Attachment B

Definition: Climate Modeling and Research System Evaluation Criteria

Solicitation Number 6400009257

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1. Basis for Selection

ORNL intends to select the responsive, responsible Offeror whose proposal best meets the requirements and contains the combination of performance features, supplier attributes and affordability offering the best overall value. ORNL will determine the best overall value by comparing differences in performance features and supplier attributes offered with differences in affordability, striking the most advantageous balance between expected performance and the overall affordability to ORNL.

Offerors should thoroughly describe the value of their proposed performance features and supplier attributes in enhancing the likelihood of successful performance or otherwise best achieving ORNL's objectives.

ORNL will assess the following elements:

Qualification Criteria	Minimum Suitability of the Offeror's Proposal
Criterion 1	Technical Elements of the Offeror's Proposal
Criterion 2	Benchmark Performance of the Offeror's Solution
Criterion 3	Delivery Schedule of the CMRS Elements
Criterion 4	Past Performance
Criterion 5	Corporate Capability
Criterion 6	Life Cycle and Option Cost Assessment

Figure 1. Assessed Criteria Summary

ORNL's selection may be made on the basis of the initial proposals or ORNL may elect to negotiate with one or more Offerors. It is intended that as a result of this solicitation that a single award will be made.

1.1. Conventions used in the CMRS Technical Specification

Attributes of the CMRS Technical Specification are described according to their relative contribution to functionality, productivity, and usability. These conventions describe specific responsibilities of the Offeror as part of their response. The Offeror should take care to ensure that all items marked Critical are properly addressed. Offeror proposals should also address Significant and Enhancing items carefully to ensure that those contributions to the overall proposal are well understood.

The following conventions are used in the Technical Specification, and repeated here.

Attribute Priority	Description
Critical [C]	Items considered the most important, or critical to the CMRS. Offeror shall describe any exceptions to items considered critical, and describe proposed methods for mitigating the impact of an offer that does not provide this item. Technical Specification Sections that include these items are marked with [C].
Significant [S]	Items that are of sufficient significance that the effectiveness of the CMRS would suffer if not provided. Offeror is encouraged to provide as many such items as possible. Technical Specification Sections that include these items are marked with [S].
Enhancing [E]	Items that enhance the utility of, and are desirable for, the CMRS. Offeror is encouraged to provide as many such items as possible. Technical Specification Sections that include these items are marked with [E].
Information [I]	Items that are provided as additional information to an Offeror regarding information about the NCCS or NOAA that may aid an Offeror in determining the most suitable system configuration. Technical Specification Sections that include these items are marked with [I].

Figure 2. Conventions used in the CMRS Technical Specification

2. Qualification Criteria: Minimum Suitability of the Offeror's Proposal

Technical Proposals will undergo an initial review to determine whether they satisfy all Critical elements. Critical elements are those items considered the most important, or critical to the CMRS, and are marked accordingly.

Technical Proposals that do not satisfy the Critical elements or that do not adequately describe a method for mitigating Critical elements that are not met by the Offeror's solution will be deemed inadequate and will not be considered further.

Any Technical Proposal that meets the minimum suitability assessment will undergo further evaluation. This includes a technical assessment of the information that an Offeror provides as instructed in the Instructions to Offerors.

3. Evaluation Criteria

Proposals will be reviewed against the following criteria, which are listed in descending order of importance:

3.1. Criterion 1: Technical Elements of the Offeror's Proposal

Greater technical emphasis is placed on Significant elements than on Enhancing elements. Offers that exceed the minimum requirements will be acknowledged and rewarded.

The order of Significant or Enhancing elements within a section in the Technical Specification does not imply a ranked priority of those elements.

There is no priority or weight assigned to individual elements. They are evaluated as a composite. Common characteristics that will contribute to scoring of each sub-element include an assessment of the overall quality of the proposed system, subsystem or approach, and the value added of relevant features,

components, performance characteristics or other properties as described by the Offeror. Technical Proposals will be evaluated relative to the following elements:

3.1.1. High Level Overview

ORNL will evaluate the architecture(s), subsystems, systems, interconnects, and other applicable elements of the design to determine the degree to which the proposed technical approach satisfies the requirements as described in the solicitation.

3.1.2. Performance

ORNL will assess the performance characteristics of the interconnect technologies, file systems, subsystems, and systems to determine the degree to which the proposed technical approach delivers a high-performance, balanced solution for the intended class of applications.

ORNL will evaluate the committed maximum run time variability for the class of applications described in the benchmarks and the rationale for that calculation.

3.1.3. Strategy

ORNL will assess the Offeror's delivery and operational strategy. This assessment will include an analysis of the rationale for a single-phased or multi-phased delivery, the rationale for proposing physically distinct subsystems or partitioned subsystems, the extent to which the Offeror's service strategy supports the reliability and computational service delivery goals, and the expected impact on application validation that may be associated with changes to the CMRS through multi-phased deliveries or existing system upgrades.

ORNL will assess the described features of the Offeror's solution that are anticipated to accommodate future application scalability and support the growth in model complexity and computational costs of climate modeling applications.

3.1.4. Software

ORNL will assess the robustness, manageability, and thoroughness of the proposed software environment, including the operating system, user and programming environment, and software tools.

3.1.5. Resiliency, Reliability, Availability, and Serviceability

ORNL will evaluate the elements of the Offeror's proposal that contribute to improved system resiliency, enhanced reliability, greater availability, and better serviceability. This will include an assessment of the extent to which the proposed system's design promotes efficient hardware problem identification and problem resolution with minimal system disruption. The evaluation will include an assessment of hardware and software monitoring capabilities, proposed metrics for times to interrupt, times to data loss, times to recovery, FIT rates for common components, and the Offeror's description of the anticipated distribution of failures across the proposed architecture.

3.1.6. Warranty, Maintenance, and Support

ORNL will assess the proposed warranty, maintenance, and support descriptions, including the overlap of systems in a multi-phased delivery, the appropriateness of the length of time that a system is under

warranty and/or maintenance, and how the proposed staffing plan supports the needs of the system, users, and ORNL.

3.1.7. Facilities Requirements

ORNL will assess the extent to which the proposed system's packaging effectively balances reliability, power, cooling, and floor space requirements.

3.2. Criterion 2: Benchmark Performance of the Offeror's Solution

For the purposes of this Solicitation, ORNL has assembled a series of application codes and data sets that will comprise a benchmark suite. Due to its total size, this benchmark suite is not published on a public electronic interface (web, ftp, or similar). Any requests for the benchmark suite must be directed in writing to the ORNL Subcontracts Administrator. For the duration of this Solicitation, the ORNL Subcontracts Administrator may be reached via email at hpcnoaaadm@ornl.gov.

The measured and projected timings (as well as the projection methodology if projections are provided) for the tests within the benchmark suite will be used to evaluate the capability, flexibility and capacity of the proposed CMRS system(s).

3.2.1. Capability

The capability of the proposed system(s) will be evaluated using run times, scalability data, file transfer times and I/O rates provided.

3.2.2. Capacity

The capacity of the proposed system(s) will be evaluated from the throughput benchmark test. Because capacity over the life of the system also depends on capability (the time for each segment of the throughput workstream), ORNL will extrapolate from the number of instances that can be completed within the 3.5 hour throughput benchmark time to the number that can be done per day by extrapolating the segment runtime to segment lengths that represent typical production runs.

3.3. Criterion 3: Delivery Schedule of the CMRS Elements

ORNL will evaluate the delivery schedule for risk.

3.4. Criterion 4: Past Performance

ORNL will evaluate the Offeror's demonstrated ability to meet schedule for development and delivery of similar systems, capability to produce and test the proposed system, and ability to provide continued development, testing and support for system problem diagnosis and future system improvements.

3.5. Criterion 5: Corporate Capability

ORNL will evaluate the Offeror's commitment to high performance technical computing; management and corporate capability; project risks with regard to how the Offeror shall meet the technical, support, and schedule requirements of this solicitation; and named individuals assigned to roles on this project.

3.6. Criterion 6: Life Cycle and Option Cost Assessment

3.6.1. Cost of Ownership

ORNL has identified the following pricing/cost of ownership factors for this solicitation.

- Total life-cycle costs (systems plus maintenance, operation, third-party software, integration, conversion).
- Facilities requirements and costs, including power, cooling and space requirements.
- Both base and on-going pricing for all hardware, software, maintenance and options.

The Offeror is encouraged to identify other cost factors that they consider to be of benefit to ORNL.

3.6.2. Price Reasonableness and Realism

An Offeror's Price Proposal will be evaluated for reasonableness and realism in relation to its Technical Proposal. In addition, proposals will be evaluated against the following Price Evaluation Criteria:

- Maintenance and Support Options - The prices offered for Maintenance and Support Options as described in the Instructions to Offerors.
- Separately Priced Options - The prices offered for Separately Priced Options as described in the Instructions to Offerors.

4. Evaluation Process

The Offeror evaluation process consists of the proposals being reviewed, evaluated and rated using a graded system that assesses the degree of compliance with the technical requirements and the level-of-performance risk. The proposals will be graded against each of the technical evaluation factors, based on the following ratings:

Red - Offeror/Proposal fails to meet the performance or capability requirements or provides unacceptable risk to the Company.

Yellow - Offeror/Proposal marginally meets the performance or capability requirements or provides moderate to high risk to the Company.

Green - Offeror/Proposal meets the performance or capability requirements necessary for acceptable subcontract performance, and provides low to moderate risk to the Company.

Blue - Offeror/Proposal exceeds the performance or capability requirements, offering superior subcontract performance, and provides little or no risk to the Company.

We may solicit information concerning your record of performance and use it in evaluation.