STATEMENT OF WORK

NIST WORKSHOPS ON ADVANCEMENT IN COMPUTATIONAL WIND ENGINEERING AND PERFORMANCE-BASED WIND DESIGN

A. Background

The National Institute of Standards and Technology (NIST) Engineering Laboratory (EL) has a long history of research and development in wind engineering and windstorm impact reduction. More recently it has been building capabilities in computational wind engineering (CWE) and performance-based design for wind (PBWD) research and development (R&D) and expanding its windstorm R&D activities, including tornadoes, machine learning techniques for simulation of hurricanes, and data-based assisted design for wind. There is now a need to assess the current state-of-the-art in CWE and PBWD to support future development of a Measurement Science Roadmap for advancing the knowledge in these areas and their applications in practice. NIST requires support to hold two (2) two-day workshops in the calendar year 2023 to address this need. The workshops shall address the following three broad subject areas, with associated sub-topics:

CWE Workshop:

Subject Area 1: CWE methodologies

Sub-Topic 1.1: Review of existing tools and methodologies: capabilities and limitations

Sub-Topic 1.2: Identification of research needs and prioritization for application of CWE in structural design for wind

Subject Area 2: Verification and Validation (V&V) of CWE methodologies

Sub-Topic 2.1: Review of existing methods, data types and sources, and experimental methods for V&V of CWE

Sub-Topic 2.2: Identification of research needs and prioritization for V&V of CWE

PBWD Workshop:

Subject Area 3: PBWD methodologies

Sub-Topic 3.1: Review of current state-of-the-art on PBWD
Sub-Topic 3.2: Identification of research needs and prioritization for standardization and application in practice.

There have been efforts in recent and past years related to PBWD and CWE, e.g., References (1) to (4) identified in Section J of this document. It is instructive to consider these efforts in planning for this workshop.

B. **SCOPE OF WORK**

The Contractor shall provide the professional, technical, and support personnel, services, materials, equipment and facilities necessary to successfully complete the requirements described in this Statement of Work. The Contractor shall develop, plan for, and hold two workshops that address the three Subject Areas described in Section A. The Contractor shall also submit two Government Contractor Reports following the conclusion of the workshops.

C. **Specific Tasks**

(1) **Task 1: Workshop Steering Committee Development** The Contractor shall appoint a Workshop Director (WD) who shall have overall responsibility for organizing the two workshops. The WD shall be part of the contractor’s key personnel.

The Contractor shall convene a Workshop Steering Committee (WSC) for each workshop. The WSC shall be composed of the WD as chair and a small group (up to 5) of other eminently qualified academic and practicing experts who have worked in the fields of wind engineering (CWE, PBWD, wind tunnel). The Contractor shall consider experience; expertise; and geographic, gender, and ethnic diversity in selecting the WD and WSC members. All WSC selections shall be made in consultation with the NIST Contracting Officer Representative (COR).

The WSC shall be responsible for the technical quality of the workshops, under the direction of the WD. The Contractor shall also include representatives from NIST as *ex-officio* members of the WSC.

(2) **Task 2: Workshop Planning** The Contractor shall confer with the NIST COR to develop an outline and to select and secure participation of qualified speakers in the three Subject Areas for the two workshops. The Contractor shall also be responsible for selecting and providing the workshop venues in the contiguous U.S. as well as for providing all workshop audio/visual and logistical support. In the proposal, the contractor shall identify the potential venues (could be different venues for each workshop). The Contractor shall submit the final proposed
workshop location(s) and audio/visual plans to the NIST COR for advance approval.

(3) Task 3: Workshop Execution. The Contractor shall host and convene two workshops of leading wind and structural engineering and computational fluid dynamic researchers and practitioners.

a. The purpose of the workshops shall be to address the Subject Areas and Sub-Topics described in Section A. The Contractor shall format the workshops to accomplish this overall goal and coordinate the format with the NIST COR. Each workshop shall not exceed two days.

b. The workshop venue(s) shall have enough spaces for at least 50 participants (general public and invited participants). Each workshop shall include a maximum of 30 invited participants, in addition to the members of the WSC. The contractor shall provide travel reimbursements for up to 10 domestic invited participants and up to 6 international invited participants, including the WD and WSC members. Invited participants shall include wind and structural engineering and computational fluid dynamic researchers and practitioners. Practitioners shall include representatives of national building codes and standards organizations, the construction materials industry, and insurance and reinsurance industries. The Contractor shall consider experience and expertise, and geographic, gender, and ethnic diversity in selecting invited participants. All invited participant selections shall be made in consultation with the NIST COR. The Contractor shall submit invited participants’ names to the NIST COR for approval prior to issuing invitations.

c. On the second day of each workshop, the Contractor shall plan for a 1/2-day session with the WD, WSC, and as many as four NIST staff at the same venue. During this time, a draft of the workshop report shall be developed.

d. The Contractor shall pay each WSC member an honorarium of $2,000.00 total for participation in the two workshops. The honorarium will cover time spent on the project, review of report materials up to three times throughout the project, and attendance at the workshops.

(4) Task 4: Draft Reports. Following the completion of each workshop described in Task 3, the Contractor shall develop a draft workshop report that documents the information resulting from the workshop, including the broad topic areas and subtopics described in Section A. Draft reports shall be submitted to the NIST
(5) Task 5: Final Reports Following NIST COR review of the draft reports specified in Task 4, the Contractor shall incorporate any NIST COR recommendations and produce a final written report that is ready for release as a NIST Government Contractor Report (GCR). The Contractor shall obtain the GCR number from the NIST COR prior to submitting the final reports. The Contractor shall provide electronic files of the final report in both Microsoft Word and Adobe Portable Document Format (PDF) and the Contractor shall publish 75 printed and bound copies of the report and provide them to NIST. The contractor shall also deliver any graphics that are part of the workshop reports in native file format.

D. Deliverables and Deliverable Due Dates

The Contractor shall submit the following deliverables to the NIST COR:

<table>
<thead>
<tr>
<th>Task</th>
<th>Deliverable</th>
<th>Deadline (Calendar Days)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Recommendations for WSC Members</td>
<td>(a) 21 Days After Award</td>
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<tr>
<td></td>
<td>(b) Appointment of WSC members</td>
<td>(b) 60 days After Award</td>
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<tr>
<td>2</td>
<td>Draft Workshop Outlines and Proposed Workshop Location</td>
<td>90 Days After Award</td>
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<tr>
<td>2</td>
<td>Final Workshop Outlines</td>
<td>10 Days After Receipt of NIST Feedback on Drafts</td>
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<tr>
<td>3</td>
<td>Execution of 2 Workshops</td>
<td>Workshops shall be held at mutually agreed upon times within 365 Days After Award</td>
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<tr>
<td>4</td>
<td>Draft Workshop Reports</td>
<td>Within 60 Days Following Conclusion of Each Workshop</td>
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<tr>
<td>5</td>
<td>Final Workshop Reports, Including Printed Reports</td>
<td>Within 60 Days Following Receipt of NIST Feedback on Drafts</td>
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Inspection and provision of feedback or acceptance of the deliverables identified above will be completed no later than 10 calendar days after deliverable receipt. Inspection and acceptance of each task shall be completed by the NIST COR.

E. Period of Performance and Place of Performance

The award period of performance shall be 17 months from date of award.

The primary place of performance shall be the Contractor's facilities. Work will also take place at workshop locations.

F. Government-Furnished Property, Data, and/or Information
No Government-furnished property, data, or other information is involved. All deliverables generated under this requirement remain the property of the Government.

The Contractor will have no access to NIST IT systems and this requirement is determined to be Non-IT no-risk.

G. TRAVEL AND OTHER DIRECT COSTS

The Contractor shall be reimbursed for other direct costs approved in advance by the NIST COR including the workshop venues and audio/visual support. The Contractor shall be reimbursed the travel expenses of invited workshop participants, other than Government employees, within the parameters set forth in Task 3 above.

The Contractor shall be reimbursed for travel costs as described in the Specific Tasks section of this document and as approved in advance by the NIST COR in accordance with the Federal Travel Regulation and the Department of Commerce Travel Handbook.

Travel and other direct costs shall not exceed a negotiated ceiling which shall be identified in the award resulting from this requirement.

H. Key Personnel Requirements

One Workshop Director (WD) is required as key personnel for this requirement. The WD shall be a licensed structural engineer who is a subject matter expert in at least one of the workshop areas (have published at least one consensus standard, peer-reviewed document on the subject(s) of CWE and/or PBWD) and has strong ties to the research and codes and standards communities, as evidenced by having led or chaired one or more standard development committees of Standards Development Organizations).

I. Contract Type

The contract type shall be firm fixed price with a not-to-exceed ceiling for travel and other direct costs.

J. References:

(1) Pre-standard for Performance-Based Wind Design, American Society of Civil Engineers, Reston, Virginia, 2019.

(3) *Strategic Plan for the National Windstorm Impact Reduction Program*, NIST, 2017