any publically owned business, at least 51% of the stock is owned by women, and women control the management and daily business operations.

1.8 Fraud, Waste and Abuse

Fraud includes any false representation about a material fact or any intentional deception designed to deprive the United States unlawfully of something of value or to secure from the United States a benefit, privilege, allowance, or consideration to which an individual or business is not entitled. Waste includes extravagant, careless, or needless expenditure of Government funds, or the consumption of Government property, that results from deficient practices, systems, controls, or decisions. Abuse includes any intentional or improper use of Government resources, such as misuse of rank, position, or authority or resources. Examples of fraud, waste, and abuse relating to the SBIR Program include, but are not limited to:

(i) misrepresentations or material, factual omissions to obtain, or otherwise receive funding under, an SBIR award;

(ii) misrepresentations of the use of funds expended, work done, results achieved, or compliance with program requirements under an SBIR award;

(iii) misuse or conversion of SBIR award funds, including any use of award funds while not in full compliance with SBIR Program requirements, or failure to pay taxes due on misused or converted SBIR award funds;

(iv) fabrication, falsification, or plagiarism in applying for, carrying out, or reporting results from an SBIR award;

(v) failure to comply with applicable federal costs principles governing an award;

(vi) extravagant, careless, or needless spending;

(vii) self-dealing, such as making a sub-award to an entity in which the PI has a financial interest;

(viii) acceptance by agency personnel of bribes or gifts in exchange for grant or contract awards or other conflicts of interest that prevents the Government from getting the best value; and

(ix) lack of monitoring, or follow-up if questions arise, by agency personnel to ensure that awardee meets all required eligibility requirements, provides all required certifications, performs in accordance with the terms and conditions of the award, and performs all work proposed in the application.

Report any allegations of fraud, waste and abuse to:

Department of Commerce Office of Inspector General Complaint Intake Unit, Mail Stop 7886 1401 Constitution Avenue, N.W. Washington, DC 20230

Telephone:

Email: hotline@oig.doc.gov Fax: 855-569-9235 Website:

Local	202-482-2495
Toll free	1-800-424-5197
TTD	1-855-860-6950

Signature Date

http://www.oig.doc.gov/Pages/online-hotline-complaint-form.aspx

2.0 CERTIFICATIONS

2.1 Certification of Size, Ownership, and SBIR Program Requirements

Awardees will be required to certify size, ownership and other SBIR Program requirements with the submission of SBIR proposal, at the time of award, and during the funding agreement life cycle. A copy of these certifications is provided in Section 9.5 and 9.6.

2.2 Research Projects with Human Subjects, Human Tissue, Data or Recordings Involving Human Subjects

2.2.1 Protection of Human Subjects

Any proposal that includes contractor participation in research involving human subjects, human tissue/cells, data or recordings involving human subjects must meet the requirements of the Common Rule for the Protection of Human Subjects ("Common Rule"), codified for the Department of Commerce (DOC) at 15 C.F.R. Part 27. In addition, any such proposal that includes research on these topics must be in compliance with any statutory requirements imposed upon the Department of Health and Human Services (DHHS) and other Federal agencies regarding these topics, all regulatory policies and guidance adopted by DHHS, the Food and Drug Administration, and other Federal agencies on these topics, and all Executive Orders and Presidential statements of policy on these topics.

NOAA reserves the right to make an independent determination of whether a proposer's research involves human subjects. If NOAA determines that your research project involves human subjects, you will be required to provide additional information for review and approval. If an award is issued, no research activities involving human subjects shall be initiated or costs incurred under the award until the NOAA Contracting Officer issues written approval. Retroactive approvals are not permitted.

NOAA will accept proposals that include research activities involving human subjects that have been or will be approved by an Institutional Review Board (IRB) currently registered with the Office for Human Research Protections (OHRP) within the DHHS and that will be performed by entities possessing a currently valid Federal wide Assurance (FWA) on file from OHRP that is appropriately linked to the cognizant IRB for the protocol. NOAA will not issue a single project assurance (SPA) for any IRB reviewing any human subjects protocol proposed to NOAA. Information regarding how to apply for an FWA and register an IRB with OHRP can be found at http://www.hhs.gov/ohrp/assurances/index.html.

Generally, NOAA does not fund research involving human subjects in foreign countries. NOAA will consider, however, the use of **preexisting** tissue, cells, or data from a foreign source on a limited basis if all of the following criteria are satisfied:

(1) the scientific source is considered unique,

(2) an equivalent source is unavailable within the United States,

(3) an alternative approach is not scientifically of equivalent merit, and

(4) the specific use qualifies for an exemption under the Common Rule.

Any award issued by NOAA is required to adhere to all Presidential policies, statutes, guidelines and regulations regarding the use of human embryonic stem cells. The DOC follows the NIH Guidelines by supporting and conducting research using only human embryonic stem cell lines that have been approved by NIH in accordance with the NIH Guidelines. Detailed information regarding NIH Guidelines for stem cells is located on the NIH Stem Cell Information website: http://stemcells.nih.gov. The DOC will not support or conduct any type of research that the NIH Guidelines prohibit NIH from funding. The DOC will review research using human embryonic stem cell lines that it supports and conducts in accordance with the Common Rule and NOAA implementing procedures, as appropriate.

Any request to support or conduct research using human embryonic stem cell lines not currently approved by the NIH, will require that the owner, deriver or licensee of the human embryonic stem cell line apply for and receive approval of the registration of the cell line through the established NIH application procedures: http://hescregapp.od.nih.gov/NIH_Form_2890_Login.htm. Due to the timing uncertainty associated with establishing an embryonic stem cell line in the NIH registry, the use of existing human embryonic stem cell lines in the NIH Embryonic Stem Cell Registry may be preferred by applicants or current award recipients. The NIH Embryonic Stem Cell Registry is located at: http://grants.nih.gov/stem_cells/registry/current.htm.

A proposer or current award recipient proposing to use a registered embryonic stem cell line will be required to document an executed agreement for access to the cell line with the provider of the cell line, and acceptance of any established restrictions for use of the cell line, as may be noted in the NIH Embryonic Stem Cell Registry.

If the proposal includes exempt and/or non-exempt research activities involving human subjects the following information is required in the proposal:

(1) The name(s) of the institution(s) where the research will be conducted;

(2) The name(s) and institution(s) of the cognizant IRB(s), and the IRB registration number(s);

(3) The FWA number of the applicant linked to the cognizant IRB(s);

(4) The FWAs associated with all organizations engaged in the planned research activity linked to the cognizant IRB;

(5) If the IRB review(s) is pending, the estimated start date for research involving human subjects;

(6) The IRB approval date (if currently approved for exempt or non-exempt research);

(7) If any FWAs or IRB registrations are being applied for, that should be clearly stated.

Additional documentation may be requested, as warranted, during review of the proposal, but may include the following for research activities involving human subjects that are planned in the first year of the award:

(1) A signed (by the study principal investigator) copy of each applicable final IRB-approved protocol;

(2) A signed and dated approval letter from the cognizant IRB(s) that includes the name of the institution housing each applicable IRB, provides the start and end dates for the approval of the research activities, and any IRB-required interim reporting or continuing review requirements;

(3) A copy of any IRB-required application information, such as documentation of approval of special clearances (i.e. biohazard, HIPAA, etc.) conflict-of-interest letters, or special training requirements;

(4) A brief description of what portions of the IRB submitted protocol are specifically included in the proposal submitted to NOAA, if the protocol includes tasks not applicable to the proposal, or if the protocol is supported by multiple funding sources. For protocols with multiple funding sources, NOAA will not approve the study without a nonduplication-of-funding letter indicating that no other federal funds will be used to support the tasks proposed under the proposed research or ongoing project;

(5) If a new protocol will only be submitted to an IRB if an award from NOAA issued, a draft of the proposed protocol may be requested;

(6) Any additional clarifying documentation that NOAA may request during review of proposals to perform the NOAA administrative review of research involving human subjects.

2.2.2 IRB Education Documentation

A signed and dated letter is required from the Organizational Official who is authorized to enter into commitments on behalf of the organization documenting that appropriate IRB education has been received by the Organizational Official, the IRB Coordinator or such person that coordinates the IRB documents and materials if such a person exists, the IRB Chairperson, all IRB members and all key personnel associated with the proposal. The NOAA requirement of documentation of education is consistent with NIH notice OD-00039 (June 5, 2000). Although NOAA will not endorse an educational curriculum, there are several curricula that are available to organizations and investigators which may be found at: http://grants.nih.gov/grants/guide/notice-files/NOT-OD-00-039.html.

2.3 Research Projects Involving Vertebrate Animals

Any proposal that includes research involving live vertebrate animals must be in compliance with the National Research Council's "Guide for the Care and Use of Laboratory Animals," which can be obtained from National Academy Press, 500 5th Street, N.W., Department 285, Washington, DC 20055. In addition, such proposals must meet the requirements of the Animal Welfare Act (7 U.S.C. § 2131 et seq.), 9 C.F.R. Parts 1, 2, and 3, and if appropriate, 21
C.F.R. Part 58. These regulations do not apply to proposed research using preexisting images of animals or to research plans that do not include live animals that are being cared for, euthanized, or used by the project participants to accomplish research goals, teaching, or testing. These regulations also do not apply to obtaining animal materials from commercial processors of animal products or to animal cell lines or tissues from tissue banks.

NOAA reserves the right to make an independent determination of whether your research involves live vertebrate animals. If NOAA determines that your research project involves live vertebrate animals, you will be required to provide additional information for review and approval. If an award is issued, no research activities involving live vertebrate animals subjects shall be initiated or costs incurred under the award until the NOAA Contracting Officer issues written approval.

If the proposal includes research activities involving live vertebrate animals, the following information is required in the proposal:

(1) The name(s) of the institution(s) where the animal research will be conducted;

(2) The assurance type and number, as applicable, for the cognizant Institutional Animal Care and Use Committee (IACUC) where the research activity is located. [For example: Animal Welfare Assurance from the Office of Laboratory Animal Welfare (OLAW) should be indicated by the OLAW assurance number, i.e. A-1234; a USDA Animal Welfare Act certification should be indicated by the certification number i.e. 12-R-3456; and an Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC) should be indicated by AAALAC.]

(3) The IACUC approval date (if currently approved);

(4) If the review by the cognizant IACUC is pending, the estimated start date for research involving vertebrate animals;

(5) If any assurances or IACUCs need to be obtained or established, that should be clearly stated.

Additional documentation will be requested, as warranted, during review of the proposal, but may include the following for research activities involving live vertebrate animals that are planned in the first year of the award:

(1) A signed (by the Principal Investigator) copy of the IACUC approved Animal Study Proposal (ASP);

(2) Documentation of the IACUC approval indicating the approval and expiration dates of the ASP; and

(3) If applicable, a nonduplication-of-funding letter if the ASP is funded from several sources.

(4) If a new ASP will only be submitted to an IACUC if an award from NOAA issued, a draft of the proposed ASP may be requested.

(5) Any additional clarifying documentation that NOAA may request during review of proposals to perform the NOAA administrative review of research involving live vertebrate animals.

2.4 Funding Agreement Addendums

2.4.1 SBIR Funding Agreement Certification

SBIR Funding Agreement Certification

All small businesses must complete this certification with their proposal submission
and any other time set forth in the funding agreement that is prior to performance of work under this award. This includes checking all of the boxes and having an authorized officer of the awardee sign and date the certification each time it is requested.

Please read carefully the following certification statements. The Federal government relies on the information to determine whether the business is eligible for a Small Business Innovation Research (SBIR) Program award. A similar certification will be used to ensure continued compliance with specific program requirements during the life of the funding agreement. The definitions for the terms used in this certification are set forth in the Small Business Act, SBA regulations (13 C.F.R. part 121), the SBIR Policy Directive and also any statutory and regulatory provisions referenced in those authorities.

If the funding agreement officer believes that the business may not meet certain eligibility requirements at the time of award, they are required to file a size protest with the U.S. Small Business Administration (SBA), who will determine eligibility. At that time, SBA will request further clarification and supporting documentation in order to assist in the verification of any of the information provided as part of a protest. If the funding agreement officer believes, after award, that the business is not meeting certain funding agreement requirements, the agency may request further clarification and supporting documentation in order to assist in the verification of any of the information provided.

Even if correct information has been included in other materials submitted to the Federal government, any action taken with respect to this certification does not affect the Government's right to pursue criminal, civil, or administrative remedies for incorrect or incomplete information given in the certification. Each person signing this certification may be prosecuted if they have provided false information.

The undersigned has reviewed, verified and certifies that (all boxes must be checked):

(1) The business concern meets the ownership and control requirements set forth in 13 C.F.R. §121.702. [_] Yes [_] No

(2) If a corporation, all corporate documents (articles of incorporation and any amendments, articles of conversion, by-laws and amendments, shareholder meeting minutes showing director elections, shareholder meeting minutes showing officer elections, organizational meeting minutes, all issued stock certificates, stock ledger, buy-sell agreements, stock transfer agreements, voting agreements, and documents relating to stock options, including the right to

convert non-voting stock or debentures into voting stock) evidence that it meets the ownership and control requirements set forth in 13 C.F.R. § 121.702. [_] Yes [_] No [_] N/A Explain why N/A:
_____

(3) If a partnership, the partnership agreement evidences that it meets the ownership and control requirements set forth in 13 C.F.R. §121.702.

[_] Yes [_] No [_] N/A Explain why N/A: _____

(4) If a limited liability company, the articles of organization and any amendments, and operating agreement and amendments, evidence that it meets the ownership and control requirements set forth in 13 C.F.R

§121.702.

[_] Yes [_] No [_] N/A

Explain why N/A: _____

(5) The birth certificates, naturalization papers, or passports show that any individuals it relies upon to meet the eligibility requirements are U.S. citizens or permanent resident aliens in the United States.

[_] Yes [_] No [_] N/A

Explain why N/A: _____

(6) It has no more than 500 employees, including the employees of its affiliates. [_] Yes [_] No
(7) SBA has not issued a size determination currently in effect finding that this business concern exceeds the 500 employee size standard. [_] Yes [_] No

(8) During the performance of the award, the principal investigator will spend more than one half of his/her time as an employee of the awardee or has requested and received a written deviation from this requirement from the funding agreement officer. [_] Yes [_] No [_] Deviation approved in writing by funding agreement officer: _____%

(9) All, essentially equivalent work, or a portion of the work proposed under this project (check the applicable line):

[_] Has not been submitted for funding by another Federal agency. [_] Has been submitted for funding by another Federal agency but has not been funded under any other Federal grant, contract, subcontract or other transaction. [_] A portion has been funded by another grant, contract, or subcontract as described in detail in the proposal and approved in writing by the funding agreement officer.

(10) During the performance of award, it will perform the applicable percentage of work unless a deviation from this requirement is approved in writing by the funding agreement officer (check the applicable line and fill in if needed): [_] SBIR Phase I: at least two-thirds (66 2/3%) of the research [_] SBIR Phase II: at least half (50%) of the research [_] Deviation approved in writing by the funding agreement officer: _____%

(11) During performance of award, the research/research and development will be performed in the United States unless a deviation is approved in writing by the funding agreement officer. [_] Yes [_] No [_] Waiver has been granted

(12) During performance of award, the research/research and development will be performed at my facilities with my employees, except as otherwise indicated in the SBIR application and approved in the funding agreement. [_] Yes [_] No

(13) It has registered itself on SBA's database as majority-owned by venture capital operating companies, hedge funds, or private equity firms.

(14) It is a Covered Small Business Concern [a small business concern that: (a) was not majority-owned by multiple venture capital operating companies (VCOCs), hedge funds, or private equity firms on the date on which it submitted an application in response to an SBIR solicitation; and (b) on the date of the SBIR award, which is made more than 9 months after the closing date of the solicitation, is majority-owned by multiple venture capital operating companies, hedge funds, or private equity firms].

[_] Yes [_] No [_] N/A

Explain why N/A: _____ [_] Yes [_] No

[_] It will notify the Federal agency immediately if all or a portion of the work proposed is subsequently funded by another Federal agency.

[_] I understand that the information submitted may be given to Federal, State, and local agencies for determining violations of law and other purposes.

[_] I am an officer of the business concern authorized to represent it and sign this certification on its behalf. By signing this certification, I am representing on my own behalf, and on behalf of the business concern that the information provided in this certification, the application, and all other information submitted in connection with this application, is true and correct as of the date of submission. I acknowledge that any intentional or negligent misrepresentation of the information contained in this certification may result in criminal, civil or administrative sanctions, including but not limited to: (1) fines, restitution and/or imprisonment under 18 U.S.C. §1001; (2) treble damages and civil penalties under the False Claims Act (31 U.S.C. §3729 et seq.); (3) double damages and civil penalties under the Program Fraud Civil Remedies Act (31 U.S.C. §3801 et seq.); (4) civil recovery of award funds, (5) suspension and/or debarment from all Federal procurement and nonprocurement transactions (FAR Subpart 9.4 or 2 C.F.R. part 180); and (6) other administrative penalties including termination of SBIR/STTR awards.

Local 202-482-2495
Toll free 1-800-424-5197
TTD 1-855-860-6950

_____ Signature _____ Date

_____
Print Name (First, Middle, Last)

_____
Title

_____
Business Name

8.1	**TOPIC:**	**Resilient Coastal Communities and Economies**
8.1.1F	**SUBTOPIC:**	**Developing and Improving Commercial Marine Algal Culture in the United States**

2.4.2 SBIR Funding Agreement Certification – Life Cycle Certification

All SBIR Phase I and Phase II awardees must complete this certification at all times set forth in the funding agreement (see §8(h) of the SBIR Policy Directive). This includes checking all of the boxes and having an authorized officer of the awardee sign and date the certification each time it is requested.

Please read carefully the following certification statements. The Federal government relies on the information to ensure compliance with specific program requirements during the life of the funding agreement. The definitions for the terms used in this certification are set forth in the Small Business Act, the SBIR Policy Directive, and also any statutory and regulatory provisions referenced in those authorities.

If the funding agreement officer believes that the business is not meeting certain funding agreement requirements, the agency may request further clarification and supporting documentation in order to assist in the verification of any of the information provided.

Even if correct information has been included in other materials submitted to the Federal government, any action taken with respect to this certification does not affect the Government's right to pursue criminal, civil, or administrative remedies for incorrect or incomplete information given in the certification. Each person signing this certification may be prosecuted if they have provided false information.

The undersigned has reviewed, verified and certifies that (<u>all boxes must be checked</u>):

(1) The principal investigator spent more than one half of his/her time as an employee of the awardee or the awardee has requested and received a written deviation from this requirement from the funding agreement officer. [_] Yes [_] No [_] Deviation approved in writing by funding agreement officer: _____%

(2) All, essentially equivalent work, or a portion of the work performed under this project (check the applicable line):

[_] Has not been submitted for funding by another Federal agency. [_] Has been submitted for funding by another Federal agency but has not been funded under any other Federal grant, contract, subcontract or other transaction. [_] A portion has been funded by another grant, contract, or subcontract as described in detail in the proposal and approved in writing by the funding agreement officer.

(3) Upon completion of the award it will have performed the applicable percentage of work, unless a deviation from this requirement is approved in writing by the funding agreement officer (check the applicable line and fill in if needed): [_] SBIR Phase I: at least two-thirds (66 2/3%) of the research [_] SBIR Phase II: at least half (50%) of the research [_] Deviation approved in writing by the funding agreement officer: _____%

(4) The work is completed and it has performed the applicable percentage of work, unless a deviation from this requirement is approved in writing by the funding agreement officer (check the applicable line and fill in if needed): [_] SBIR Phase I: at least two-thirds (66 2/3%) of the research [_] SBIR Phase II: at least half (50%) of the research [_] Deviation approved in writing by the funding agreement officer: _____% [_] N/A because work is not completed

(5) The research/research and development is performed in the United States unless a deviation is approved in writing by the funding agreement officer. [_] Yes [_] No [_] Waiver has been granted

(6) The research/research and development is performed at my facilities with my employees, except as otherwise indicated in the SBIR application and approved in the funding agreement.

[_] Yes [_] No

[_] It will notify the Federal agency immediately if all or a portion of the work proposed is subsequently funded by another Federal agency.

[_] I understand that the information submitted may be given to Federal, State, and local agencies for determining violations of law and other purposes.

[_] I am an officer of the business concern authorized to represent it and sign this certification on its behalf. By signing this certification, I am representing on my own behalf, and on behalf of the business concern that the information provided in this certification, the application, and all other information submitted in connection with the award, is true and correct as of the date of submission. I acknowledge that any intentional or negligent misrepresentation of the information contained in this certification may result in criminal, civil or administrative sanctions, including but not limited to: (1) fines, restitution and/or imprisonment under 18 U.S.C. §1001; (2) treble damages and civil penalties under the False Claims Act (31 U.S.C. §3729 et seq.); (3) double damages and civil penalties under the Program Fraud Civil Remedies Act (31 U.S.C. §3801 et seq.); (4) civil recovery of award funds, (5) suspension and/or debarment from all Federal procurement and nonprocurement transactions (FAR Subpart 9.4 or 2 C.F.R. part 180); and (6) other administrative penalties including termination of SBIR/STTR awards.

Signature Date

Print Name (First, Middle, Last) Title Business Name

3.0 PROPOSAL PREPARATION INSTRUCTIONS AND REQUIREMENTS

3.1 Proposal Requirements

NOAA reserves the right not to complete a technical review of any proposal which it determines has insufficient scientific and technical information, or one which fails to comply with the administrative procedures as outlined in the NOAA/SBIR Checklist in Section 9.7. Proposals that do not pass the screening criteria (outlined in Section 4.2) will be rejected without further consideration.

The offeror must provide sufficient information to demonstrate that the proposed work represents a sound approach to the investigation of an important scientific or engineering innovation. The proposal must meet all the requirements of the subtopic in Section 8 to which it applies.

A proposal must be self-contained and written with all the care and thoroughness of a scientific paper submitted for publication. It should indicate a thorough knowledge of the current status of research in the subtopic area addressed by the proposal. Each proposal should be checked carefully by the offeror to ensure inclusion of all essential material needed for a complete evaluation. The proposal will be peer reviewed as a scientific paper. All units of measurement should be in the metric system.

The proposal must not only be responsive to the specific NOAA program interests described in Section 8 of the solicitation, but also serve as the basis for technological innovation leading to **new commercial products, processes, or services.** An organization may submit different proposals on different subtopics or different proposals on the same subtopic under this Solicitation. When the proposed innovation applies to more than one subtopic, the offeror must choose that subtopic which is most relevant to the offeror's technical concept.

Proposals principally for the commercialization of proven concepts or for market research shall not be submitted for Phase I funding, since such efforts are considered the responsibility of the private sector.

The proposal should be direct, concise, and informative. Promotional and other material not related to the project shall be omitted.

NOAA will notify the various offerors whether they have been recommended for a potential award within 90 calendar days of the closing date of this solicitation. If selected for potential award and approved by the Contracting Officer, the offeror can anticipate to receive an actual award within 180 calendar days of the closing date of the solicitation. The offeror shall **not** proceed with work until an official award is received.

3.2 Phase I Proposal Limitations

• Page Length -**no more than 25 pages**, consecutively numbered, including the cover page, project summary, main text, references, resumes, other applicable technical enclosures or attachments, and the Proposed Budget (Section 9.3). The only exceptions to the page count limitation are the additional Supplemental Budget Documentation for the Proposed Budget (See Section 9.4 for a more detailed discussion); SBIR Funding Agreement Certification (Form 9.5); SBIR.gov Company Registry documentation (see Section 3.3.2); and those pages necessary to comply with the itemization of prior SBIR Phase II awards, per Section 3.5. No additional attachments, appendices, or references beyond the 25 page limitation shall be considered in the technical proposal evaluation.

• Paper Size -must be standard size (21.6 cm X 27.9 cm; 8 ½" X 11").

• Format -must be easy to read with a font of at least 10 point. Margins should be at least 2.5cm / 0.984".

Supplementary material, revisions, substitutions, audio or video tapes, or other electronic media will **not** be accepted.

Proposals not meeting these requirements will be rejected without further review.

3.3 Phase I Proposal Submission Forms and Technical Content

This section includes instructions for completing required forms and writing the Technical Content section. A complete proposal application must include:

Technical Proposals: **Two (2) copies** of each of the following (totaling 25 printed pages):

(a) Cover Page (front and back counted as one page, required form, see Section 3.3.1 and 9.1)
(b) Project Summary (required form, see Section 3.3.3 and 9.2)
(c) Technical Content (up to 22 pages, see Section 3.3.4)
(d) Proposed Budget (required form, see Section 3.6 and 9.3)

Supplemental Budget and Other Information: **Two (2) copies** of each of the following (not counted towards 25 page limit):

(a) Supplemental Budget documentation (required, see Section 9.4)
(b) SBIR Funding Agreement Certification (required form, see Section 9.5)
(c) Screen shot or similar copy of proposers' Company Registry as noted on SBIR.gov website (required, see Section 3.3.2)
(d) Attachment: List of prior Phase II awards for proposers awarded more than 15 SBIR Phase II awards in the prior five fiscal years (required if applicable and does not contribute to 25 page count limit, see Section 3.5)

Proposals received missing any of these required items will be rejected without further review. For instructions on proposal submission, see Section 6.2.

3.3.1 Proposal Cover Sheet

Complete all items in the "Cover Page" (front and back side) required form and use as page 1 of the proposal. Ensure that required signatures are included. The government may reject any unsigned offers received. **NO OTHER COVER PAGE WILL BE ACCEPTED.**

If you check the Yes box on #7 of the Cover Sheet, your contact information will be provided to NIST Hollings Manufacturing Extension Partnership (MEP). You may be contacted by your local MEP to explore business-related support services that could benefit the potential of the project you proposed.

Before NOAA can award a contract to a successful offeror under this solicitation, the offeror must be registered in the System for Award Management (SAM). To register, visit https://www.sam.gov/portal/public/SAM/ or call 1-866-606-8220. This procurement shall be awarded as a "contract" and not a "grant." Within SAM.gov, you must complete the Representations and Certifications Section and include NAICS code 541712 with your registration.

The DUNS number is a nine-digit number assigned by Dun and Bradstreet Information Services. If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one. A DUNS number will be provided immediately by telephone at no charge to the offeror. For information on obtaining a DUNS number, the offeror, if located within the United States, should call Dun and Bradstreet at 1-866-7055711, or access their website at http://fedgov.dnb.com/webform.

No award shall be made under this solicitation to a small business concern without proper registration in SAM.

Small Business Concerns may also be able to obtain free to low cost assistance with the SAM.gov website through their local state Procurement Technical Assistance Centers (PTAC). Information can be obtained at http://www.aptac-us.org.

Be sure to identify proposal page numbers that contain confidential information in the Proprietary Notice section at the end of the Cover Sheet.

3.3.2 Data Collection Requirement

Each Phase I and Phase II applicant is required to provide information for SBA's database (www.SBIR.gov). The following are examples of the data to be entered by applicants into the database:

- Any business concern or subsidiary established for the commercial application of a product or service for which an SBIR award is made
- Revenue from the sale of new products or services resulting from the research conducted under each Phase II award;
- Additional investment from any source, other than Phase I or Phase II awards, to further the research and development conducted under each Phase II award.
- Update the information in the database for any prior Phase II award received by the SBC. The SBC may apportion sales or additional investment information relating to more than one Phase II award among those awards, if it notes the apportionment for each award.

Each Phase II awardee is required to update appropriate information on the award in the database upon completion of the last deliverable under the funding agreement and is requested to voluntarily update the information in the database annually thereafter for a minimum period of 5 years.

3.3.3 Project Summary

Complete all sections of the "Project Summary" form and use as page 2 of your proposal. The technical abstract should include a brief description of the problem or opportunity, the innovation, project objective, and technical approach.

In summarizing anticipated results, include technical implications of the approach and the potential commercial applications of the research. **Each awardee's Project Summary will be published on the NOAA SBIR website and, therefore, must NOT contain proprietary information.**

3.3.4 Technical Content

Beginning on page 3 of the proposal, the following sections are required: **(All headings must be included. If a particular section does not apply, please include the heading, followed by N/A)**

(a) **Identification and Significance of the Problem or Opportunity.** Make a clear statement of the specific research problem, technical problem, or opportunity addressed. Indicate its innovativeness, commercial potential, and why it is important. Show how it applies to one of the specific subtopics in Section 8.
(b) **Phase I Technical Objectives.** State the specific objectives of the Phase I research or research and development effort, including the technical questions it will try to answer to determine the feasibility of the proposed approach.
(c) **Phase I Work Plan.** Include a detailed description of the Phase I Research or Research Development plan. The plan should indicate not only what will be done, *but also* where it will be done and how the Research will be carried out. The method(s) planned to achieve each objective or task, mentioned in item (b) above, should be discussed in detail. In most cases, **this section is typically at least one-third of the proposal.**
(d) **Related Research or R&D.** Describe research or R&D that is directly related to the proposal including any conducted by the principal investigator or by the proposer's firm. Describe how it relates to the proposed effort, and describe any planned coordination with outside sources. **The purpose of this section is to demonstrate the offeror's awareness of recent developments in the specific topic.**
(e) **Key Individuals and Bibliography of Related Work.** Identify key individuals involved in Phase I, including their directly related education, experience, and bibliographic information. Where vitae are extensive, summaries that focus on most relevant experience or publications are desired and may be necessary to meet proposal size limitation. List all other commitments that key personnel have during the

proposed period of contract performance.
(f) **Relationship with Future R&D.** Discuss the significance of the Phase I effort in providing a foundation for the Phase II R&D effort. Also state the anticipated results of the proposed approach, if Phases I and II of the project are successful.
(g) **Facilities and Equipment.** The conduct of advanced research may require the use of sophisticated instrumentation or computer facilities. The proposer should provide a detailed description of the availability and location of the facilities and equipment necessary to carry out Phase I. NOAA facilities and/or equipment will be available for use by awardees only if specifically provided for in the subtopic description. All related transportation/shipping/insurance costs shall be the sole responsibility of the contractor. If expressed in the subtopic description that access to NOAA resources will be made available, then under mutual agreement between awardee and NOAA staff, arrangements will be planned prior to NOAA labs visits, samples testing or exchange, and any collaborative discussions.
(h) **Consultants and Subcontracts.** The purpose of this section is to show NOAA that:

(1) research assistance from outside the firm materially benefits the proposed effort, and (2) arrangements for such assistance are in place at the time of proposal submission.

Outside involvement in the project is encouraged where it strengthens the conduct of the research. Outside involvement is not a requirement of this solicitation and is limited to no more than 1/3 of the research and/or analytical effort in Phase I.

1. Consultant – A person outside the firm, named in the proposal as contributing to the research, must provide a signed statement confirming his/her availability and role in the project. Additionally, it should document the total amount anticipated with hours and an agreed consulting rate for participation in the project. This statement is part of the page count.
2. Subcontract – Similarly, where a subcontract is involved in the research, the subcontracting institution must furnish a letter signed by an appropriate official describing the programmatic arrangements and confirming its agreed participation in the research. This letter is part of the page count. The proposed budget for this participation shall be included in the Supplemental Budget Documentation section and does not contribute to the 25 page count limitation.

No individual or entity may serve as a consultant or subcontractor if they:

1. Had any role in suggesting, developing, or reviewing the subtopic; or
2. Have been the recipient of any information on the subtopic not available to the public.

(i) **Potential Commercial Applications and Follow-on Funding Commitment.** Describe in detail the commercial potential of the proposed research, how commercialization would be pursued, benefits over present products on the market, and potential use by the Federal Government. Address the following:

—. Market opportunity – Describe the current and anticipated target market, the size of the market, and include a brief profile of the potential customer.

—. Technology and competition – Describe the competitive landscape, the value proposition and competitive advantage of the product or service enabled by the proposed innovation. Also include what critical milestones must be met to get the product or process to market and the resources required to address the business opportunity.

—. Finances – Describe your strategy for financing the innovation.

—. (j) **Cooperative Research and Development Agreements (CRADA).** State if the applicant is a current CRADA partner with NOAA, or with any other Federal agency, naming the agency, title of the CRADA, and any relationship with the proposed work. An Agency may NOT enter into, nor continue, a CRADA with an awardee on the subtopic of the award.

—. (k) **Guest Researcher.** State if the offeror or any of its consultants or subcontractors is a guest researcher at NOAA, naming the sponsoring laboratory.

—. (l) **Cost Sharing.** Cost-sharing is permitted for proposals under this program solicitation; however, cost-sharing is not required. Cost-sharing will not be an evaluation factor in consideration of your Phase I proposal.

3.4 Similar Proposals or Awards. *** WARNING ***

While it is permissible, with proposal notification, to submit identical proposals or proposals containing a significant amount of essentially equivalent work for consideration under numerous Federal program solicitations, **it is unlawful to enter into funding agreements requiring essentially equivalent work.** If there is any question concerning this, it must be disclosed to the soliciting agency or agencies before award.

If an applicant elects to submit identical proposals or proposals containing significant amount of essentially equivalent work under other Federal program solicitations, a statement must be included in each such proposal indicating:

(a) the name and address of all agencies to which a proposal was submitted or from which awards were received;

(b) the date of proposal submission or date of award;

(c) the title, number, and date of solicitation(s) under which a proposal(s) was submitted or award(s) received;

(d) the specific applicable research topic for each proposal submitted or award received;

(e) the title of the research project; and

(f) the name and title of the principal investigator or project manager for each proposal submitted or award received.

If no equivalent proposal is under consideration or equivalent award received, a statement to that effect **must** be included in this section of the technical content area of the proposal and certified within the Cover Page.

3.5 Prior SBIR Phase II Awards

If a small business concern has received more than 15 SBIR Phase II awards from any of the Federal agencies in the prior five (5) fiscal years, it must submit as an attachment to its Phase I proposal the following list of items: name of awarding agency; date of award; funding agreement number; amounts of award; topic or subtopic title; follow-on agreement amount; source and date of commitment; and current commercialization status for each Phase II. The offeror shall document the extent to which it was able to secure Phase III funding to develop concepts resulting from previous Phase II SBIR Awards. **This required information shall not be considered part of the Phase I page count limitation.**

3.6 Proposed Budget

Complete the "NOAA SBIR Proposed Budget" (See Section 9.3) for the Phase I effort and include it as the last page of the technical proposal. Verify the total request is accurate and does **not exceed $95,000**. Proposals exceeding $95,000.00 shall be automatically rejected. The Proposed Summary Budget must be signed by the Corporate Official. Some items of the form under Section 9.3 may not apply to every proposal. Additionally, some firms may have different accounting practices for their overhead rates. Offerors should use indirect rates consistent with their own accounting system, even if different from the rate categories shown on the form. These differences should be discussed in the Supplemental Budget Documentation. Enough information, though, should be provided on the Proposed Budget to allow NOAA to understand how the offeror plans to use the requested funds if the award is considered. A complete cost breakdown should be provided giving direct costs, indirect costs, other direct costs G&A, and profit. The offeror is to submit a cost estimate with detailed information consistent with the offeror's cost accounting system. A reasonable profit will be allowed.

As a reminder in completing the Proposal Budget Summary for Phase I, a minimum of two-thirds of the research and/or analytical effort must be performed by the proposing small business concern. The total cost for all consultant fees, facility leases, usage fees, and other subcontract or purchase agreements may not exceed one-third of the contract price. For Phase II, a minimum of one-half of the research and/or analytical effort must be performed by the proposing small business concern. The total cost for all consultant fees, facility leases, usage fees, and other subcontract or purchase agreements may not exceed one-half of the contract price.

Offerors shall provide additional supplemental budget documentation for the Proposed Budget for the Government's Cost and Pricing Review. ***This Supplemental Budget Documentation shall NOT be utilized for evaluation of the Technical Proposal. Offerors must ensure that all relevant technical information is included within the 25 page technical proposal.*** The Supplemental Budget Documentation does **NOT** count towards the 25 page count requirement. Additionally, the government **only requires two (2) hard copies** of the Supplemental Budget Documentation. The Supplemental Budget Documentation shall include a cover sheet and be organized, stapled, and easy to understand. The information should only supplement and help to justify and explain the amounts requested on the Proposed Budget sheet. Additionally, the documentation should indicate any known or anticipated source, quantity, unit price, competition obtained, and basis used to establish source and reasonable costs (e.g. other direct costs, equipment, and travel, etc.).

A more detailed discussion of completing the Proposed Budget and the Supplemental Budget Documentation is provided in Section 9.4.

3.7 Multiple Proposals

Offerors may submit multiple proposals to this solicitation. Offerors should submit separate proposal packages for each topic area they wish to be considered. If offerors have multiple proposals with different methods or deliverables that they wish to propose on the same topic area, a separate proposal package should be provided for each method or deliverable.

4.0 METHOD OF SELECTION AND EVALUATION CRITERIA

4.1 Introduction

All Phase I and II proposals will be evaluated and judged on a competitive basis. **A proposal will not be deemed acceptable if it represents presently available technology.** Proposals will be initially screened to determine responsiveness (See Section 4.2 and 9.7). Proposals passing this initial screening will be technically evaluated by engineers or scientists (reviewers may be NOAA employees or outside of NOAA) to determine the most promising technical and scientific approaches. Each proposal will be judged on its own merit. NOAA is under no obligation to fund any proposal or any specific number of proposals in a given topic. It also may elect to fund several or none of the proposed approaches to the same topic or subtopic.

4.2 Phase I Screening Criteria

Phase I proposals that do not satisfy all of the screening criteria shall be rejected without further review and will be eliminated from consideration for award. Rejected proposals may not be resubmitted (with or without revision) under this solicitation. The screening criteria (also see Section 9.7) are:

(a) The proposing firm must qualify as a small business, in accordance with Section 1.7.13.
(b) The Phase I proposal must meet **all** of the requirements stated in Section 3.

(c) The Phase I proposal must be limited to one subtopic and clearly address research for that subtopic.

(d) Phase I proposal budgets must not exceed $95,000.

(e) The project duration for the Phase I feasibility research must not exceed six months.

(f) The proposing firm must carry out a minimum of two-thirds of expenditures under each Phase I project.

(g) All work must be performed by the small business concern and its subcontractors in the United States, unless a waiver has been granted in advance by the Contracting Officer (see Section 1.5).

(h) The proposal must contain information sufficient to be peer reviewed as research.

4.3 Phase I Evaluation and Selection Criteria

Phase I proposals that comply with the screening criteria will go through the following process:

Step 1: The proposals will be evaluated by internal NOAA and/or external scientists or engineers via peer review in accordance with the following criteria listed in descending order of importance:

(1) The technical approach and the anticipated agency and commercial benefits that may be derived from the research.

(2) The adequacy of the proposed effort and its relationship to the fulfillment of requirements of the research subtopic.

(3) The soundness and technical merit of the proposed approach and its incremental progress toward subtopic solution.
(4) Consideration of a proposal's commercial potential as evidenced by:
(a) the SBC's record of commercializing SBIR or other research;
(b) the existence of second phase funding commitments from private sector or non-SBIR funding sources;
(c) the existence of third phase follow-on commitments for the subject of the research; and
(d) the presence of other indicators of the commercial potential of the idea.
(5) Qualifications of the proposed principal/key investigators, supporting staff, and consultants.

Technical reviewers will base their rankings on information contained in the proposal. It is assumed that reviewers are not acquainted with any experiments referred to, key individuals, or the firm. No technical clarifications may be made after proposal submission.

After the technical review, the superior Phase I proposals will be priority ranked to ensure that the proposed research is consistent with the objectives of NOAA's research.

Step 2: A NOAA-wide selection panel will review the content of the technically superior proposals based on the following evaluation factors to develop a final ranking:

(1) Proposal priority ranking resulting from Step 1.

(2) Economic impact (e.g., ability of the company to develop a commercially viable product, service or process); number and record of past performance for SBIR and STTR awards; consideration given to companies without previous SBIR awards; existence of outside non-SBIR funding or partnering commitments; and/or the presence of other relevant supporting material contained in the proposal that indicates the commercial potential of the idea (such as letters of support, journal articles, literature, Government publications, etc.).

Final award recommendation decisions will be made by NOAA based upon rankings assigned by the selection panel and consideration of additional factors, **including possible duplication of other research**, the importance of the proposed research as it relates to NOAA needs, and the availability of funding. In the event of a "tie" between proposals, manufacturing-related projects as well as those regarding energy efficiency and renewable energy systems will receive priority in the award selection process. NOAA may elect to fund several or none of the proposals received on a given subtopic. Upon recommendation of a proposal for a Phase I award, NOAA reserves the right to review and negotiate, if necessary, the amount of the award.

4.4 Phase II Evaluation and Selection Criteria

During the feasibility study project performance period, Phase I awardees will be provided instructions for preparation and submission of Phase II proposals. Phase II proposals that comply with the screening criteria as stated in those instructions. Phase II proposals will be evaluated by NOAA and external scientists and engineers in accordance with the step 1 and 2 evaluation criteria.

Upon selection of a proposal for Phase II award, NOAA reserves the right to review and negotiate, if necessary, the amount of the award. NOAA is not obligated to fund any specific Phase II proposal.

4.5 Release of Proposal Review Information

Notifications to the various offerors of recommendations of potential selection or non-selection of award, that passed the screening criteria, will be advised within 90 calendar days of closing of the solicitation. Copies of the technical evaluations shall be provided tentatively 30 days after completion of potential selection or non-selection of award. The identity of the reviewers will not be disclosed.

5.0 CONSIDERATIONS

5.1 Awards

NOAA will award firm-fixed price contracts to successful offerors. A firm-fixed price contract identifies a price that is not subject to any adjustment on the basis of the contractor's cost expenditure in performing the effort. This agreement type places upon the contractor the risk and full responsibility for all costs and resulting profit or loss. It provides maximum incentive for the contractor to control costs and perform effectively and imposes a minimum administrative burden upon both parties. NOAA also does not allow any advance payments to be made on its awards. The firm-fixed price shall be inclusive of all transportation/shipping/insurance costs for government furnished property (if requested in the proposal and accepted by the government) made available for use by awardee and all deliverables/prototypes to be furnished to NOAA.

Contingent upon availability of funds, NOAA anticipates making approximately **eight (8) to ten (10)** Phase I firm-fixed price contracts of no more than **$95,000** each. Total performance period shall be no more than six (6) months. Historically, NOAA has funded about ten percent of the Phase I proposals submitted.

Phase II awards shall be for no more than $400,000. The period of performance to complete Phase II effort will depend upon the scope of the research, but the final report due date must not exceed 24 months. One year after completing the R&D activity, the awardee shall be expected to report on their commercialization activities. The total period of performance for Phase II is anticipated to be approximately 36 months.

It is anticipated that **approximately half of the Phase I awardees will receive Phase II awards**, depending upon the availability of funds. To provide for an in-depth review of the Phase I final report and the Phase II proposal and commercialization plan, Phase II awards will be made approximately five months after the completion of Phase I.

For planning purposes, proposers should understand that Phase I awards are tentatively issued in July 2014, Phase II proposals are due approximately March 2015 and Phase II awards are issued tentatively June 2015.

This Solicitation does not obligate NOAA to make any awards under either Phase I or Phase II. Furthermore, NOAA is not responsible for any monies expended by the proposer before award of any contract resulting from this Solicitation.

5.2 Reports

Phase I awardees will be required to submit two progress reports and a final report. Phase I reports are due at 2, 4, and 6 months after award.

Phase II awardees will be required to submit four progress reports, a final report, and a commercialization report. Phase II reports are due at 2, 6, 12, 18, and 24 months, or as to be negotiated on a case by case basis. The commercialization report is due 36 months after award. The payment schedule in paragraph 5.3 is tied to these reports.

Phase I and Phase II progress reports should be brief letter reports and include all technical details regarding the research conducted up to that point in the project and will provide detailed plans for the next stages of the project. The acceptance of each progress report will be contingent upon appropriate alignment with the solicited and proposed milestones. Consideration will be given to changes from the solicited and proposed milestones if results from experimentation warrant a deviation from plan. Inclusion of proprietary information within the progress reports and final report may be necessary in order to effectively communicate progress and gain appropriate consultation from NOAA experts regarding next steps. All such proprietary information will be marked according to instructions provided in Section 5.5.

Final reports submitted under Phase I and Phase II shall include a single-page project summary as the first page, identifying the purpose of the research, and giving a brief description of the research carried out, the research findings or results, and the commercial applications of the research in a final paragraph. The remainder of the report should indicate in detail the research objectives, research work carried out, results obtained, and estimates of technical feasibility.

All final reports must carry an acknowledgement on the cover page such as: “This material is based upon work supported by the National Oceanic and Atmospheric Administration (NOAA) under contract number _____. Any opinions, findings, conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of NOAA.”

The information provided in the Phase II commercialization update reports will be compiled and used as general statistics to help determine the value of NOAA SBIR Program, educate stakeholders about the outcomes and impact, and attract new entrants.

The Phase II commercialization update report shall include the following:

a. A description of the company’s efforts to further develop, commercialize and derive revenues from the technology resulting from this SBIR award. These may include but are not limited to: customer/potential customer base, overview of marketing and sales strategies, other uses of knowledge gained, partners, licensing, committed resources, market readiness, use of knowledge gained for other projects, manufacturing, and financing strategy. Also discuss difficulties, and barriers to entry.

If work has ended on the project, please provide an explanation as to why (i.e. technical objective not met, existing barriers to entry, could not obtain follow-on funding, technology not economically viable, alternative technology entered the market, or other explanation).

b. Information about any follow-on funding commitment(s) and investments to further the development and/or commercialize the Phase II technology.

If follow-on funding was not obtained, provide possible reasons (i.e. technical objective not met, technology not economically viable, alternative technology entered the market, or other explanation).

c. Details about products and /or processes being developed, used for other projects, or currently in the marketplace resulting from the SBIR project.

d. A list of any patents or published patent applications resulting from the SBIR project.

e. Sales revenue from new products or processes received from the commercialization of this SBIR project include: sales, manufacturing, product licensing, royalties, consulting, contracts, or other.

To help assess the effectiveness of our program in meeting programmatic and SBIR objectives, NOAA may periodically request information from small businesses about progress taken towards commercialization of the technology after the completion of Phase I and II contracts.

5.3 Payment Schedule

If selected for award, the government shall contact the potential awardee to negotiate the appropriate amounts tied to the reports in paragraph 5.2. The specific payment schedule (including payment amounts) for each award will be incorporated into the resulting contract.

No advance payments will be allowed. To receive an SBIR payment the SBC must re-certify that they remain eligible as SBC to receive funding and have not changed their SBC status or any other terms of condition of initial award.

For Phase II, a total of six payments are anticipated to coincide with the reports. The government shall negotiate with the potential awardee regarding the payment schedule for payments one through five (excluding $5,000.00 for payment six). The sixth payment for $5,000.00 will be made after the commercialization report is accepted (see Section 5.2). Failure to submit the report within twelve months of the completion of the R&D activity period for Phase II may result in a de-obligation of the $5,000.00.

5.4 Deliverables

Offers submitted in response to subtopics that require delivery of a prototype should state in the proposal, the plan to develop and deliver the specified prototype. Shipping shall be Freight on Board (F.O.B) Destination which means that the contractor is responsible for all transportation/shipping/insurance costs for deliverables. Notwithstanding the absence of such an explicit statement in the offeror’s proposal, delivery of the developed prototype as called for by the Solicitation subtopic is required.

5.5 Innovations, Inventions, and Patents

5.5.1 Proprietary Information

Information contained in unsuccessful proposals will remain the property of the proposer. Any funded proposal will not be made available to the public, except for the "Project Summary" page.

The inclusion of proprietary information within the proposal is discouraged unless it is absolutely necessary for the proper evaluation. Information contained in unsuccessful proposals will remain the property of the offeror. The Government may, however, retain copies of all proposals. Public release of information in any proposal submitted will be subject to existing statutory and regulatory requirements. If proprietary information is provided by an offeror in a proposal, which constitutes a trade secret, proprietary commercial or financial information, confidential personal information or data affecting the national security, it will be treated in confidence, to the extent permitted by law. This information must be clearly marked by the offeror with the term "confidential proprietary information" and the following legend must appear on the first page of the technical section of the proposal:

> "These data shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed in whole or in part for any purpose other than evaluation of this proposal. If a funding agreement is awarded to this offeror as a result of or in connection with the submission of these data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the funding agreement and pursuant to applicable law. This restriction does not limit the Government's right to use information contained in the data if it is obtained from another source without restriction. The data subject to this restriction are contained on pages _____ of this proposal."

Any other legend may be unacceptable to the Government and may constitute grounds for removing the proposal from further consideration, without assuming any liability for inadvertent disclosure. The Government will limit dissemination of such information to its employees and, where necessary for evaluation, to outside reviewers on a confidential basis.

Examples of laws that restrict the government to protect confidential/proprietary information about business operations and trade secrets possessed by any company or participant include: Freedom of Information Act (FOIA) – 5. U.S.C. § 552(b); Economic Espionage Act – 18 U.S.C. § 1832; and Trade Secrets Act – 18 U.S. C. § 1905.

In view of the above, proposers are cautioned that proposals are likely to be less competitive if significant details are omitted due to the proposer's reluctance to reveal confidential/proprietary information.

5.5.2 Rights in Data Developed under SBIR Contracts

Except for copyrighted data, the Government shall normally have unlimited rights to data in Phase I, II, or III awards, such as:

(a) data specifically identified in the SBIR contract to be delivered without restriction;

(b) form, fit, and function data delivered under the contract;

(c) data delivered under the contract that constitute manuals or instructions and training material for installation, operation, or routine maintenance and repair of items, components, or processes delivered or furnished for use under the contract; and

(d) all other data delivered under the contract.

To preserve the SBIR Data Rights of the awardee, the following must be affixed to any submissions of technical data developed under that SBIR award:

SBIR RIGHTS NOTICE (DEC 2007)

> These SBIR data are furnished with SBIR rights under Contract No._____ (and subcontract _____, if appropriate). For a period of 4 years, unless extended in accordance with FAR 27.409(h), after acceptance of all items to be delivered under this contract, the Government will use these data for Government purposes only, and they shall not be disclosed outside the Government (including disclosure for procurement purposes) during such period without permission of the Contractor, except that, subject to the foregoing use and disclosure prohibitions, these data may be disclosed for use by support Contractors. After the protection period, the Government has a paid-up license to use, and to authorize others to use on its behalf, these data for Government purposes, but is relieved of all disclosure prohibitions and assumes no liability for unauthorized use of these data by third parties. This Notice shall be affixed to any reproductions of these data, in whole or in part.

(END OF NOTICE)

The Government's sole obligation with respect to any properly identified SBIR data shall be as set forth in the paragraph above. The five-year period of protection applies for Phases I, II, and III.

5.5.3 Copyrights

With prior written permission of the Contracting Officer, the awardee normally may copyright and publish (consistent with appropriate national security considerations, if any) material developed with Government support. The Government receives a royalty-free license for the Federal Government and requires that each publication contain an appropriate acknowledgement and disclaimer statement.

5.5.4 Patents

Small business concerns normally may retain the worldwide patent rights to any invention made with Government support. In such circumstances, the Government receives a royalty-free license for Federal Government use, reserves the right to require the patent holder to license others in certain circumstances, and may require that anyone exclusively licensed to sell the invention in the United States must normally manufacture it domestically. To the extent authorized by 35 U.S.C. 205, the government will not make public any information disclosing a Government-supported invention for a minimum 4-year period (that may be extended by subsequent SBIR funding agreements) to allow the awardee a reasonable time to pursue a patent.

5.5.5 Invention Reporting

SBIR awardees must report inventions to the NOAA SBIR Program within two months of the inventor's report to the awardee. The reporting of patents and other patent obligations shall be completed through the iEdison System unless noted in resulting contract. For additional information on the iEdison System go to https://s-edison.info.nih.gov/iEdison/.

5.6 Considerations

Upon award of a funding agreement, the contractor will be required to make certain legal commitments through acceptance of numerous clauses in Phase I funding agreements. The outline that follows is illustrative of the types of clauses to which the contractor would be committed. This list is not a complete list of clauses to be included in Phase I funding agreements, and is not the specific wording of such clauses. Copies of complete terms and conditions are available upon request.

(a) Standards of Work. Work performed under the contract must conform to high professional standards.

(b) Inspection. Work performed under the contract is subject to Government inspection and evaluation at all reasonable times.

(c) Examination of Records. The Comptroller General (or a duly authorized representative) shall have the right to examine pertinent records of the contractor involving transactions related to this contract.

(d) Default. The Government may terminate the agreement if the contractor fails to perform the work contracted.
(e) Termination for Convenience. The Government may terminate the contract at any time if it deems termination to be in the best interest, in which case the contractor will be compensated for work performed and for reasonable termination costs.
(f) Disputes. Any dispute concerning the contract, which cannot be resolved by agreement, shall be decided by the Contracting Officer with right to appeal.

(g) Contract Work Hours. The contractor cannot require an employee to work more than eight hours a day or 40 hours a week, unless the employee is compensated accordingly (i.e. overtime pay).

(h) Equal Opportunity. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.

(i) Affirmative Action for Veterans. The contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran or veteran of the Vietnam era.

(j) Affirmative Action for the Handicapped. The contractor will not discriminate against any employee or

applicant for employment because he or she is physically or mentally handicapped.

(k) Officials Not to Benefit. No Government official shall benefit personally from any SBIR contract.

(l) Covenant Against Contingent Fees. No person or agency has been employed to solicit or secure the contract upon an understanding for compensation, except bona fide employees or commercial agencies maintained by the contractor for the purpose of securing business.

(m) Gratuities. The Government may terminate the contract if any gratuity has been offered to any representative of the Government to secure the contract.

(n) Patent Infringement. The contractor shall report each notice or claim of patent infringement based on the performance of the contract.

(o) American-Made Equipment and Products. When purchasing either equipment or a product, under the SBIR funding agreement, purchase only American-made items whenever possible.

5.7 Additional Information

(a) Projects. The responsibility for the performance of the principal investigator, and other employees or consultants, who carry out the proposed work, lies with the management of the organization receiving an award.
(b) Organizational Information. Before award of an SBIR contract, the Government may request the proposer to submit certain organizational, management, personnel, and financial information to assure responsibility of the proposer.

(c) **Duplicate Awards. If an award is made under this solicitation, the contractor will be required to certify that he or she has not previously been, nor is currently being, paid for essentially equivalent work by any agency of the Federal Government. Severe penalties may result from such actions.**

(d) **Your firm is required to obtain a Dunn and Bradstreet Number (DUNS) and register in the System for Award Management (SAM) database and complete the Online Representations and Certifications (in order to be eligible to receive a contract award.**

(e) **In addition, your firm is required to register in the SBIR database (www.SBIR.gov) and submit a copy of your firms registration information from the Company Registry**.

(f) If there is any inconsistency between the information contained herein and the terms of any resulting SBIR contract, the terms of the contract are controlling.

(g) The Government is not responsible for any monies expended by the offeror before award of any contract.

(h) NOAA may provide technical assistance to awardees as allowed by legislation.

5.8 Technical Assistance for Proposal Preparation and Project Conduct

Proposers may wish to contact the NIST Hollings Manufacturing Extension Partnership (MEP), a nationwide network of locally managed extension centers whose sole purpose is to provide small-and medium-sized manufacturers with the help they need to succeed. The centers provide guidance to high-technology companies seeking resources and teaming relationships. To contact a MEP center, call 1-800-MEP-4MFG (1-800-637-4634) or visit MEP's website at www.mep.nist.gov.

Proposers may also contact independent state, regional, or area specific resources, for example, economic development agencies for additional assistance and resources.

6.0 SUBMISSION OF PROPOSALS

6.1 Deadline for Proposals and Modifications

Deadline for Phase I proposal receipt (two copies) at the NOAA Eastern Region Acquisition Division is 4:00 p.m. (CST) on January 29, 2014. THE HARDCOPY MAILED SUBMISSION TO THE NOAA EASTERN REGION ACQUISITION DIVISION IS THE ONLY FORMAL PROPOSAL THAT SHALL BE CONSIDERED IN TERMS OF TIMELY SUBMISSION. NOAA does not accept formal SBIR proposal submission via electronic method.

All offerors should expect delay in mailed delivery due to added security at Federal Facilities. It is the responsibility of the offeror to make sure delivery is made on time. WALK-INS AND COURIER DELIVERIES ARE NOT PERMITTED.

As a reminder in addition to the formal hardcopy submission, an Adobe Portable Document Format (pdf) or Microsoft Office 2010 compatible copy of the submitted proposal shall be simultaneously emailed to noaa.sbir@noaa.gov with a subject heading of "SBIR 2014-1 Submission." This electronic copy of the proposal is NOT considered the formal submission and shall NOT be considered in regards to questions of timely submission by the due date.

Offerors are responsible for submitting proposals that adhere to the requirements of the solicitation (see Section 9.7 NOAA/SBIR Checklist) so as to reach the government office by the time specified in the solicitation. Any proposal that is received after the exact time specified for receipt of proposals is "late" and will not be considered. Late proposals and their modifications that are not considered shall be held unopened, unless for identification, until after award and then shall be retained with other unsuccessful proposals.

Modifications to proposals may be submitted at any time **before** the solicitation closing date and time, which includes responses to an amendment or correcting a mistake. For modifications, the offeror shall provide new proposals with a cover letter indicating that it is replacing a previously submitted proposal. A late modification of an otherwise successful proposal that makes its terms more favorable to the Government will be considered at any time it is received and may be accepted. Revised proposals may only be submitted when requested or allowed by the Contracting Officer. Proposals may be withdrawn at any time before award. Withdrawals are effective upon receipt of notice by the Contracting Officer.

Letters of instruction will be sent to those eligible (e.g. completed Phase I within the required time frame) to submit Phase II proposals. The Phase II proposals are due after receipt of the Phase I Final Report, approximately eight months after commencement of the Phase I contract.

Offerors are cautioned of unforeseen delays that can cause late arrival of proposals at NOAA, resulting in them not being included in the evaluation procedures. No information on the status of proposals under scientific/technical evaluation will be available until formal notification is made.

6.2 Proposal Submission

Two (2) hard copies of each set of proposals (which includes the Technical Proposal and the Supplemental Budget and Other Information) must be received no later than 4:00 pm (CST) on January 29, 2014. Proposals are to be mailed to:

DOC/NOAA – EAD-KC ATTN: SBIR Proposals/Joan Clarkston 601 East 12th Street Kansas City, MO Kansas City, MO 64106

Telephone: 816-426-7469

Proposals may be sent to the above address via US Mail or other commercial carriers. **WALK-INS AND COURIER DELIVERIES ARE NOT PERMITTED.** All deliveries must be made no later than the due date and time stipulated in the solicitation in order to be considered.

To be considered a complete proposal, the application must include:

Technical Proposals: **Two (2) copies** of each of the following (totaling 25 pages):

(a) Cover Page (front and back counted as one page, required form see Section 3.3.1 and 9.1)
(b) Project Summary (required form, see Section 3.3.3 and 9.2)
(c) Technical Content (up to 22 printed pages, see Section 3.3.4)
(d) Proposed Budget (required form, see Section 3.6 and 9.3)

Supplemental Budget and Other Information: **Two (2) copies** of each of the following (not counted towards the 25 page limit):

(a) Supplemental Budget documentation (required, see Section 9.4)
(b) SBIR Funding Agreement Certification (required form, see Section 9.5)
(c) Screen shot or similar copy of proposers' Company Registry as noted on SBIR.gov website (required, see Section 3.3.2)
(d) Attachment: List of prior Phase II awards for proposers awarded more than 15 SBIR Phase II awards in the prior five fiscal years (required if applicable and does not contribute to 25 page count limit, see Section 3.5)

Acknowledgment of receipt of a proposal by NOAA will be made. All correspondence relating to proposals must cite the specific **proposal number** identified in the acknowledgment.

(a) **Packaging: Secure packaging is mandatory. NOAA cannot process proposals damaged in transit. All copies of the proposal must be sent in the same package. Do not send separate "information copies," or several packages containing parts of a single proposal. The top copy must be signed as an original by the principal investigator and the corporate official. Other copies may be photocopies. Proposals without appropriate signatures may be rejected.**

(b) **Bindings: Do not use special bindings or covers**. Staple the pages in the upper left hand corner of each proposal. Separation or loss of proposal pages cannot be the responsibility of NOAA.

Proposals in response to this solicitation shall be valid for a period of 240 calendar days after the closing date of the solicitation.

6.3 Warning

While it is permissible, with proper notification to NOAA, to submit identical or essentially equivalent proposals for consideration under numerous Federal program solicitations, it is unlawful to enter into contracts requiring essentially equivalent effort. Offeror, if awarded, will be required at the time of the award and during the term of the award up to final payment to certify that essentially equivalent work is not being performed under funding agreements from any other federal agencies. If there is any question concerning this, it must be disclosed to the soliciting agency or agencies before award.

7.0 SCIENTIFIC AND TECHNICAL INFORMATION SOURCES

7.1 General Information

The following web pages may be sources for additional technical information:

http://www.noaa.gov
http://techpartnerships.noaa.gov/
http://www.lib.noaa.gov

7.2 Oceanic and Atmospheric Science

➓ Scientific information in the areas of oceanic and atmospheric science may be obtained from organizations shown in the website: http://seagrant.noaa.gov/WhoWeAre/Leadership/SeaGrantDirectors.aspx

- Overcoming Technical Barriers to the Sustainable Development of Competitive Marine Aquaculture in the United States (2008): http://www.nmfs.noaa.gov/aquaculture/docs/aquaculture_docs/noaanist_techbarriers_final.pdf
- NOAA Marine Aquaculture Policy (2011): http://www.nmfs.noaa.gov/aquaculture/docs/policy/noaa_aquaculture_policy_2011. pdf
- Department of Commerce Aquaculture Policy (2011): http://www.nmfs.noaa.gov/aquaculture/docs/policy/doc_aquaculture_policy_2011.p df
- NOAA's Center for Operational Oceanographic Products and Services (COOPS): http://tidesandcurrents.noaa.gov/
- NOAA's National Water Level Observation Network (NWLON): http://tidesandcurrents.noaa.gov/nwlon.html
- Ocean Systems Test and Evaluation Report -Limited Acceptance of the Design Analysis WaterLog H-3611i Microwave Radar Water Level Sensor: http://tidesandcurrents.noaa.gov/publications/Technical_Report_NOS_COOPS_061.pdf
- User's Guide for 8200 Acoustic Gauge (Installation and Operation): http://tidesandcurrents.noaa.gov/publications/hy8200aco_manual.pdf
- ➓ A complete listing of links to CO-OPS' technical publications can be found at: http://tidesandcurrents.noaa.gov/pub.html
- International Earth Rotation and Reference Systems Service (IERS), IERS Technical Note No. 32, IERS Conventions (2003), p. 72, chapter 7, Displacement of Reference Points: http://www.iers.org/nn_11216/IERS/EN/Publications/TechnicalNotes/tn32.html
- Rasmussen RS and MT Morrisey, 2008: DNA-based methods for the identification of commercial fish and seafood species. COMP REVIEWS FOOD SCI & FOOD SAFETY 7: 280-295.
- Rosalee S. Rasmussen Hellberg and Michael T. Morrissey, 2011: Advances in DNA-based techniques for the detection of seafood species substitution on the commercial market. JALA 16: 308-321
- NOAA Annual Guidance Memorandum -November 2011: http://www.ppi.noaa.gov/wp-content/uploads/fy14-18_agm.pdf
- Alliance for Coastal Technologies: http://www.act-us.info/evaluations.php
- National Climatic Data Centers (NCDCs) current suite of web services: http://www.ncdc.noaa.gov/cdo-web/webservices/ncdcwebservices

7.3 SBIR National Conferences

Federal R&D Opportunities for Technology Intensive Firms

Marketing Opportunities for R&D and Technology Projects with Federal Agencies and Major

Corporations. Techniques and Strategies for Commercializing R&D through Venture Capital, Joint Ventures, Partnering, Subcontracts, Licensing, and International Markets.

Management Seminars in Marketing and Business Planning. Working with Academia and the States. Agency

and company exhibits and/or One-on-One tables will be open for networking

opportunities for all attendees! For further information on dates and times of upcoming conferences, see the SBIR Homepage: www.sbir.gov

8.0 RESEARCH TOPICS

Local 202-482-2495
Toll free 1-800-424-5197
TTD 1-855-860-6950

_____ Signature _____ Date

_____

Summary: We stand at a critical juncture in the development of marine aquaculture in the United States. The U.S. is a major consumer of aquaculture products – we import 91% of our seafood and half of that is from aquaculture – yet we are a minor producer. Algal products have a huge market worldwide, use energy from the sun, and can uptake excess nutrients, improving local water quality. A compelling case can be made for growing algae for specific compounds, food, feed, fuel and to enhance ecosystem services in the United States; creating employment and business opportunities and providing local, safe, and sustainable products. Marine algal aquaculture is part of NOAA's comprehensive strategy to maintain healthy and productive marine ecosystems and vibrant coastal communities. The Department of Commerce and NOAA have produced complimentary National Aquaculture Policies supporting growth in domestic aquaculture.

Proposals are requested for research towards innovative products and services supporting domestic algal aquaculture. Priority is given to research that addresses key industry bottlenecks to increase economic competitiveness of domestically cultured algae products, enhance ecosystem services, protect food safety and security, and create economic opportunities for coastal communities.

Project Goals: New techniques and technologies are needed to support the nascent domestic algal aquaculture industry. Projects that would support the sustainable growth of the industry include but are not limited to: new engineering technologies (bioreactors, structures, offshore moorings), production technologies (new candidate species for aquaculture, better harvest methods, increased yield, physiology, reproduction, genetics and genomics), product development, integrated multi-trophic aquaculture (IMTA), and improved products and tools for preventing, diagnosing, and controlling disease and contamination from pollutants. Work is also needed on the raising and refining of algae with nutritional profiles that can be used to directly enhance human health and/or provide key nutrients to aquafeeds.

Phase I Activities and Expected Deliverables:

Activities:

- Identify key bottlenecks that will be addressed
- Execute research and development of techniques and management measures to address these bottlenecks

Deliverables:

- Proof of concept
- Report showing promise for commercial application of developed technology/technique

Phase II Activities and Expected Deliverables:

Activities:

- Prototype trials of the techniques and products developed in phase I

Deliverables:

- Detailed report on developed technology/technique showing biological and economic feasibility under commercial conditions.

References:

➓ Overcoming Technical Barriers to the Sustainable Development of Competitive Marine Aquaculture in the United States (2008)
http://www.nmfs.noaa.gov/aquaculture/docs/aquaculture_docs/noaanist_techbarriers_final.pdf

➓ NOAA Marine Aquaculture Policy (2011)
http://www.nmfs.noaa.gov/aquaculture/docs/policy/noaa_aquaculture_policy_2011.pdf

- Department of Commerce Aquaculture Policy (2011)

http://www.nmfs.noaa.gov/aquaculture/docs/policy/doc_aquaculture_policy_2011.pdf

8.1.2N SUBTOPIC: Automated Vertical Reference

Summary: We are aware of research grade products yielding millimeter per year motions for dam deformation and continental drift. Others are able to generate dynamic vertical positioning on buoys to within 3-5 cm. Between these two ranges we believe there exist the capability to develop and operationally observe vertical stability (lack of change) at a sub-centimeter resolution.

A small, easily-deployable Global Navigation Satellite System (GNSS) based instrument that resolves sub-centimeter vertical and horizontal position in earth centered, earth fixed (ECEF) coordinates has a number of valuable applications. Such a system would be an as-selfcontained-as-possible altimeter and positioning system with autonomous processing capabilities. It could be collocated and affixed to existing Center for Operational Oceanographic Products and Services (CO-OPS)[1] National Water Level Observation Network (NWLON)[2] and land-based sensors to increase temporal identification of vertical site movement. NWLON water level sensor elevation would be precisely measured relative to the GNSS sensor elevation and would provide an additional frame of reference, independent of the geodetic benchmarks.

Other potential applications include integration with a quick-deployable land-based water level sensor (i.e. microwave water level) for storm surge measurements and real-time leveling during extreme events such as tsunamis at hardened sites. Applications of a more dynamic (non-static) nature such as deployment on buoys of opportunity in support of modeling and water level gauging are also of interest.

Project Goals: The goal is to provide vertical control for a variety of applications. In addition to monitoring NWLON platform stability over the long-term and reducing the frequency of required leveling between the water level sensor and the primary benchmark, this system will add value to the national network of observing systems and increase spatial coverage of vertically controlled stations. Implementation of this technology supports NWLON programmatic goals for precise connections to geodetic and ellipsoidal reference frames for coastal surveying and engineering applications.

Requirements for this innovative product are that it be a small, self-contained, automated, and quickly-deployable system that is cost-effective and consumes minimal power. Kinematic operational scenarios range from the "static" to those associated with the dynamic water surface. The continuous monitoring of the sub-centimeter vertical stability of a "fixed" water level sensor platform (microwave or acoustic) as deployed by CO-OPS represents the normal and satisfactory (nominal) performance scenario[3,4]. The nominal system must deliver a horizontal and vertical position at least once a day when polled by a data collection platform via RS-232. The device must output the period of observational time and the vertical uncertainty associated with each position report. An explicit error code should be output when the device is unable to deliver sub-centimeter accuracy. The accuracy threshold must be easily adjustable by the user to accommodate environments where the regularized (mean) position solution uncertainty exceeds the sub-centimeter level due to kinematics.

During nominal operations, output from the device will be transmitted along with each six minute microwave or acoustic water level observation, but the reported vertical position will be representative of the elevation acquired over whatever period is necessary to achieve sub-centimeter precision. Any additional encoding of the output for integration into the Geostationary Operational Environmental Satellite (GOES) transmitted message will be conducted by CO-OPS and is not a part of this SBIR topic.

Through novel use of GNSS [GPS, coupled with other systems; e.g., Global Navigation Satellite System (GLONASS)] and other sensor technology, the successful vendor might achieve the Project Goals by: 1) limiting location solutions to constellations which yield the best vertical dilution of precision, 2) enabling advanced filtering and statistical techniques over periods as necessary, 3) starting with the presumption that the receiving antenna is fixed, 4) employing nearby Continuously Operating Reference Station (CORS) stations or satellite based corrections, and 5) focusing on relative position change. Note that even in "static" conditions, solutions which utilize precise point positioning GNSS techniques (as opposed to differential GNSS) must not ignore the sub-daily displacements relative to the ECEF reference frame due to solid earth tides[5]. One notion of meeting the goals of being self-contained and cost-effective is to avoid reliance upon an external subscription-based augmentation service which involves recurring fees.

Phase I Activities and Expected Deliverables: A Phase I result would include, at minimum:

- A description of the GNSS signal processing that enables the system to provide the required vertical accuracy
- A demonstration of the system capability using real GPS data (not necessarily in real-time or with a field deployable system)
- A description of the hardware, firmware and software that would be developed in a Phase II SBIR

Phase II Activities and Expected Deliverables: A Phase II result would include, at minimum:

- A mutually acceptable two-way data interface (polled RS232, National Marine Electronics Association (NMEA) output)
- Output that includes a measure of position quality and sufficient metadata
- Five (5) fully functional prototypes that would be property of NOAA/NOS. Field testing should include deployment of prototypes in at least three different environments.

References:

[1] NOAA's Center for Operational Oceanographic Products and Services (COOPS): http://tidesandcurrents.noaa.gov/

[2] NOAA's National Water Level Observation Network (NWLON): http://tidesandcurrents.noaa.gov/nwlon.html

[3] Ocean Systems Test and Evaluation Report -Limited Acceptance of the Design Analysis WaterLog H-3611i Microwave Radar Water Level Sensor: http://tidesandcurrents.noaa.gov/publications/Technical_Report_NOS_COOPS_061.pdf

[4] User's Guide for 8200 Acoustic Gauge (Installation and Operation):
http://tidesandcurrents.noaa.gov/publications/hy8200aco_manual.pdf

A complete listing of links to CO-OPS' technical publications can be found at:
http://tidesandcurrents.noaa.gov/pub.html

[5] International Earth Rotation and Reference Systems Service (IERS), IERS Technical Note No. 32, IERS Conventions (2003), p. 72, chapter 7, Displacement of Reference Points:
http://www.iers.org/nn_11216/IERS/EN/Publications/TechnicalNotes/tn32.html

d Identification of Species and Origin in Processed Seafood

Summary: Seafood substitution is a significant form of seafood fraud, which can have negative economic and environmental impacts. While morphological identification of whole fish is relatively easy, the challenge arises when attempting to identify processed fish products, which have lost their distinctive morphological characteristics. Additionally, heavy processing may have denatured proteins and DNA, further complicating potential identification. An additional challenge is the potential for substitution of cultured and wild caught fish. Current identification methods are time-consuming, and require access to a well-equipped laboratory, making it very difficult for consumers to detect substitutions.

Project Goals: Successful projects will develop a method for detecting species and origin substitutions for processed seafood that is:

- rapid (less than 8 hours)
- portable (approximately the size of a standard briefcase)
- robust to use by non-specialists
- 95% accurate for discriminating species and origin.

Phase I Activities and Expected Deliverables: Deliverables will include identification of appropriate technologies and selection of target species group.

Phase II Activities and Expected Deliverables: Deliverables will include a prototype system for species and origin discrimination. This should include at least 5 commercially important species and their most common substitutes.

References:

- Rasmussen RS and MT Morrisey, 2008: DNA-based methods for the identification of commercial fish and seafood species. COMP REVIEWS FOOD SCI & FOOD SAFETY 7: 280-295.

- Rosalee S. Rasmussen Hellberg and Michael T. Morrissey, 2011: Advances in DNA-based techniques for the detection of seafood species substitution on the commercial market. JALA 16: 308-321

ns

pment of System to Automate Analysis of Fisheries Information from Digital Stills

Summary: Image recording systems are increasingly being used by the National Marine Fisheries Service (NMFS) for a multitude of applications. These systems collect aerial images of marine mammals, images of fish catch landed on the deck of vessels, as well as underwater images of fish from a variety of platforms including Remotely Operated Vehicles (ROVs), Autonomous Underwater Vehicles (AUVs) and towed camera systems. These images are reviewed manually to collect information such as the species composition and size of individuals. The effort required to manually analyze data from these systems is both time consuming and expensive. A hardware/software system that can automate the review of these images would reduce the cost of data collection and the time needed to review images. Accuracy and consistency of data may also be improved.

Project Goals: The long term goal is to automate analysis digital still image sequences of (1) live fish underwater and (2) fish catch on vessels in order to reduce labor costs and improve timeliness of data availability. Some of the technical challenges that must be overcome are variable lighting and backgrounds and high species diversity. Fish also can be at varying distances from cameras. The goal is to develop an end-to-end software/hardware system that can be used to automate the identification and sizing of fish in still images.

Phase I Activities and Expected Deliverables:

Activities:

- Identify features of commercially important and frequently encountered fish species occurring on the West Coast off California, Oregon, and Alaska and around the Hawaiian Islands that can be used for automated classification such as shape and color patterns
- • Develop and demonstrate capability to automate data collection, potentially including but not necessarily limited to:
  - o Identification of images that contain fish
  - o Species classification
  - o Abundance of individuals and individual sizes
  - o Habitat characteristics
- Quantify error associated with data generated (e.g., proportion of fish correctly identified to species; degree of error about abundance or size estimates)
- Demonstrate level of repeatability of results across multiple users with the same test data sets
- Produce a detailed report documenting methods and results, with discussion of results and identification of successes and remaining challenges

Deliverables:

- Proof of concept
- A detailed report documenting methods and results, with a discussion of results and with discussion of results and identification of successes and remaining challenges.

Phase II Activities and Expected Deliverables:

Activities**:**

- Prototype trials of the techniques and products developed in Phase I
- Develop one or more transferable software packages/platforms with user-friendly interface to accomplish data processing capabilities developed during Phase I activities
- Products should allow improvement in species classification performance through incorporation of new training data and information on additional species
- Products should allow analyst intervention/correction in instances where confidence in species identification is low
- • Desired analysis results include:
  - ○ Individual fish length measurements and species identifications
  - ○ Summary information on species composition and length distributions collected over multiple image sequences
  - ○ Confidence intervals associated with individual species identifications and length measurements within a sequence and summary statistics for analysis of multiple sequences.

Deliverables:

- Detailed report on developed technology/technique under commercial conditions that provides software package(s)/platforms and operating manual.

References:

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ized CO_2 Gas Sensor for Autonomous Measurement of Ocean Carbon

Summary: A full understanding of the ocean carbon budget is not currently possible due to a lack of seasonal and geographic coverage of ocean carbon measurements. In order to address this knowledge gap, there is a pressing need for expanded autonomous, in situ, ocean carbon monitoring.

Ocean carbon instruments that use non-dispersive infrared gas analyzer (NDIR) technology have a well proven track record of making quality, long term measurements (Battelle's Moored Autonomous partial pressure of C02 (MApC02), General Oceanic's pC02, Contros' Hydro C/C02, Pro Oceanus' PSI CO2 Pro, etc.). However, the current NDIR sensors used in these systems are off the shelf products which have been designed to address a wide range of measurement applications from industrial to scientific. For example, the NDIR sensor used in the MApC0$_2$ system has a CO_2 measurement range of 0-20,000 ppm and has been optimized to operate at a constant temperature of 50°C (achieved by heating the NDIR measurement cell). Quantifying the ocean carbon cycle requires making CO_2 measurements with a desired accuracy of +/-3 ppm, using 'wet' air [20%-85% relative humidity (RH)] in the range of 0-2,000 ppm CO_2 with instrument temperatures of -10 to 45°C and pressures of 60-120 KPa. Furthermore, long term autonomous measurement precludes the use of power hungry heaters to maintain constant NDIR cell temperatures. To maximize instrument accuracy and minimize thermal noise (without controlling the NDIR temperature), several autonomous NDIR based oceanographic instruments calibrate the NDIR cell before every measurement using a two point calibration routine. While successful, this technique requires bulky compressed gas cylinders filled with expensive reference gases.

Project Goals: Optimizing a non-dispersive infrared gas analyzer (NDIR) or developing a comparable CO_2 gas measurement technology for integration into existing and future autonomous CO_2 gas sensor based ocean carbon monitoring instruments with the goals of decreasing cost, complexity, and power consumption would be very advantageous to the ocean carbon monitoring community. As the most expensive component of most ocean carbon monitoring instruments, the NDIR's upfront cost hinders the large scale deployment of these instruments that is needed to fully quantify the ocean carbon cycle. Additionally, lessening the requirement for calibrating the NDIR before every measurement would result in smaller instruments for installation onto to the next generation of autonomous vehicles, decreased observing network operating costs, and simpler more robust system designs.

Phase I Activities and Expected Deliverables:

- Kick-off meeting with NOAA to clarify project requirements and needs.
- Bench testing of potential sensor components.
- Design review with NOAA of the conceptual design including drawings, schematics, bench test results and expected instrument accuracy.
- Final report detailing proposed CO2 gas sensor conceptual design, including specifics on the detector, and sensor calibration methodology

Phase II Activities and Expected Deliverables:

- Build a prototype CO2 gas sensor which has been optimized for the measurement of ocean carbon.
- Calibrate, and then evaluate the accuracy and response of the prototype sensor (over a 0-2000ppm CO2 range) to fluctuations in temperature, pressure, and relative humidity (as stated in this subtopic's summary section) in a lab setting.
- Deliver the prototype instrument, and a brief report detailing the calibration and lab testing to NOAA.
- In collaboration with NOAA, field test the prototype sensor in an ocean environment within an existing CO2 gas sensor based ocean carbon monitoring system, for a period of at least 1 month.

References:

1. http://www.act-us.info/evaluations.php

ation and Mitigation

a-High Precision Measurements of Greenhouse Gas Stable Isotope Ratios

Summary: Atmospheric carbon dioxide (CO_2) and methane (CH_4) are the dominant contributors to global radiative forcing, and monitoring their concentrations is vital for understanding changes in Earth's climate. Interpreting variations of atmospheric CO_2 and CH_4 allow sources and sinks of carbon to be determined. Currently, ultra-high precision laboratory-based measurements for CO_2 and CH_4 using isotope ratio mass spectrometers exist. These devices are labor intensive and require significant pre-processing of samples. Direct optical methods (i.e. spectroscopy) have potential to greatly streamline this process if small volumes can be used and measurements can be made with as good or better precision and stability than existing mass spectrometric techniques. Instruments with such high precisions are not currently available in the marketplace. Instrument developers should aim for measurements of CO_2 and CH_4 isotope ratios that achieve the needed repeatability ($\delta^{13}C$ CO_2: 0.01 per mil, $\delta^{18}O$ CO_2: 0.02 per mil, $\delta^{13}C$ CH_4: 0.1 per mil, or $\delta^{2}H$ CH_4: 0.5 per mil) using < 600 mL of air [standard temperature and pressure (STP)] in less than 15 minutes. Note that the requirements pertain to only a single isotopomer, i.e., a single instrument capable of achieving precision (repeatability) for multiple isotopomers is a benefit but is not required.

Project Goals: The short-term goal of this project is to design a cost-effective and ideally, but not necessarily portable (adequate for field deployment) ultra-high precision instrument to measure isotopic composition of greenhouse gases in a way that significantly improves on the currently slow and labor intensive techniques while maintaining or exceeding currently achieved precision.

The long-term goal is performing isotopic measurements on a routine and large-scale basis for the purpose of attributing sources of carbon in the atmosphere. Assessing the isotopic composition of measured greenhouse gases is one of the most accurate techniques to identify their origin, whether they are emitted by biogenic or anthropogenic activities (e.g., combustion, fires, biological activity, air-sea gas exchange).

Phase I Activities and Expected Deliverables:

- Develop conceptual methodology
- Verify methodology
- Investigate and identify appropriate components
- Design bench-level prototype

Phase II Activities and Expected Deliverables:

- Purchase components
- Integrate components
- Construct working bench-level prototype
- Perform initial bench testing
- Iteratively test and refine the original design as necessary
- Integrate the prototype into a laboratory setting
- Provide verification of data quality in cooperation with NOAA laboratories

8.4 TOPIC: Weather-Ready Nation

8.4.1D SUBTOPIC: Geospatial Database for Storm Risk Assessment

Summary: There is a large research focus on climate, extreme weather events, and storm risk planning. The protection, planning, and response to these challenges are central to NOAA's mission, including disaster planning, mitigation, and recovery. Better preparedness and improved recovery can help save lives, reduce costs, and provide comfort. Algorithms developed at NOAA use Weather Surveillance Radar-88 Doppler (WSR88D) Next-Generation Radar (NEXRAD) data to detect and track tornados, hail, and mesocyclones in real-time. While these data are invaluable for real-time operations, historical analysis using other independent data sources is also essential to planning for storm risk. A compelling need exists to assess storm risk by deriving severe weather data products (e.g. climatologies). This includes trend analysis and risk assessment of storms (including hurricanes, tornadoes, drought, floods, lightning, and hail) and storm reports with damage. Utilities (including tools to query multiple interoperable databases) are needed to map these spatially against social and demographic databases to assess populations at risk. Access systems need to take advantage of data decoders, geo-spatial database, and data servers to provide a user friendly and efficient manner in which to access the data of need. Derived products based on retrospective data, such as flash flood climatology and other storm products, need to be stored in a manner that they are directly accessible and applicable to decision making engagement sites for planning needs of national, state and local government emergency response. This project would build on, refine, and expand the functions of National Climatic Data Centers (NCDCs) current suite of web services: http://www.ncdc.noaa.gov/cdo-web/webservices/ncdcwebservices.

Project Goals: This project will facilitate the build-out of technical "services" such as Application Programming Interface (API) services to dynamically discover, harvest and access various components of NCDC's severe weather database. This will enable data-mining of NCDC's severe weather database and provide a foundation upon which future improvements can be built. The successful project will build a more accessible "platform" of services to be leveraged by the larger community of developers and firms. This approach for deriving storm risk assessment products can be leveraged by other hazardous weather software toolkits. For example, the Federal Emergency Management Agency (FEMA) has a tool named Hazards United States – Multi Hazard (HAZUS-MH) which is a risk assessment tool that analyzes potential losses from floods, hurricane winds, and earthquakes. While HAZUS is a modeling and mapping tool for risk assessment, the proposed Geospatial Database for Storm Risk Assessment is a data management system for severe weather data that creates storm risk assessment products. These products could be integrated into HAZUS via standards-based web services. This allows HAZUS to easily integrate new datasets and models without worrying about the data management (formats, projections, etc.). Other private sector companies that support themes such as risk management (insurance and reinsurance) will be able to use the storm risk geospatial database to easily access information and climatological products mined from petabytes of archived data. Many of these datasets are currently not used due to the size and complexity of the raw data. Standards-based web services will allow the seamless integration of the database into custom applications developed by these companies.

Phase I Activities and Expected Deliverables:

- Familiarize with NCDC's various historical databases
- Coordinate with NCDC personnel on technical specifications and standards, including metadata and open, documented Web services
- Design concept of Research-to-Operations (R2O) to be implemented in Phase II APIs to help consolidate access to a small and consistent number of access protocols
- Generate conceptual services framework, including general scope, number and functionality of APIs
- Present conceptual APIs for review and approval

Phase II Activities and Expected Deliverables:

- Design and Implement APIs in three-tiered environment
- All APIs successfully security-reviewed
- All APIs approved for function by NCDC Data Access experts
- All operational APIs successfully tested with multiple scenario schema

se Above Surface/Below Surface Expendable Dropsondes (MASED)

Summary: NOAA's mission on the oceans spans such different factors ranging from hurricane forecasts to determination of hypoxia zones to assessment of fisheries stocks. There is a current need for improving the quality of forecasting changes of hurricane intensity and to develop affordable sensors of dissolved oxygen for the determination of the extent of hypoxia zones. Some of the factors influencing the changes in hurricane intensity include temperature at different layers below the ocean's surface and mixing of the thermal layers because of surface-wind-induced turbulence. There are currently no inexpensive observing systems that detect temperature, salinity, and currents under the ocean's surface. This SBIR project seeks to sponsor the development of a dropsonde that will have the ability to provide the subsurface variables already mentioned and optionally atmospheric variables such as temperature, relative humidity, wind speed, and direction.

Hypoxia zones cause a considerable impact to affected fisheries and it is important to know the extent of those zones at different depths in order to forecast their location as a function of winds and currents and their impact on fisheries stocks. Airborne submersible dropsondes would allow a considerable area of ocean to be covered in a reasonable amount of time compared to what it would take to do sensor deployment from a surface vessel.

Those requirements point at a need for a modular multi-purpose dropsonde that can be field customized for temperature, salinity, and current observations and optionally dissolved oxygen observations.

Project Goals: This SBIR seeks to sponsor the development of a dropsonde that can be used for two purposes: 1) ocean properties for ocean, weather, and climate forecasts and 2) is capable of surviving the drop from an aircraft, descend to at least 200 m depth below the sea surface, and re-surface at least once. While underwater, collect at every 1 m depth and store observations of water temperature, salinity, and translational and rotational accelerations in the X, Y and Z axis. The sonde will be required to surface at least once after submerging but additional points in the evaluation of proposals will be given to those proposed designs for sondes that can dive to 200 m and resurface more than once. Preferably, the sonde will have dimensions compatible with the current generation of dropsonde systems. Designs that are not compatible will need to include the costs of retooling the dropsonde systems in the NOAA, Air Force, and Navy aircraft as part of the overall project cost estimate. The overall system will include means and procedures to calibrate the sensors before deployment.

The sonde will include the following systems:

1) GPS for surface position determination 2) Communications link 3) Underwater pressure transducer capable for depths of at least 200 m. 4) Salinity sensor 5) Temperature sensor 6) Dissolved Oxygen sensor 7) Solid State Inertial Management Unit (IMU) either available commercial-off-the-shelf, or manufactured from individual components. The IMU must be capable of determining translational and rotational accelerations in the X, Y and Z axis (6 axis), and optionally three (3) magnetic axis 8) Buoyancy control 9) Data collection and storage subsystem. Environmental data collected every 1 m depth. Acceleration data collected every 0.1 sec. 10) Position processing subsystem. Preferably done on-board on real-time but an off-board solution is acceptable.

11) Power storage and management subsystem capable of powering the sensors, data collection and storage subsystem, buoyancy control subsystem, and position processing subsystem.

Phase I Activities and Expected Deliverables:

- Phase I Work Plan and report.
- Conceptual design and report.
- Feasibility Analysis and report.
- Demonstration of proof of concept for the subsystems. Includes physical demonstration and written report
- Repeat Steps 2-4 as required
- Development of the preliminary operational concept that meets the conceptual design. Include operational costs.

Phase II Activities and Expected Deliverables:

- Phase II Work Plan and report
- Engineering Design and report
- Prototype Development and report
- Comprehensive Field Testing and report
- Repeat Steps 2-4 as necessary
- Manufacturing Plan and report
- Cost Estimation and report
- Delivery Plan and report
- Final report

SAT Display Service for Weather-Ready Nation

Summary: Americans depend on the National Weather Service for real time warnings and forecasts of severe weather, any time of the year and any location across the nation, to include the 48 contiguous states, Alaska, Hawaii and its territories. The satellite imagery on the main NWS link shows very little useful information for customers, is not actionable, and actually confuses those who look at it. With the amount of detailed and accurate satellite information collected and the advent of geo-referencing and imagery demarcation technology this should not be occurring. With innovation and hard work, NWS will have the premier path for portraying critical weather warnings with real-time, concise satellite imagery, both from geosynchronous and polar orbiting platforms.

The current portrayal of satellite imagery on NWS web pages is too science-oriented and lacks localization needed to fully illustrate potential weather impacts. Furthermore, this web service does not exploit the depth of information content available today and if not upgraded will be woefully inadequate when the GOES-R and JPSS programs are fully implemented and available. For example, there is no capability to regionalize cloud imagery to selected areas of interest, understand or refine cloud color enhancements, relate satellite imagery to immediate weather danger, or relate satellite imagery to radar imagery and surface observations. NWS needs help in taking full advantage of what satellite channels can convey in terms of weather hazards, in centralizing all satellite products and loops onto one known link that customers can easily recognize, and use GIS features to show relationship of cloud and surface details (shown by channels) to certain geographic and political features.

The proposed technology will take one or more of these factors into consideration to demonstrate a capability that will capture all available METSAT imagery from NOAA in a way that customers can use it readily for their daily lives. This includes being able to look at regional depiction of foggy areas for the Northeast, Department of Agriculture finding exactly where snow is still on the ground over the Plains, the ability for an incident commander to focus in on small thunderstorms in the mountains or remote areas, and a mother trying to find where snow showers are in absence of radar imagery; there are so many features that satellite imagery can provide for customers that would fulfill a Weather Ready Nation vision.

The stated need is not limited to the recommended solution. Other innovative technological advances are encouraged.

Project Goals: This SBIR seeks to sponsor the development of a premier METSAT display service that will be second to none. It will feature the best that NOAA has to offer from its satellite information inventory, with processing software to enable immediate referencing to locations and events that customers focus on.

The technology may include the following systems: 1) METSAT display system showing features that can be used in combination with other data such as radar, surface observations and lightning data. 2) Processing software such as ArcGIS or Google Earth to enable customers to immediately focus in on activity that can hinder and endanger their lives and property.

The stated goals are not limited to the recommended solution. Other innovative technological advances are encouraged.

Phase I Activities and Expected Deliverables:

- Phase I Work Plan and report
- Conceptual design and report
- Feasibility Analysis and report
- Demonstration of proof of concept. Includes physical demonstration and written report.
- Repeat Steps 2-4 as required
- Development of the preliminary operational concept that meets the conceptual design. Includes operational costs and report.
- Comprehensive final report

Phase II Activities and Expected Deliverables:

- Phase II Work Plan and report
- Engineering Design and report
- Prototype Development and report
- Comprehensive Field Testing and report
- Repeat Steps 2-4 as necessary
- Manufacturing Plan and report
- Cost Estimation and report
- Delivery Plan and report
- Final report

8.4.4W-P SUBTOPIC: Rip Current Sensor and Warning System

Summary: An average of 60,000 water rescues occur every year in the United States and 80% of them are due to rip currents. What is needed is a system that can detect the presence of rip currents, or dangerous longshore currents, and convey this information to the public in real-time. Innovation is needed to make the system efficient, tamper proof and cost-effective in all water environments. The system could easily be marketed to waterfront communities, hotels and coastal businesses.

Many factors contribute to rip current and dangerous longshore current formation. Those factors include, but are not limited to, current strength; bathymetry; water depth; wave height, period, and direction; and structural location. The proposed technology will take one or more of these factors into consideration to demonstrate a simplified means for improving the detection and forecasting of real-time rip current and dangerous longshore current formation, thereby enabling more accurate messaging to protect lives along our coastlines as we strive for a Weather Ready Nation. Ideally, this technology will improve lead-time and accuracy of rip current forecasts.

The stated need is not limited to the recommended solution. Other innovative technological advances are encouraged.

Project Goals: This SBIR seeks to sponsor the development of a rip current sensor and warning system that can be used to improve real-time detecting and forecasting of rip currents and dangerous longshore currents, thereby protecting the public from hazardous marine conditions.

The technology may include the following systems:

1) An underwater sensor to detect changes in current strength, to be correlated with wave characteristics and/or water depth. Bathymetry and/or proximity to structures may also be incorporated.
2) Information from the sensor is communicated to a warning system in order to convey hazardous information to the public.

The stated goals are not limited to the recommended solution. Other innovative technological advances are encouraged.

Phase I Activities and Expected Deliverables:

- Phase I Work Plan and report
- Conceptual design and report
- Feasibility Analysis and report
- Demonstration of proof of concept. Includes physical demonstration and written report.
- Repeat Steps 2-4 as required
- Development of the preliminary operational concept that meets the conceptual design. Includes operational costs and report.
- Comprehensive final report

Phase II Activities and Expected Deliverables:

- Phase II Work Plan and report
- Engineering Design and report
- Prototype Development and report
- Comprehensive Field Testing and report
- Repeat Steps 2-4 as necessary
- Manufacturing Plan and report
- Cost Estimation and report
- Delivery Plan and report
- Final report

ed Aircraft System-Borne Atmospheric and Sea Surface Temperature (SST) Sensing

Summary: Weather observations of atmospheric temperature, pressure, moisture, wind speed and wind direction in the atmospheric boundary layer are extremely important for a better understanding of how the detailed interactions of the atmosphere and the ocean influence the development of high impact weather events such as hurricanes and other storms at sea. Improving this understanding of air-sea interactions and potentially providing real-time operational boundary layer weather observations could be highly significant contributions to supporting improved storm prediction. However, collecting these types of boundary layer observations are extremely difficult due to the lack of spatial resolution of satellite observations at storm scales or the danger of manned aircraft flights in the low boundary layer.

The commercial development of aircraft dropsondes for weather observations is an example of how vertical atmospheric profiles have become well-calibrated industry standards for the Federal, academic, and private industry weather communities. New innovations in unmanned aircraft systems (UAS) are providing a variety of options for flights into the boundary layer using low-flying UAS launched from land, ships, balloons, or other aircraft. However, an integrated, well-calibrated, versatile plug-and-play payload sensor package for boundary layer weather or sea surface temperature (SST) observations has not been developed for UAS applications. Additionally, commercial dropsondes do not currently provide reliable SST observations for air-sea interaction studies.

The NOAA UAS Program is partnering with the ESRL Physical Sciences Division and the AOML Hurricane Research Division to explore the technical feasibility of an integrated, well-calibrated, versatile plug-and-play payload sensor package for improved boundary layer weather and SST observations from UAS and dropsondes.

Project Goals: The Tropical Cyclone Boundary Layer (TCBL) is the most poorly observed aspect of tropical cyclones, and will be used as the basis of the observation requirement although previously mentioned hazardous weather events have similar requirements. High winds, heavy rain, sea spray, and high ocean waves cause significant problems for observations near the sea surface. These factors make observations of the TCBL very dangerous., The TCBL receives much attention due to its importance in the intensification of tropical cyclones. The TCBL is characterized by strong turbulence. Both low-level wind shear and buoyancy lead to sometimes-violent vertical mixing, distributing characteristics throughout the layer. It is in the TCBL that fluxes of heat, moisture, and momentum occurs, providing the energy and moisture necessary to maintain a storm's intensity. These missions pose a safety challenge platform, instruments and operators in this area of interest

The NOAA UAS Program exploring cost and operationally feasible unmanned observing strategies for hazardous weather collection. We request a Phase I study to demonstrate the design feasibility of an airborne atmospheric and Sea Surface Temperature (SST) sensing suitable for autonomous data collection with dropsondes and onboard a low altitude UAS operating in turbulent environments. The design of the system must describe the detailed system interface including sensor, power, navigation, and data communication systems.

Phase I Activities and Expected Deliverables: The purpose of this Phase I is to determine the technical feasibility of the proposed research and the quality of performance of the small business concern receiving an award. We request a Phase I study to demonstrate the design feasibility of airborne atmospheric and SST suitable for autonomous data collection onboard dropsondes and low altitude UAS operating in hazardous environments. The design of the system must:

1. Identify dropsondes and feasible UAS platforms,
2. Identify a payload suitable for atmospheric (wind vector, pressure, temperature, humidity, latent and sensible heat flux) and SST data collection,
3. Describe the detailed system interface between the platform and payload,
4. Describe the power, navigation, and data communication sub-systems,
5. Provide a cost analysis for Phase II and future operational system.

Phase II Activities and Expected Deliverables: Phase II will be the Research & Development (R&D) and prototype development phase which will require:

1. Comprehensive proposal outlining the research in detail,
2. New technology flight demonstration of proposed dropsonde and UAS system (small business may request government owned equipment in this phase),
3. Delivery of the prototype design including drawings,
4. Plan to commercialize the final product,
5. A company presentation to the SBIR panel.

Key Driving Requirements for TCBL Missions

Local 202-482-2495
Toll free 1-800-424-5197
TTD 1-855-860-6950

NOAA2014-1

_____ Signature _____ Date

_____
Print Name (First, Middle, Last)

_____
Title

_____
Business Name

Six Months
January 29, 2014

8.1 TOPIC: Resilient Coastal Communities and Economies
8.1.1F SUBTOPIC: Developing and Improving Commercial Marine Algal Culture in the United States

Requirement	Definition
	Mean horizontal wind vector (+/-0.5 m/s), mean vertical wind vector (+/-0.5 m/s)
Data Measurements	Mean Pressure (+/-1.0 hPa), mean temperature (+/-0.2 K), mean humidity (+/-5% RH)
	Latent Heat Flux (+/-10 W/m2), Sensible Heat Flux (+/10 W/m2)
	Sea Surface Temperature (SST) (+/-0.2 K)
TCBL Altitude	60 to 3000 m (200 to 10,000 ft) with routine sampling at 60 m (200 ft)
ARLL Altitude	0 to 1000 m (0 to 3300 ft)
TCBL Spatial Resolution	100 m (330 ft) horizontal with sampling rates > 4 Hz
ARLL Spatial Resolution	500 m (1600 ft) horizontal and 100 m (330 ft) vertical
TCBL Geographic Location	Mesoscale coverage within hurricane core, typically 280 to 925 km (150 to 500 nm) offshore of the U.S. East coast or Gulf coast
ARLL Geographic Location	Within the atmospheric river events in the Pacific approaching the U.S. west coast or Hawaii within 500 km (270 nm) of landfall.
TCBL Coverage	2 flights per storm with coverage of > 465 km (> 250 nm) per flight
ARLL Coverage A	1200 km (650nm) transects across AR events at altitude from 0 to 100 m (330 ft).
ARLL Coverage B	100 km (54 nm) transects within AR events at altitudes 100 m (330 ft) intervals from 0 to 1000 m (3300 ft).
TCBL Refresh Rate	Once per day during TC approach and landfall, beginning with storm development at up to 3 days out
ARLL Refresh Rate	Once per day for AR events within 500 km (270 nm) of landfall.
TCBL Seasonal	June through November

9.2 NOAA SBIR Project Summary Form

Local 202-482-2495
Toll free 1-800-424-5197
TTD 1-855-860-6950

_____ Signature _____ Date

_____
Print Name (First, Middle, Last)

_____
Title

_____
Business Name

8.1 TOPIC: Resilient Coastal Communities and Economies
8.1.1F SUBTOPIC: Developing and Improving Commercial Marine Algal Culture in the United States

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	Latent Heat Flux (+/-10 W/m2), Sensible Heat Flux (+/10 W/m2)
	Sea Surface Temperature (SST) (+/-0.2 K)
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TCBL Refresh Rate	Once per day during TC approach and landfall, beginning with storm development at up to 3 days out
ARLL Refresh Rate	Once per day for AR events within 500 km (270 nm) of landfall.
TCBL Seasonal Window	June through November
ARLL Seasonal Window	November through April
TCBL Total Per Year	5-15 TC, occasionally overlapping

NAME OF FIRM:

AMOUNT REQUESTED:

ADDRESS: PHONE #:

9.3 NOAA SBIR Proposed Budget

Local 202-482-2495
Toll free 1-800-424-5197
TTD 1-855-860-6950

_____ Signature _____ Date

_____
Print Name (First, Middle, Last)

_____
Title

_____
Business Name

8.1 TOPIC: Resilient Coastal Communities and Economies
8.1.1F SUBTOPIC: Developing and Improving Commercial Marine Algal Culture in the United States

Requirement	Definition
	Mean horizontal wind vector (+/-0.5 m/s), mean vertical wind vector (+/-0.5 m/s)
Data Measurements	Mean Pressure (+/-1.0 hPa), mean temperature (+/-0.2 K), mean humidity (+/-5% RH)
	Latent Heat Flux (+/-10 W/m$_2$), Sensible Heat Flux (+/10 W/m2)
	Sea Surface Temperature (SST) (+/-0.2 K)
TCBL Altitude	60 to 3000 m (200 to 10,000 ft) with routine sampling at 60 m (200 ft)
ARLL Altitude	0 to 1000 m (0 to 3300 ft)
TCBL Spatial Resolution	100 m (330 ft) horizontal with sampling rates > 4 Hz
ARLL Spatial Resolution	500 m (1600 ft) horizontal and 100 m (330 ft) vertical
TCBL Geographic Location	Mesoscale coverage within hurricane core, typically 280 to 925 km (150 to 500 nm) offshore of the U.S. East coast or Gulf coast
ARLL Geographic Location	Within the atmospheric river events in the Pacific approaching the U.S. west coast or Hawaii within 500 km (270 nm) of landfall.
TCBL Coverage	2 flights per storm with coverage of > 465 km (> 250 nm) per flight
ARLL Coverage A	1200 km (650nm) transects across AR events at altitude from 0 to 100 m (330 ft).
ARLL Coverage B	100 km (54 nm) transects within AR events at altitudes 100 m (330 ft) intervals from 0 to 1000 m (3300 ft).
TCBL Refresh Rate	Once per day during TC approach and landfall, beginning with storm development at up to 3 days out
ARLL Refresh Rate	Once per day for AR events within 500 km (270 nm) of landfall.
TCBL Seasonal Window	June through November
ARLL Seasonal Window	November through April
TCBL Total Per Year	5-15 TC, occasionally overlapping

NAME OF FIRM:

AMOUNT REQUESTED:

ADDRESS:

PHONE #:
FAX #:
E-MAIL:

PRINCIPAL INVESTIGATOR (NAME AND TITLE):

9.4 NOAA SBIR Budget Instructions

In accordance with Section 3.7 of the solicitation, the offeror is to submit a cost estimate with detailed information for each element, consistent with the offeror's cost accounting system.

NOAA SBIR Proposed Budget

Complete the "NOAA SBIR Proposed Budget" (See Section 9.3) for the Phase I effort, and include it as the last page of the technical proposal. Verify the total request is accurate and does **not exceed $95,000**. The Proposed Summary Budget must be signed by the Corporate Official. Some items of the form under Section 9.3 may not apply to every proposal. Additionally, some firms may have different accounting practices for their overhead rates. Offerors should use indirect rates consistent with their own accounting system, even if different from the rate categories shown on the form. These differences should be discussed in the Supplemental Budget Documentation. Enough information, though, should be provided on the Proposed Budget to allow NOAA to understand how the offeror plans to use the requested funds if award is considered. A complete cost breakdown should be provided giving direct costs, indirect costs, other direct costs G&A, and profit. The offeror is to submit a cost estimate with detailed information consistent with the offeror's cost accounting system. A reasonable profit will be allowed.

As a reminder in completing the Proposal Budget Summary for Phase I, a minimum of two-thirds of the research and/or analytical effort must be performed by the proposing small business concern. The total cost for all consultant fees, facility leases, usage fees, and other subcontract or purchase agreements may not exceed one-third of the contract price. For Phase II, a minimum of one-half of the research and/or analytical effort must be performed by the proposing small business concern. The total cost for all consultant fees, facility leases, usage fees, and other subcontract or purchase agreements may not exceed one-half of the contract price.

Supplemental Budget Documentation

Offerors shall provide additional supplemental budget documentation for the Proposed Budget for the Government's Cost and Pricing Review. ***This Supplemental Budget Documentation shall NOT be utilized for evaluation of the Technical Proposal. Offerors must ensure that all relevant technical information is included within the 25 page technical proposal.***
The Supplemental Budget Documentation does **NOT** count towards the 25 page count requirement. Additionally, the government **only requires two (2) hard copies** of the Supplemental Budget Documentation. The Supplemental Budget Documentation shall include a coversheet and be organized, stapled, and easy to understand. The information should only supplement and help to justify and explain the amounts requested on the Proposed Budget sheet. Additionally, the documentation should indicate any known or anticipated source, quantity, unit price, competition obtained, and basis used to establish source and reasonable costs (e.g. other direct costs, equipment, and travel, etc.). If additional room is required, and not available on the SBIR Proposed Budget Form, it may be incorporated into the Supplemental Budget Documentation. The Proposed Budget Form should annotate the location of this information appropriately.

Instructions for Proposed Budget Summary Form:

Lines A Direct Labor. List the key personnel by name and role/function in the project. Other direct personnel need not specifically named, but their role, such as “technician,” total hours and hourly rate should be entered. Personnel whose costs are indirect (e.g. administrative personnel) should be included in Line F. Fringe benefits can be listed for each employee in the space provided, or they may be included within the indirect costs in Line F. Provide the Fringe Benefit percentage rate, if applicable to the firm’s accounting practices. In the Supplemental Budget Documentation, information shall be provided regarding the development of the Fringe Overhead rate or Other Indirect Rates, as applicable.

As a reminder, the PI/PM must be employed by the small business concern at the time of contract award and during the period of performance of the research effort. Additionally, at least 51% of the PI/PM's time must be spent with the awardee during the contract performance.

Line B, Equipment. List items costing over $5,000 and exceeding one year of useful life. Lesser items may be shown in Line D. Indicate in the Supplemental Budget Documentation whether equipment is to be purchased or leased along with supporting documentation on where it will be be purchased or leased. List each individual item with the corresponding cost. Include a copy of the quote or catalog price with the Supplemental Budget Documentation. Discuss any competition utilized, basis of source, and reasonableness of price. The inclusion of equipment will be carefully reviewed relative to need and appropriateness for the research proposed.

Line C, Travel. Include the overall requested Travel Amount on the 9.3 Budget Form. In the Supporting Documentation, the offeror shall itemize by destination, purpose, personnel, period, and cost for both staff and consultants. Budget breakdowns for travel funds must be justified and related to the needs of the project. Inclusion of travel expenses will be carefully reviewed relative to need and appropriateness for the research proposed. Foreign travel is not an appropriate expense.

Line D, Other Direct Costs. The overall materials and supplies, testing and/or computer services, and subcontracts (including consultants), and any other direct costs required for the project must be identified on the 9.3 Budget Form. In the Supplemental Budget Documentation, it shall specify type, quantity and unit cost (if applicable), and total estimated cost of these other direct costs. Incorporate a quote/proposal or catalog price for any other direct costs listed. The proposal should identify direct (e.g. labor categories, hours, & rates), indirect, other direct costs (e.g. materials, travel, etc.), and profit, as applicable. Discuss any competition utilized, basis of source, and reasonableness of price.

Line E, Total Direct Costs. Enter the sum of Lines A through E.

Line F, Indirect Costs. Cite your established Overhead (OH) and General and Administrative (G&A) rate, as appropriate. If you utilize different or additional overhead rates in accordance with your accounting practices, incorporate this information in this section with appropriate rate information. In the Supplemental Budget Documentation, include information on the development of your indirect cost and their pools. A discussion of Indirect Costs and samples can be obtained at www.dcaa.mil/chap6.pdf or http://oamp.od.nih.gov/dfas/idc3tierexample.xls. If you have a negotiated Indirect Cost Rate with another federal agency, include a copy of this documentation with your Supplemental Budget Documentation.

Line G, Total Costs. Enter the total amount of the proposed project, the sum of Lines E and GF

Line H, Profit. The small business concern may request a reasonable profit. Include the rate proposed.

Line I, Total Amount of this request. Enter the sum of Lines G and H. This amount must equal the amount entered in the Cover Sheet Form. It cannot exceed $95,000.00.

Line J, Review of Accounts. Answer yes or no. If yes, enter name, address, and phone number of reviewing office and official. Additional details can be provided with the Supplemental Budget Information, as needed.

Line K, Corporate/Business Authorized Representative. A date with signature of someone with the authority to commit the company must be given.

Appendix A – CERTIFICATIONS

A. SBIR Funding Agreement Certification (at time of award)

All small businesses that are selected for award of an SBIR Funding Agreement must complete this certification at the time of award and any other time set forth in the Funding Agreement that is prior to performance of work under this award. This includes checking all of the boxes and having an authorized officer of the Awardee sign and date the certification each time it is requested.

Please read carefully the following certification statements. The Federal Government relies on the information to determine whether the business is eligible for a Small Business Innovation Research (SBIR) Program award. A similar certification will be used to ensure continued compliance with specific program requirements during the life of the Funding Agreement. The definitions for the terms used in this certification are set forth in the Small Business Act, SBA regulations (13 C.F.R. Part 121), the SBIR Policy Directive and also any statutory and regulatory provisions referenced in those authorities.

If the Funding Agreement officer believes that the business may not meet certain eligibility requirements at the time of award, they are required to file a size protest with the U.S. Small Business Administration (SBA), which will determine eligibility. At that time, SBA will request further clarification and supporting documentation in order to assist in the verification of any of the information provided as part of a protest. If the Funding Agreement officer believes, after award, that the business is not meeting certain Funding Agreement requirements, the agency may request further clarification and supporting documentation in order to assist in the verification of any of the information provided.

Even if correct information has been included in other materials submitted to the Federal Government, any action taken with respect to this certification does not affect the Government's right to pursue criminal, civil or administrative remedies for incorrect or incomplete information given in the certification. Each person signing this certification may be prosecuted if they have provided false information.

The undersigned has reviewed, verified and certifies that (all boxes must be checked unless otherwise directed):

(1) ☐The Awardee business concern meets the ownership and control requirements set forth in 13 C.F.R. § 121.702.

(2) If a corporation, all corporate documents (namely: articles of incorporation and any amendments, articles of conversion, by-laws and amendments, shareholder meeting minutes showing director elections, shareholder meeting minutes showing officer elections, organizational meeting minutes, all issued stock certificates, stock ledger, buy-sell agreements, stock transfer agreements, voting agreements, and documents relating to stock options, including the right to convert non-voting stock or debentures into voting stock) must evidence that the corporation meets the ownership and control requirements set forth in 13 C.F.R.§ 121.702. (Check one box).

☐ Yes ☐N/A Explain why N/A:
_____

(3) If a partnership, the partnership agreement evidences that it meets the ownership and control requirements set forth in 13 C.F.R. § 121.702. (Check one box).

☐ Yes ☐N/A Explain why N/A:

_____

(4) If a limited liability company, the articles of organization and any amendments, and operating agreement and amendments, evidence that it meets the ownership and control requirements set forth in 13 C.F.R. § 121.702. (Check one box).

☐ Yes ☐N/A Explain why N/A:

_____

(5) The birth certificates, naturalization papers, or passports show that any individuals it relies upon to meet the eligibility requirements are U.S. citizens or permanent resident aliens in the United States. (Check one box).

☐ Yes ☐N/A Explain why N/A:

_____

(6) ☐The Awardee business concern has no more than 500 employees, including the employees of its Affiliates.

(7) ☐SBA has not issued a size determination currently in effect finding that this business concern exceeds the 500 employee size standard.

(8) During the performance of the award, the Principal Investigator/Project Manager will spend more than one half of his/her time (based on a 40 hour workweek) as an employee of the Awardee or has requested and received a written deviation from this requirement from the Funding Agreement officer. (Check one box).

☐ Yes ☐Deviation approved in writing by Funding Agreement officer: %

(9) All, essentially Equivalent Work, or a portion of the work proposed under this project (check the applicable line):
☐ **Has not** been submitted for funding to this Agency or another Federal agency.
☐ **Has** been submitted for funding to this Agency or another Federal agency but has not been funded under any other grant, contract, subcontract or other transaction.
☐ A portion has been funded by another grant, contract, or subcontract as described in detail in the proposal and approved in writing by the Funding Agreement officer.

(10) During performance of award, the Awardee will perform the applicable percentage of work unless a deviation from this requirement is approved in writing by the Funding Agreement officer (check the applicable line and fill in if needed):
☐ SBIR Phase I: at least two-thirds (66 2/3%) of the research.
☐ SBIR Phase II: at least half (50%) of the research.
☐ Deviation approved in writing by the Funding Agreement officer:_____%

(11) During performance of award, the research/research and development will be performed in the United States unless a deviation is approved in writing by the Funding Agreement officer (Check one box).
☐ Yes ☐Waiver has been granted

(12) ☐ During performance of award, the research/research and development will be performed at the Awardee's facilities by the Awardee's employees, except as otherwise indicated in the SBIR application and approved in the Funding Agreement.

(13) The SBIR Awardee has registered itself on SBA's database as majority-owned by venture capital operating companies, hedge funds or private equity firms (check one box).
☐ Yes ☐No ☐N/A Explain why N/A:

_____

(14) The SBIR Awardee is a Covered Small Business Concern (a small business concern that: (a) was not majority-owned by multiple venture capital operating companies (VCOCs), hedge funds, or private equity firms on the date on which it submitted an application in response to an SBIR NOFO; and (b) on the date of the SBIR award, which is made more than 9 months after the closing date of the NOFO, is majority-owned by multiple venture capital operating companies, hedge funds, or private equity firms). (Check one box).
☐ Yes ☐No

15) ☐I will notify this Federal agency immediately if all or a portion of the work authorized and funded under this award is subsequently funded by another Federal Agency.

16) ☐I understand that the information submitted may be given to Federal, State and local agencies for determining violations of law and other purposes.

17) ☐I am an officer of the business concern authorized to represent it and sign this certification on its behalf. By signing this certification, I am representing on my own behalf, and on behalf of the business concern that the information provided in this certification, the application, and all other information submitted in connection with this application, is true and correct as of the date of submission. I acknowledge that any intentional or negligent misrepresentation of the information contained in this certification may result in criminal, civil or administrative sanctions, including but not limited to: (1) fines, restitution and/or imprisonment under 18 U.S.C. § 1001; (2) treble damages and civil penalties under the False Claims Act (31 U.S.C. § 3729 *et seq.*); (3) double damages and civil penalties under the Program Fraud Civil Remedies Act (31 U.S.C. § 3801 *et seq.*); (4) civil recovery of award funds, (5) suspension and/or debarment from all Federal procurement and nonprocurement transactions (FAR Subpart 9.4 or 2 C.F.R. Part 180); and (6) other administrative penalties including termination of SBIR/STTR awards.

Signature_____ ***Date***____/___/_____

Print Name (First, Middle, Last)

_____

Title

_____

Business Name

_____

B. SBIR Funding Agreement Certification (Life-Cycle Certification)

All SBIR Phase I and Phase II Awardees must complete this certification at all times set forth in the Funding Agreement (see §8(j) of the SBIR Policy Directive). This includes checking all of the boxes and having an authorized officer of the Awardee sign and date the certification each time it is requested.

Please read carefully the following certification statements. The Federal government relies on the information to ensure compliance with specific program requirements during the life of the Funding Agreement. The definitions for the terms used in this certification are set forth in the Small Business Act, the SBIR Policy Directive, and also any statutory and regulatory provisions referenced in those authorities.

If the Funding Agreement officer believes that the business is not meeting certain Funding Agreement requirements, the agency may request further clarification and supporting documentation in order to assist in the verification of any of the information provided.

Even if correct information has been included in other materials submitted to the Federal Government, any action taken with respect to this certification does not affect the Government's right to pursue criminal, civil, or administrative remedies for incorrect or incomplete information given in the certification. Each person signing this certification may be prosecuted if they have provided false information.

The undersigned has reviewed, verified and certifies that (all boxes must be checked except where otherwise directed):

(1) The Principal Investigator/Project Manager spent more than one half of his/her time (based on a 40 hour workweek) as an employee of the Awardee or the Awardee has requested and received a written deviation from this requirement from the Funding Agreement officer. (Check one box).

☐ Yes ☐No ☐Deviation approved in writing by Funding Agreement officer:_____%

(2) All Essentially Equivalent Work, or a portion of the work, performed under this project (check applicable line):

☐ **Has not** been submitted for funding to this Agency or another Federal Agency.

☐ **Has** been submitted for funding to this Agency or another Federal agency but has not been funded under any other grant, contract, subcontract or other transaction.

☐ A portion has been funded by another grant, contract, or subcontract as described in detail in the proposal and approved in writing by the Funding Agreement officer.

(3) Upon completion of the award, the Awardee will have performed the applicable percentage ofwork, unless a deviation from this requirement is approved in writing by the Funding Agreement officer (check the applicable line and fill in if needed):
☐ SBIR Phase I: at least two-thirds (66 2/3%) of the research.
☐ SBIR Phase II: at least half (50%) of the research.
☐ Deviation approved in writing by the Funding Agreement officer:_____%

(4) The work is completed and the small business Awardee has performed the applicable percentage of work, unless a deviation from this requirement is approved in writing by the Funding Agreement officer(check the applicable line and fill in if needed):
☐ SBIR Phase I: at least two-thirds (66 2/3%) of the research.
☐ SBIR Phase II: at least half (50%) of the research.
☐ Deviation approved in writing by the Funding Agreement officer:_____%
☐ N/A because work is not completed.

(5) The research/research and development is performed in the United States unless a deviation is approved in writing by the Funding Agreement officer. (Check one box).
☐ Yes ☐No ☐Waiver has been granted

(6) The research/research and development is performed the Awardee's facilities by the Awardee's employees, except as otherwise indicated in the SBIR application and approved in the Funding Agreement. (Check one box).
☐ Yes ☐No

(7) ☐I will notify this Federal agency immediately if all or a portion of the work authorized and funded under this award is subsequently funded by another Federal agency.

(8) ☐I understand that the information submitted may be given to Federal, State and local agencies for determining violations of law and other purposes.

(9) ☐I am an officer of the Awardee business concern authorized to represent it and sign this certification on its behalf. By signing this certification, I am representing on my own behalf, and on behalf of the business concern, that the information provided in this certification, the application, and all other information submitted in connection with the award, is true and correct as the date of submission. I acknowledge that any intentional or negligent misrepresentation of the information contained in this certification may result in criminal, civil or administrative sanctions, including but not limited to: (1) fines, restitution and/or imprisonment under 18 U.S.C. § 1001; (2) treble damages and civil penalties under the False Claims Act (31 U.S.C. § 3729 *et seq.*); (3) double damages and civil penalties under the Program Fraud Civil Remedies Act (31 U.S.C. § 3801 *et seq.*); (4) civil recovery of award funds,

(5) suspension and/or debarment from all Federal procurement and non-procurement transactions (FAR Subpart 9.4 or 2 C.F.R. Part 180); and (6) other administrative penalties including termination of SBIR/STTR awards.

Signature _____ ***Date*** ____/___/_____

Print Name (First, Middle, Last)

_____

Title

_____

Business Name

_____

9.7 NOAA/SBIR CHECKLIST

Please review this checklist carefully to assure that your proposal meets the NOAA requirements. Failure to meet these requirements may result in your proposal being rejected without consideration.

Two (2) copies of the proposals (Technical and Supplemental Budget and Other Information)must be received by 4:00 p.m. (CST) January 29, 2014.

_____ 1. The **COVER PAGE** (Form 9.1) has been completed and is page 1 of the proposal (front and back). Required signatures are included (Also see Section 3.3.1)

_____ 2. The **PROJECT SUMMARY** (Form 9.2) has been completed and is page 2 of the proposal. The abstract contains no proprietary information (Also See Section 3.3.3).

_____ 3. The **TECHICAL CONTENT** of the proposal begins on **PAGE 3** and includes the items identified in **SECTION 3.3.4** of the solicitation. The technical content section of the proposal is limited to 22 printed pages in length.

_____ 4. The **PROPOSED BUDGET** (Form 9.3) has been completed, including signature, and is the **last page** of the proposal. The proposal budget is for $95,000 or less. No more than one-third of the budget is allocated to consultants and/or subcontractors. Also see section 3.6 for additional information.

_____ 5. Other Supplemental Budget Documentation is provided in accordance with Section 9.4.

_____ 6. SBIR Funding Agreement Certification (Form 9.5) completed and provided; offeror meets program requirements including eligibility requirements in Paragraph 1.5 for transition rates.

_____ 7. In accordance with Section 3.5, provide list of prior Phase II awards for proposers awarded more than 15 SBIR Phase II awards in the prior five fiscal years, if applicable.

_____ 8. Screen shot or similar copy of Company Registry is provided in accordance with Section 3.3.2.

_____ 9. The entire technical proposal, including forms and technical content, is **25 pages or less in length** (excluding Other Supplemental Budget Documentation, SBIR Funding Agreement Certification, SBIR.gov Company Registry documentation, and those pages necessary to comply with the itemization of prior SBIR Phase II awards) (See Section 3.2).

_____ 10. The proposal, cover page and project summary contains an easy-to-read font of at least 10 point) (See Section 3.2).

_____ 11. The proposal contains only pages of 21.6cm x 27.9cm size (8 ½ " x 11") (See Section 3.2).

_____ 12. The proposal is limited to only one of the subtopics in Section 8 and 3.3.4(a).

_____ 13. The Principal Investigator/Project Manager will be employed by the company at least 51% of the time during the award period (See Section 1.5 and 1.7.9)

_____ 14. An Adobe Portable Document Format (pdf) or Microsoft Office compatible copy of the submitted proposal shall be simultaneously emailed to noaa.sbir@noaa.gov with a subject heading of "SBIR 2014-1 Submission." This electronic copy of the proposal is **NOT** considered the formal submission. The electronic copy may **NOT** be used in lieu of the formal submission (See Section 6.1).

_____ 15. All work must be performed by the small business concern and its subcontractors in the United States, unless a waiver has been granted in advance by the Contracting Officer (See Section 1.5).

NOTE: **Proposers are cautioned that late arrival of proposals shall result in them being rejected without evaluation.** Potential offerors are advised to sign up within https://www.fedbizopps.gov to receive notification of any amendment to the solicitation that may be released after opening date.