REQUEST FOR PROPOSALS

Contract to initiate a coastal resilience prioritization decision-support system to estimate the zone of influence associated with the potential implementation of nature-based solutions in Delaware Bay

Release Date: 4 August 2020 | Proposal Deadline: 31 August 2020

OVERVIEW

The National Fish and Wildlife Foundation (NFWF) seeks a qualified Contractor to conceptualize and initiate development of a spatially-explicit resilience prioritization decision-support system (DSS) capable of predicting the potential zone of influence (ZOI) associated with the benefits of hypothetical or proposed nature-based resilience projects in reducing threats from storms and sea level rise. NFWF currently invests in the restoration of natural systems to enhance habitat for fish and wildlife, while also helping to build the resilience of coastal communities to flooding and erosion threats. The resulting model will support NFWF's resilience investments, principally through the National Coastal Resilience Fund. The contract Period of Performance is estimated to be no more than 18 months.

BACKGROUND

The National Coastal Resilience Fund (NCRF) aims to restore, strengthen, and enable rapid recovery of natural systems so they may protect coastal communities from the impacts of coastal storms, sea and lake level changes, flooding, and coastal erosion. By restoring or otherwise enhancing natural systems, habitat improvements can simultaneously benefit fish and wildlife resources. The NCRF was established in 2018 in partnership with the National Oceanic and Atmospheric Administration (NOAA).

The NCRF invests in conservation projects throughout the United States that restore or expand natural features such as coastal marshes and wetlands, dunes and beach systems, oyster and coral reefs, forests, coastal rivers and floodplains, and barrier islands that minimize the impacts of storms and other naturally occurring events on nearby communities. Between 2018 and 2019, the NCRF has invested approximately $60 million to strategically design, rebuild, and repair coastal assets that reduce threats to flooding from sea level rise, coastal erosion, increased frequency and intensity of storms, and impacts from other chronic and episodic events. In addition, since 2014 NFWF has invested in over 54 resilience projects in the northeastern U.S. through the Hurricane Sandy Resiliency Grant Program. Most recently, NFWF has also invested in projects through the Emergency Coastal Resilience Fund.

Current NFWF Coastal Resilience Prioritization and Assessment Efforts

Capitalizing on this large portfolio of coastal resilience investments, NFWF is actively developing tools and standard monitoring protocols to inform funding priorities and help measure the impact of coastal resilience investments. NFWF uses these efforts to improve our ability to identify, implement, measure, and evaluate the effectiveness of natural and nature-based features (NNBF) in building a community's resilience to coastal storms, sea level rise, and nuisance flooding. To-date, NFWF has made progress towards assessing whether implementing projects has built resilience, and if so, to what extent. Using standardized project-scale ecological and socio-economic metrics, NFWF is working with third-party contractors and grantees to create models based on the actual design specifications of NFWF grants. With site-level

specifications, contractors will model the zone of influence (ZOI) before and after the project is implemented to understand the resilience benefits of the NNBF.

While understanding the nature and extent of the impact of actual resilience projects is critical to ensuring effective grant making, NFWF is also interested in understanding how to identify and prioritize proposed/future projects with the greatest potential for building the resilience of human and natural communities. It is necessary to develop tools and resources that can help NFWF, its partners, and practitioners more effectively *plan and prioritize* potential resilience projects prior to project design or implementation. To begin to meet this need and prioritize where to target resilience investments, NFWF has developed the Coastal Resilience Assessment, which identifies open spaces where human community assets and fish and wildlife habitats are exposed to coastal flooding threats. Results of the assessment are available through the Coastal Resilience Evaluation and Siting Tool (CREST), an interactive web tool that allows users to view, interact with, and download results. Developed in partnership with NOAA and the University of North Carolina's National Environmental Modeling and Analysis Center (NEMAC), CREST combines multiple datasets to help NFWF and our grantees identify project areas with the greatest potential to benefit both human community resilience and fish and wildlife habitat.

While the Coastal Resilience Assessment is key to identifying locations that may be ideal for the implementation of nature-based solutions, it does not provide information about the extent to which a potential project may reduce the extent of flooding to surrounding communities and habitats or the portfolio of projects needed to achieve a desired level of flood reduction. Similarly, despite the inherent advantages of modeling the ZOI at the project-scale due to the presence of detailed project specifications, it is also important to be able to predict, plan, and prioritize NNBF projects at a multi-project, community, or watershed scale. This will help to understand *a priori* the number, type, and extent of resilience efforts needed to achieve cumulative, tangible benefits for important community assets.

Developing a Coastal Resilience Prioritization Decision-Support System to Maximize Impact

NFWF seeks a qualified Contractor to help conceptualize and begin development of a resilience prioritization decision-support system (DSS) to help understand the impacts of storm surge and sea level rise under current and future conditions. Ultimately, in order to inform a local/regional NNBF investment strategy, NFWF aims to understand NNBF's ability to mitigate coastal hazards and how those benefits are mediated by the landscape and other features of a particular community. Using probabilistic models, we hope to understand which areas are vulnerable to coastal flood hazards, and which NNBF mitigation strategies are likely to minimize risk and help build coastal resilience to inform investment decisions.

By modeling the ZOI and assets within that zone, NFWF and its partners hope to compare potential resilience benefits across proposed projects to focus on those that may have the greatest potential benefit to the surrounding community, considering its context (e.g., existing community planning efforts). In addition, NFWF aims to use the DSS to help set goals to build resilience to flooding within a given community and prioritize investments for maximum impact.

The selected Contractor will conceptualize and initiate development of a robust resilience prioritization DSS within the Delaware Bay that can account for a broad suite of restoration activities to understand the right type, location, and scale of projects needed to enhance a community's resilience to flooding threats. There are several advantages associated with developing the model in the Delaware Bay region. By concentrating efforts on a single, data-rich geography, we can work to develop methods, assess model sensitivity, and determine the appropriate spatial scale of the model needed to facilitate effective planning and goal setting. Through the NCRF and Hurricane Sandy Program, NFWF is modeling the socio-economic benefits of multiple large-scale NNBF projects implemented in the Delaware Bay area. These

data detail the projected ZOI before and after the implementation of actual, fully implemented or ongoing projects and thus can serve as an important training/validating dataset for the development of a larger, community or watershed-scale DSS to assist in prioritization of NNBF resilience buildings efforts.

SCOPE OF WORK

NFWF's resilience investments are national in scope; however, we recognize the resilience prioritization decision-support system (DSS) described here depends upon fine-resolution data. Therefore, the following Scope of Work will focus on the Delaware Bay region. First, the Scope of Work will support efforts to conceptualize a robust modeling framework that, if fully implemented, could ultimately help identify a preferred portfolio of NNBF interventions and associated resilience benefits to help create resilience goals and guide future investments. Second, the selected Contractor will work with NFWF to begin the development of necessary models as time and budget allow. As described below, the exact scale and resolution of the models will be determined by the Contractor based on recommended model specifications and data availability but should be of sufficient size to support multi-project planning and prioritization.

Task 1: Become familiar with NFWF's resilience objectives, including relevant funding programs and recent and ongoing resilience efforts.

Description: NFWF is developing a comprehensive suite of tools and resources to guide and improve the implementation of nature-based solutions. Therefore, it is critical that the selected Contractor gain a deep understanding of NFWF's overarching objectives, in addition to the objectives and products associated with each relevant funding program including NCRF, the Delaware River Program, and the Hurricane Sandy Resiliency Grant Program. The Contractor should also be familiar with related and ongoing NFWF efforts with other third-party contractors in order to facilitate coordination and leverage existing resources where appropriate. In addition to thoroughly understanding NFWF's objectives, under this task the selected Contractor should also become familiar with the recent peer-reviewed and gray literature relevant to this topic. The literature review should include exploration of similar efforts in other regions in the United States and internationally where relevant (for example see Arkema et al. 2013, Ruckelshaus et al. 2016, Reddy et al. 2016, Narayan et al. 2017, among other recent and ongoing efforts[1]).

Task 2: Create a conceptual design and work plan for a resilience prioritization decision-support system.

Description: Based on the knowledge gained through the completion of Task 1, the Contractor will create a conceptual design for a resilience prioritization DSS with an ultimate goal of estimating the ZOI associated with the identification and analysis of a hypothetical portfolio of resilience projects capable of informing investment decisions. This task should include refining research questions and exploring the appropriate methods, models, and resolution needed to answer those research questions. As part of this task, the Contractor should review existing models and available data in the Delaware Bay in order to determine whether existing models can be utilized or refined for this purpose, or if additional models must be developed. Specific considerations under this task are expected to include, but are not limited to the following and should each be considered in close consultation with NFWF and NOAA staff.

[1] For example, see https://coastalscience.noaa.gov/project/sea-level-rise-assessments-mitigate-surge-flooding/ and https://engage.umb.edu/details/program/2013 for examples of similar efforts in other regions.

- **The appropriate resolution of modeling efforts to evaluate the likely benefits of potential NNBFs.** Consideration should be given to the benefits (and potentially any associated thresholds and/or tipping points) offered by different NNBFs, including flood reduction, wave attenuation, erosion, etc. In addition, the Contractor should consider the appropriate spatial resolution need to capture those benefits across a range of potential resilience building activities (e.g., wetland restoration, beach and dune restoration, living shorelines, floodplain restoration). The model should be of sufficient scale and resolution to support multi-project planning.
- **The appropriate type, rigor, and precision of models needed to achieve the desired outcome.** Determine which types of models are necessary and best suited to address the research questions. For instance, models may include, but are not limited to, probabilistic hydrodynamic models (e.g., ADCIRC, SWAN), vulnerability assessments, marsh models (e.g., SLAMM, Hydro-MEM), sediment models, and/or cost-benefit or economic impact analyses.
- **Consider the transferability of the proposed modeling approach from one area or region to another.** While this Scope of Work is limited to the Delaware Bay area, the NCRF is a national program and NFWF is interested in understanding the scalability and replicability of such an approach to other regions of the U.S., including areas that may have limited data.

Building on this inventory of existing models, data sources, and methodologies, the selected Contractor will develop a detailed work plan with clear, step-by-step actions and milestones needed to meet NFWF's ultimate objectives for a DSS to inform resilience-building NNBF investments. At some point during this task, the Contractor should consult with external subject matter experts, including experts recommended by NFWF and NOAA staff, to gain input into conceptualization and design. Offerors should propose an approach to seek technical input using virtual formats since in-person workshops might not be feasible within the timeframe of the contract due to COVID-19 considerations. In their proposals, Offerors should outline a proposed approach to develop a conceptual design and work plan and should clearly indicate the amount of time needed to complete this task. The Contractor will work closely with NFWF staff to determine which specific activities outlined in the work plan will be executed under Task 3.

Deliverables: Written work plan detailing a conceptual design for the resilience prioritization DSS. The work plan will outline a timebound and systematic approach to integrate all necessary models into a cohesive decision support construct that can help guide NFWF's resilience investment strategies. The work plan should include discrete activities with approximate timelines and necessary steps to complete each activity. To the extent practicable, the design should include model parameters, data sources, climate scenarios, assumptions, programming language(s), and resolution, among other considerations. The report should include a summary of any feedback received from external technical and subject matter experts. In addition to NFWF's review of the work plan, the Contractor will host a meeting with NFWF and NOAA staff to present results and provide comment on the proposed work plan.

Schedule: Complete work plan within eight months of contract start date.

Task 3: Execute all or a portion of the work plan.

Note: Offerors should include this task in their proposal scope of work and budget; however, and at NFWF's discretion, the specific deliverables under this task will be dependent on satisfactory completion of Task 2. As time and resources allow, NFWF will work with selected Contractor to amend the contract to include mutually agreed upon deliverables for Task 3 prior to commencement of this task.

Description: While the exact work plan will be dependent upon completion of Task 2 and a complete inventory of modeling resources and proposed methodologies, we expect this task will include a composite modeling approach inclusive of hydrodynamic, marsh, sediment, and/or socio-economic models. Following satisfactory completion of Task 2, NFWF will work with the selected Contractor to develop a discrete and realistic set of modeling deliverables, which may or may not include the entirety of the work plan. Based on knowledge of existing resources in the Delaware Bay and technical expertise, Offerors should propose deliverables that build on the approach outlined in Task 2 and that can be reasonably completed in less than 10 months. All assumptions should be clearly articulated in the proposal and associated budget.

All preliminary models and products should be presented to, and reviewed by NOAA and NFWF staff prior to finalization. Once finalized, the selected Contractor will distribute any results or modeling products for technical and peer review. The Contractor will then incorporate feedback from the reviewers as appropriate and in coordination with NFWF staff.

Deliverables: Any final products including, but not limited to GIS model map packages should include associated programming code, metadata, and standardized symbology. All model assumptions should be clearly articulated and to the extent possible, the model should rely on publicly available, third-party data sources, and be built in an open-source programming language (e.g., R or Python).

Schedule: Dependent upon remaining time available following successful completion of Task 2, deliverables should be complete within 18 months of contract start date.

Task 4: Prepare final report.

Description: Prepare final report detailing model design (if applicable), methods, and results. The final report should outline the methods, assumptions, and data sources (including raw data and citations as appropriate) used to generate any modeling products. The methods should be written in sufficient detail for NFWF or others to replicate the analysis. The final report should also update the work plan developed in Task 2 as needed to explain which activities remain including recommendations for future work and considerations for replicating the model in different geographies. At least two rounds of review and revision are expected. In addition, the selected Contractor should provide a presentation of final results to NFWF and NOAA staff prior to finalization of the report.

Deliverables: Final report and presentation.

Schedule: Complete within 18 months of contract start date.

REQUIRED EXPERTISE AND PROPOSED STAFF

Required expertise includes advanced skills in spatial, statistical, or simulation modeling of climate, socio-economic factors and physical geography, hydrodynamic and hydrologic modeling, and experience with nature-based solutions.

CRITERIA FOR COMPETITIVE APPLICATIONS

Proposals will be evaluated and scored on the following criteria. Offerors should organize their Statement based on these sections:

1. **Technical Approach.** This section must demonstrate a clear understanding of the goals of the RFP and should describe in detail the proposed work plan to achieve those goals. This section should also include a description of how you will communicate with NFWF and program stakeholders and

report on progress, results, and deliverables. Offerors should propose a detailed project timeline with final deliverables within 18 months of the contract start date. Weight: 35%

2. **Qualifications of Proposed Personnel.** The section should clearly describe which tasks each member of the team will conduct and how their training and experience provide the requisite experience to do so successfully. Weight: 25%

3. **Contractor's Past Performance.** The proposal should include information on the primary investigator(s)'s past performance conducting efforts similar to those proposed. Describe how the past performance is applicable to this effort. If sub-contractors are to be used, information should be provided that demonstrates their past performance as well and how the firms have successfully worked together in the past. Weight: 20%

4. **Budget.** The proposed budget should itemize work in sufficient detail to enable reviewers to evaluate the appropriateness of the entire funding request. You must use the Contractor Budget Template provided (available here). You may add columns to the template for additional tasks if needed, but should not make any other changes. Weight: 20%

ELIGIBLE OFFERORS & CONFLICT OF INTEREST STATEMENT

Eligible applicants include institutions of higher education, other nonprofits, commercial organizations, international organizations, and local, state and Indian tribal governments.

By submitting a proposal in response to this solicitation, the offeror warrants and represents that it does not currently have any apparent or actual conflict of interest, as described herein. In the event an offeror currently has, will have during the life of the contemplated contract, or becomes aware of an apparent or actual conflict of interest, in the event an award is made, the offeror must notify NFWF in writing in the Statement of Quotations, or in subsequent correspondence (if the issue becomes known after the submission of the Statement of Quotations) of such apparent or actual conflicts of interest, including organizational conflicts of interest. Conflicts of interest include any relationship or matter which might place the contractor, the contractor's employees, or the contractor's subcontractors in a position of conflict, real or apparent, between their responsibilities under the award and any other outside interests, or otherwise.

Conflicts of interest may also include, but are not limited to, direct or indirect financial interests, close personal relationships, positions of trust in outside organizations, consideration of future employment arrangements with a different organization, or decision-making affecting the award that would cause a reasonable person with knowledge of the relevant facts to question the impartiality of the offeror, the offeror's employees, or the offeror's future subcontractors in the matter. Upon receipt of such a notice, the NFWF Contracting Officer will determine if a conflict of interest exists and, if so, if there are any possible actions to be taken by the offeror to reduce or resolve the conflict. Failure to resolve conflicts of interest in a manner that satisfies NFWF may result in the proposal not being selected for award.

By submitting a proposal in response to this solicitation, the Offeror warrants and represents that it is eligible for award of a Contract resulting from this solicitation and that it is not subject to any of the below circumstances:

- Has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an Contract with the authority responsible for collecting the tax liability, where the awarding agency is aware of the unpaid tax liability, unless the agency has considered suspension or debarment of the corporation and made a determination that this further action is not necessary to protect the interests of the Government; or
- Was convicted (or had an officer or agent of such corporation acting on behalf of the corporation convicted) of a felony criminal violation under any Federal or State law within the preceding 24 months, where the awarding agency is aware of the conviction, unless the agency has considered suspension or debarment of the corporation and made a determination that this further action is not necessary to protect the interests of the Government; or
- Is listed on the General Services Administration's, government-wide System for Award Management Exclusions (SAM Exclusions), in accordance with the OMB guidelines at 2 C.F.R Part 180 that implement E.O.s 12549 (3 C.F.R., 1986 Comp., p. 189) and 12689 (3 C.F.R., 1989 Comp., p. 235), "Debarment and Suspension, " or intends to enter into any subaward, contract or other Contract using funds provided by NFWF with any party listed on the SAM Exclusions in accordance with Executive Orders 12549 and 12689. The SAM Exclusions instructions can be found here: https://www.fws.gov/northeast/refuges/agreements/Documents/SAM_Exclusions_how_do_i_search_exclusions.pdf

SUBMISSION REQUIREMENTS

Proposals must be submitted under the same email at the same time, in three distinctly labeled and separate documents: 1) Technical Proposal, 2) Budget, and 3) Evidence of Financial Stability. Interested parties should submit proposals electronically to NFWF (Kaity Goldsmith at *kaitlin.goldsmith@nfwf.org*) using the requirements below:

1. **Technical Proposal**
    - *Format*: Proposals must be provided in Word format or searchable PDF with a font size no smaller than 11 pt. (Embedded tables can use a different font size from 11pt; however, please ensure the size is sufficiently large for readability.) Note: The only section of the proposal that has a page limit is the work plan narrative (maximum of 5 pages).
    - *Contact information*: Primary contact person, company name, address, phone, email, website, DUNS number, and EIN/Taxpayer ID#.
    - *Narrative on Proposed Work Plan*: Concise (5-page limit) description of the proposed work plan.
    - *Past Experience*: Summarize applicant's expertise and experience. List recent (last 2-5 years) accomplishments and previous services related to the technical expertise offered.
    - *Biographies*: Resumes and/or Vitae of key staff and their role in the proposed work area.
    - *References*: List two clients who have received services from the applicant that is similar in nature to the proposed work; include names, phone numbers, and email address.
2. **Budget**: The budget proposal must be submitted using the Contractor Budget Template (available here).
3. **Evidence of Financial Stability**: The applicant shall provide with the RFP response, proof of financial stability in the form of financial statements, credit ratings, a line of credit, or other financial arrangements sufficient to demonstrate the applicant's capability to meet the requirements of this RFP.

SELECTION PROCEDURE

A panel of NFWF and NOAA staff will review the full proposals. Offerors may be asked to modify objectives, work plans, or budgets prior to final approval of the award. Only one award will be made for this project. If multiple institutions are involved, they should be handled through sub-awards and sub-contracts.

SUBMISSION DEADLINES

August 12	**Deadline for questions about the solicitation to NFWF** Offerors should submit questions regarding this solicitation via email to Kaity Goldsmith (*kaitlin.goldsmith@nfwf.org*). NFWF will post all the questions and responses to all questions so that all offerors have access to them at the same time. In order to provide equitable responses, all questions must be received by NFWF **no later than 5:00 PM EDT on Wednesday, August 12, 2020.**
August 17	**NFWF response to questions about the solicitation** NFWF will post the questions submitted regarding the solicitation and responses on the NFWF website in the Related Content section.
August 31	**Deadline for receipt by NFWF of proposals** Proposals must be received electronically as an email attachment to Kaity Goldsmith (*kaitlin.goldsmith@nfwf.org*) by **11:59 PM EDT on Monday, August 31, 2020.** Proposals must be provided in Word format or searchable PDF.
Mid-September	**Interviews with selected finalists**
October	**Contract award to selected Offeror**

REFERENCES

Arkema, K., Guannel, G., Verutes, G. *et al.* (2013) Coastal habitats shield people and property from sea-level rise and storms. *Nature Clim Change* 3, 913–918. https://doi.org/10.1038/nclimate1944

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Reddy, S.M., Guannel, G., Griffin, R. *et al.* (2016) Evaluating the role of coastal habitats and sea-level rise in hurricane risk mitigation: An ecological economic assessment method and application to a business decision. *Integr Environ Assess Manag* 12: 328-344. DOI: 10.1002/ieam.1678

Ruckelshaus, M.H., Guannel, G., Arkema, K. *et al.* (2016) Evaluating the Benefits of Green Infrastructure for Coastal Areas: Location, Location, Location. *Coastal Management* 44:5, 504-516. DOI: 10.1080/08920753.2016.1208882