



Department of Energy

Oak Ridge Office
P.O. Box 2001
Oak Ridge, Tennessee 37831—

August 11, 2009

Mr. Michael J. Fietze, Director
Prime Contract Administration
UT-Battelle, LLC
P.O. Box 2008
Oak Ridge, TN 37831-6262

Dear Mr. Fietze:

CONTRACT NO. DE-AC05-00OR22725 - MODIFICATION NO. 243

A fully executed copy of the subject contract modification is enclosed for your retention. This modification obligates American Recovery and Reinvestment Act of 2009 funding in the amount of \$73,356,000 to the contract for the Work for Others project entitled "Specialized High-Performance Computing Collaboration for Climate Modeling".

If you have any questions, please contact me at 576-4523.

Sincerely,

A handwritten signature in black ink that reads "Mark A. Million".

Mark A. Million
Contracting Officer

Enclosure

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE	PAGE OF PAGES	
			1	3
2. AMENDMENT/MODIFICATION NO. 243	3. EFFECTIVE DATE See Block 16C	4. REQUISITION/PURCHASE REQ. NO. 09SC006056	5. PROJECT NO. (If applicable)	
6. ISSUED BY Oak Ridge U.S. Department of Energy P.O. Box 2001 Oak Ridge TN 37831	CODE 00518	7. ADMINISTERED BY (If other than Item 6) Oak Ridge U.S. Department of Energy P.O. Box 2001 Oak Ridge TN 37831	CODE	00518
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) UT-BATTELLE, LLC Attn: Michael J. Freitze, Director Prime Contract Administration Post Office Box 2008 OAK RIDGE TN 37831-6231		(x) 9A. AMENDMENT OF SOLICITATION NO.	9B. DATED (SEE ITEM 11)	
CODE 099114287 FACILITY CODE		X 10A. MODIFICATION OF CONTRACT/ORDER NO. DE-AC05-000R22725	10B. DATED (SEE ITEM 11) 10/18/1999	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
See Page 3. Net Increase: \$73,356,000.00

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) 970.5232-4 OBLIGATION OF FUNDS (DEC 2000), P.L. 95-91, and P.L. 111-5

E. IMPORTANT: Contractor is not, is required to sign this document and return _____ 0 _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

Subj to Retent: N

Recovery TAS::13 1454::TAS

See Page 3.

Note: Information reflected on Page 2 is not relevant to this modification and may not be accurate. Please disregard Page 2.

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Mark A. Million		
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA Mark A. Million (Signature of Contracting Officer)	16C. DATE SIGNED 8/11/09

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	DE-AC05-00OR22725/243	2	3

NAME OF OFFEROR OR CONTRACTOR
 UT-BATTELLE, LLC

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
00001	FOB: Destination Period of Performance: 04/01/2000 to 03/31/2010 Change Item 00001 to read as follows (amount shown is the total amount): MANAGEMENT AND OPERATION OF THE OAK RIDGE NATIONAL LABORATORY Incrementally Funded Amount: \$9,310,193,801.92				

Block 12 “ACCOUNTING AND APPROPRIATIONS DATA,” continued.

Funds Obligated for Recovery Act Projects:

All required accounting and appropriations data, including the Treasury Accounting Symbol and Fund Code is hereby provided as Attachment 2 to this modification.

Block 14 “DESCRIPTION OF AMENDMENT/MODIFICATION,” continued.

- A. This modification is issued to obligate American Recovery and Reinvestment Act (Recovery Act) of 2009 funds for a Work for Others project entitled “Specialized High-Performance Computing Collaboration for Climate Modeling”.
- B. Accordingly, pursuant to Section I Contract Clause – DEAR 970.5232-4 entitled “Obligation of Funds,” funds in the amount of \$73,356,000 are hereby obligated in support of Recovery Act activities. The total amount of funds obligated under this contract since its inception is increased from \$9,628,185,723.55 to \$9,701,541,723.55.
- C. The specific Contractor Recovery Act Statement of Work, Milestones, Roles and Responsibilities, and Deliverables funded by this modification are identified in the Interagency Agreement referenced in the table below. Attachment 1 to this modification includes the Statement of Work, Significant Milestones, and Funding Estimate for the project.

Interagency Agreement Document No.	Interagency Agreement Title
NOAA-OCIO-CLIMATE-09	High Performance Computing Collaborative Services for Climate Modeling

- D. The work described in this modification shall be performed using funds obligated under this contract, which have been appropriated under the Recovery Act of 2009, (Pub. L. 111-5), and as such, is subject to the special statutory conditions and the additional contractual terms and conditions that are listed in section E below and previous contract modifications related to the Recovery Act. The funds obligated hereunder shall only be used to accomplish the work as set forth in section C above and may not be used for any other purpose without the prior written consent of the Contracting Officer.
- E. The Contractor shall complete all Recovery Act Work funded by this modification in accordance with Recovery Act requirements, including the required completion dates specified therein, and by the completion date identified in the approved Interagency Agreement for the activity.
- F. All other terms and conditions remain unchanged.

08/06/2009
11:57:39

**Department of Energy, Oak Ridge Office
Work for Others Funding Obligation**

Page 1 of 1

Funding Package

Project Type:	Federal
Project Number:	2316-T849-08
Project Structure:	Basic
Project Status:	Active
Project Title:	Specialized High-Performance Computing Collaboration for Climate Modeling

Sponsor Information

Sponsor Name:	National Oceanic and Atmospheric Ad
Sponsor Funding Document No.:	NOAAOCIOCLIMATE09
Sponsor Funding Document Amendment No.:	00
Sponsor Signature Date:	08/04/2009

Package Information

Action:	New Funding
Obligation Amount (Increment or Decrement):	73,356,000.00
Period of Performance (Fixed):	08/05/2014

Cost Object Breakdown Totals

Fund Amount	73,356,000.00
FAC Amount	0.00
Contract Amount	73,356,000.00

The Department of Energy has executed the above interagency agreement. UT-Battelle is authorized to conduct the project in accordance with the interagency agreement. Any funding amounts cited above are obligated into the UT-Battelle contract for reimbursable work.

DOE acknowledges that these funds were provided pursuant to the American Recovery and Reinvestment Act of 2009.

Statement of Work

1.0 Background

In September 2008, the National Oceanic and Atmospheric Administration (NOAA) and the Department of Energy (DOE) signed a Memorandum of Understanding on collaborative research. Through this agreement, Oak Ridge National Laboratory (ORNL) provides NOAA with advanced high-performance computing for prototyping critical weather and climate applications in support of NOAA's mission. The focus of the ongoing research includes: porting existing NOAA weather and climate models to advanced high performance computers at ORNL, benchmarking the computational performance of the NOAA cubed sphere model on leadership class computers, and providing system/software engineering to improve computational performance. Initial results of NOAA codes on ORNL computers show very good performance, scaling to tens of thousands of processors on the leadership computing systems at the ORNL National Center for Computational Sciences.

Since this time, NOAA and DOE have developed a Work for Others Agreement, under Proposal 2316-T849-08, to enter into more sustained projects for the challenges which require a closer cooperation and understanding between DOE/ORNL and NOAA. This Agreement will help the Nation prepare for the challenges and risks posed by climate change by improving predictive and adaptive capacities at global to local levels and supporting the developing world in carrying out vulnerability analyses and addressing their findings.

2.0 Purpose

ORNL shall provide sophisticated research collaboration and expert technical support that contributes directly to operating high performance computer and data systems for NOAA so as to deliver improved climate data and model experiments. These models will be used to understand and predict climate variability and change, as well as to produce decision-support tools to facilitate understanding climate change, mitigation strategies, and adaptation options for the Nation. The proposed effort leverages the significant specialized expertise and unique ORNL capabilities. ORNL is the DOE's lead laboratory for high performance computing and its applications to climate change prediction. ORNL is also a lead laboratory for the DOE Climate Change Prediction Program (CCPP) with a mission to advance climate change science and improve climate change projections using state-of-the-science coupled climate models, on time scales of decades to centuries and space scales of regional to global. ORNL also contributes to the Climate Variability and Change element of the U.S. Climate Change Science Program (CCSP), by supporting high performance computing and scientific collaboration for the climate modeling programs at other federal agencies, particularly the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA).

The common research goal is to develop, test, and apply state-of-the-science computer-based global climate simulation models, based upon a strong scientific foundation while leveraging leading edge high performance computing and information technologies. The objective is to increase dramatically the skill, resolution, complexity, and the throughput of computer model-based projections of climate variability and change to enable sound decision-making on issues of national importance, such as future energy use and technology options.

3.0 Scope

For the initial phase of the Work for Others Agreement (Proposal 2316-T849-08), \$73.356 Million in ARRA funds will be obligated to DOE for ORNL to perform tasks associated with providing computational services and the scientific collaboration NOAA requires. These funds will also be used to offset ORNL expenses related to infrastructure support, site preparation, utilities costs and other operating expenses as described below. NOAA plans to obligate these funds via a funds transfer to DOE upon execution of an Interagency Agreement.

NOAA has been invited by ORNL to collaborate on developing a set of high performance computing requirements that meet NOAA's mission requirements. In addition, NOAA and ORNL are also collaborating on developing service level/operating requirements that detail NOAA expectations regarding service delivery. NOAA and ORNL will establish a scientific management plan to coordinate collaborative activities and ultimately enhance NOAA's climate research program. NOAA and ORNL scientific staff are expected to interact on a routine basis and frequent site visits are anticipated.

High performance computing services designed to meet NOAA's mission requirements must be capable of reliable, sustained performance while running intricate environmental modeling codes and generating voluminous data products. NOAA anticipates using its most challenging models to confirm the suitability of services. These services are expected to be world-class computational resources scaling to 10s of thousands of processors and delivering several hundred teraflops of performance. NOAA's service level/operating requirements will result in computing resources able to deliver highly reliable services while running multiple copies of NOAA models in sufficient number to occupy the entire dedicated computing configuration. Service level/operating requirements will compel the computing system to deliver consistent sustained performance as measured by run-time variability (time to execute each instance of the benchmark codes) and numerical reproducibility (exactly the same result for each benchmark run) tests. Adherence to these standards will compel the computing resources to possess robust resiliency features (ability to run codes to completion despite system problems) enhancing NOAA's ability to meet mission goals. NOAA anticipates that ORNL will employ these same performance standards to monitor high performance computing resource performance over the life of the contract.

4.0 Significant Milestones

Significant Milestones associated with the work are as follows:

Milestone	Date
NOAA and ORNL Collaborate on Detailed High Performance Computing Requirements	31 August 2009
High Performance Computing Technical and Service Level Requirements Documented	30 September 2009
Chief Scientists Define Collaborative Science Projects	15 October 2009
High Performance Computing Service Solution Identified with Detailed Specifications	15 January 2010
Facility Long-Lead Preparation Begins	15 January 2010
Science Project Readiness Review	1 April 2010
Initial Operational Capability of High Performance Computing	30 September 2010
High Performance Computing Service Fully Operational	Starting 31 October 2010

ORNL will fulfill the reporting requirements in accordance with Section 1512 of the American Recovery and Reinvestment Act and the Office of Management and Budget guidance.

5.0 Funding Estimate

ARRA funds will be obligated as estimated in the table below. Until a specific computer, ancillary systems, networks and security needs are identified, costs can only be estimated.

Estimates (\$1,000)

Category	Total
Infrastructure (Storage, Services*, Network, Security)	6,356
High Performance Computing System Support	55,000
Site Preparations	4,000
Collaborative Research and Acquisition Support	2,000
Operating Expenses	6,000
Total	73,356

*Broadly classified as all of the support services (DNS, DHCP, LDAP, etc.) that will be implemented. *The Federal Administration Charge (FAC) and the DOE Laboratory Directed Research and Development (LDRD) charge will not be incurred on the work performed under this scope of work per regulatory guidance under the American Recovery Reinvestment Act (ARRA).*

