

RECLAMATION

Managing Water in the West

U.S. Department of the Interior
Bureau of Reclamation

NOTICE OF INTENT TO AWARD

This Funding Announcement is not a request for applications. This announcement is to provide public notice of the Bureau of Reclamation's intention to fund the following project activities without full and open competition.

ABSTRACT	
Funding Announcement	R11AC80816
Project Title	Climate and Water Research and Related Technical Support
Recipient	University Corporation for Atmospheric Research (UCAR)
Principal Investigator / Program Manager	Gina Taberski (303) 497-2132 taberski@ucar.edu
Anticipated Federal Amount	\$450,000.00
Cost Share	\$0
Total Anticipated Award Amount	\$450,000.00
New Award or Continuation?	Continuation
Anticipated Period of Performance	August 30, 2011 – September 30, 2016
Award Instrument	Cooperative Agreement
Statutory Authority	Omnibus Public Lands Management Act of 2009, Section 9504, Public Law 111-11, (b) RESEARCH AGREEMENTS.
CFDA # and Title	15.507 Sustaining and Manage America's Resources for Tomorrow
Single Source Justification Criteria Cited	2 - Continuation
Reclamation Point of Contact	Shaun Wilken swilken@usbr.gov 303-445-3697

OVERVIEW

Reclamation seeks to continue work with UCAR's managed organizations and programs because of their complementary capabilities and missions with those of Reclamation in the area of water and climate sciences.

Under existing Funding Agreement R11AC80816, the recipient has undertaken 11 agreement tasks (i.e. projects) developed to address the agreement scope and comply with the terms of developing agreement tasks. Eight of those projects will be completed using resources that have been obligated. The purpose of this continuation is to permit completion of 3 of those 11 agreement tasks for which scope has been developed and would be completed within the Funding Agreement's Period of Performance. The following are brief overviews of the three agreement tasks to be completed under this continuation; agreement tasks are also referred to as Project Work Plans (PWP):

- PWP#7 - "Development of Methods to Assess the Hydrological Impacts of Climate Change over the Contiguous United States": National Center for Atmospheric Research (NCAR), the United States Army Corps of Engineers (USACE), and the Bureau of Reclamation (Reclamation) are partnering to improve portrayal of the impacts of climate change over the contiguous USA. This collaborative project builds on an initial collaborative effort between NCAR, Reclamation and USACE (described later), and involves three sub-projects: (1) Methods and Products for Uncertainty Analysis to Inform Streamflow Routing using Multi-model Hydrologic Projections for the Contiguous U.S. under Climate Change Conditions (supported by USACE); (2) New Tools and Products for Climate Change-forced Streamflow Routings and Projections over the Contiguous United States (supported by USACE); and (3) Development and Application of New Methods to Assess Climate Change Impacts on Water Resources (supported by Reclamation, described in this project work plan).
- PWP#10 - "An Experimental Demonstration and Evaluation of Real-time, Over-the-Loop Streamflow Forecasting": Department of Interior Bureau of Reclamation (Reclamation), the U.S. Army Corps of Engineers (USACE), and the National Center for Atmospheric Research (NCAR) are partnering to evaluate: (1) the application of state-of-the-science forecasting methods and datasets in an experimental real-time operational platform serving a selection of watersheds across the contiguous U.S., and (2) the performance these methods and datasets in 'over-the-loop' forecasting. The first objective is motivated by a lack of experience with various advanced methods (such as data assimilation), implemented in an integrated operational workflow. The second objective is prompted by a perceived need to adjust parts of the current operational forecasting workflow in order to realize fully the benefits of various advanced methods in streamflow forecasting and water management support. The perception is that advanced forecasting methods require a great degree of automation in order to realize their potential benefits through the use of an over-the-loop forecaster role. A working hypothesis of this activity is that over-the-loop forecasting will unlock potential of advanced forecasting methods to inform water resources management, yet Reclamation and USACE need greater understanding of this paradigm's practicality for real forecast operations. There has been insufficient real-time, publicly available testing, demonstration, and evaluation of over-the-loop forecasting from the perspectives of workflow feasibility, product delivery

reliability, and forecasting skill. This work is intended to help fill these gaps and further enhance and inform the advanced forecasting methods that are being evaluated. The project builds on methods, models and datasets developed through ongoing FY2013-2015 collaboration project, “The Predictability of Streamflow across the Contiguous United States”.

- PWP#11 – “Climate science and water resources distance learning efforts and customized courses: Less Technical Professional Development Series”: COMET and the Bureau of Reclamation have been working since 2011 to develop and deliver climate change training courses for water practitioners, planners, engineers, and resource specialists. Initial efforts have targeted technical staff who much carryout vulnerability assessment activities, and have led to pilot courses under a COMET Professional Development Series (PDS) entitled, Assessing Natural Systems Impacts under Climate Change. This new project builds on earlier efforts and involves developing a new PDS to reach less-technical audiences who play integral roles in helping their water organizations implement climate change adaptation. These audiences include staff responsible for implementation and developing policy, including project managers, resource specialists, and public affairs, as well as more senior program and staff managers. The new PDS is entitled Integrating Climate Change Adaptation into Water, Environmental, and Land Resources Management. The project involves developing curriculum to meet training needs for a variety of less-technical communities dealing with climate change adaptation in different facets of water management. It will feature a mix of course delivery formats, including online, self-paced, instructor-free web-courses and instructor-led residence or remote (virtual) courses. Development of the PDS is scoped in two phases: phase one occurring under this agreement during Fiscal Year (FY) 2015-2016, and phase two occurring subsequently under a new agreement.

RECIPIENT INVOLVEMENT

UCAR will be responsible for undertaking and completing the Project Work Plans in accordance with the terms and conditions of the award, approved scope, and budget.

RECLAMATION INVOLVEMENT

Substantial involvement on the part Reclamation is anticipated for the successful completion of the objectives to be funded by this award. In particular, Reclamation will be responsible for the following:

- a. Reclamation shall collaborate and participate with the Recipient in the conduct and management of each project in accordance with mutually developed work plans. Reclamation will also oversee the Recipient’s activities to ensure that the program objectives are being achieved.
- b. Reclamation will provide field assistance or review to support the project.

c. This oversight shall include review, input, and approval at key interim stages of the project as identified in each project-specific work plan.

d. Reclamation shall schedule an annual review meeting between Reclamation and UCAR representatives that coincides with federal government fiscal years. The annual review meeting is designed to provide UCAR with year-long schedule of tasks and budget information that will serve to ensure effective and efficient management of the overall agreement and associated tasks. Reclamation will notify UCAR no less than 30 days prior to scheduling a review meeting.

SINGLE-SOURCE JUSTIFICATION

DEPARTMENT OF THE INTERIOR SINGLE SOURCE POLICY REQUIREMENTS
Department of the Interior Policy (505 DM 2) requires a written justification which explains why competition is not practicable for each single-source award. The justification must address one or more of the following criteria as well as discussion of the program legislative history, unique capabilities of the proposed recipient, and cost-sharing contribution offered by the proposed recipient, as applicable. In order for an assistance award to be made without competition, the award must satisfy one or more of the following criteria: (1) Unsolicited Proposal – The proposed award is the result of an unsolicited assistance application which represents a unique or innovative idea, method, or approach which is not the subject of a current or planned contract or assistance award, but which is deemed advantageous to the program objectives; (2) Continuation – The activity to be funded is necessary to the satisfactory completion of, or is a continuation of an activity presently being funded, and for which competition would have a significant adverse effect on the continuity or completion of the activity; (3) Legislative intent – The language in the applicable authorizing legislation or legislative history clearly indicates Congress’ intent to restrict the award to a particular recipient of purpose; (4) Unique Qualifications – The applicant is uniquely qualified to perform the activity based upon a variety of demonstrable factors such as location, property ownership, voluntary support capacity, cost-sharing ability if applicable, technical expertise, or other such unique qualifications; (5) Emergencies – Program/award where there is insufficient time available (due to a compelling and unusual urgency, or substantial danger to health or safety) for adequate competitive procedures to be followed.

Reclamation did not solicit full and open competition for this award based the following criteria:

(2) CONTINUATION

Single Source Justification Description:

The activities to be funded are necessary to the satisfactory completion of agreement tasks 7, 10 and 11, which are presently being funded, and for which competition would have a significant adverse effect on the continuity or completion of the activity. Completion of these tasks is in the best interest of the government for the following reasons:

- Task 7 calls for (1) developing next generation methodologies for climate projection downscaling and hydrologic projection under climate change; and, (2) applying these new methods using recent global climate projections. Bureau of Reclamation (Reclamation) and U.S. Army Corps of Engineers (the Corps) are then planning to inform national-coverage water resource vulnerability assessments using these new resultant information resources. Without these new information sets, both Reclamation and the Corps will have to solely rely on existing downscaling and hydrology projection information resources that have been shown to exhibit weaknesses (agreement task 1) that introduce uncertainty in vulnerability assessment and adaptation planning.
- Task 10 calls for next-phase evaluation (subsequent to agreement task 3) of advanced short-term streamflow forecasting techniques, migrating from a relatively controlled hindcasting environment (task 3) to a less controlled, real-time, forecasting environment driven by real observational and weather forecast data feeds, and featuring a “forecaster over-the-loop” paradigm (i.e. more reliance on automation and objective controls) contrasting from a traditional “forecaster in-the-loop” process (i.e. less reliance on automation in favor of human judgment and manual data modifications at every stage of forecast workflow). Forecaster over-the-loop is required to realize the benefits of these advanced forecasting techniques. However, there has been no large-scale demonstration of this forecasting approach in the U.S. Lessons learned from task 10 will inform National Weather Service (NWS) National Water Center (NWC) development of a new national-coverage forecasting platform that needs to feature forecaster over-the-loop (i.e. through their Integrated Water Resources Sciences and Services collaboration) and future technology development decisions at NWS’s regional River Forecast Centers (RFCs); three western U.S. RFCs are collaborators on task 10. Failure to complete this research will result in NWC and RFCs forecast technology developments being less informed on the capabilities of these advanced forecasting techniques, and slow associated research-to-operations efforts that would improve streamflow forecasts serving Reclamation, the Corps, and other water agencies.
- Task 11 calls for continued development of climate training resources for less-technical, general audiences who will be called upon to facilitate mainstreaming of climate change considerations into water agency mission activities (including Reclamation). These training resources are designed to orient program managers, line supervisors, project leads, and resource specialists on how climate change may be considered in their specific mission activities. Given that Task 11 calls for the development of unique, continuing education resources for these learner audiences, failure to develop these training

resources will lead to a persistence of inconsistent practices among the workforce audiences, inefficient pursuit of available but less applicable training, and reduced achievement of workforce learning objectives.

UCAR is uniquely qualified to conduct and finalize the research identified in these agreement tasks because they have already begun each task and have task work-teams that are highly qualified and well-oriented to efficiently complete task objectives.

STATUTORY AUTHORITY

Omnibus Public Lands Management Act of 2009, Section 9504, Public Law 111-11, (b)
RESEARCH AGREEMENTS.

(1) **AUTHORITY OF SECRETARY.**—The Secretary may enter into 1 or more agreements with any university, nonprofit research institution, or organization with water or power delivery authority to fund any research activity that is designed—

(A) to conserve water resources;

(B) to increase the efficiency of the use of water resources; or

(C) to enhance the management of water resources, including increasing the use of renewable energy in the management and delivery of water.

(2) **TERMS AND CONDITIONS OF SECRETARY.**—

(A) **IN GENERAL.**—An agreement entered into between the Secretary and any university, institution, or organization described in paragraph (1) shall be subject to such terms and conditions as the Secretary determines to be appropriate.

(B) **AVAILABILITY.**—The agreements under this subsection shall be available to all Reclamation projects and programs that may benefit from project-specific or programmatic cooperative research and development.