

## **DEPARTMENT OF TRANSPORTATION**

### **Federal Highway Administration**

#### ***Clarus* Connection Incentive Program; Request for Applications**

**AGENCY:** Federal Highway Administration (FHWA), DOT.

**ACTION:** Notice; request for applications

**SUMMARY:** This document requests applications from U.S. public transportation agencies for participation in the *Clarus* Connection Incentive Program (CIP). The term “participation” describes the act of public transportation agencies providing their Road Weather Information System (RWIS) Environmental Sensor Station (ESS) observations and associated metadata to the *Clarus* System. These data that public transportation agencies provide will be quality checked and become part of a national data management infrastructure consisting of surface transportation-based meteorological observations.

Specifically, this request for applications describes a Connection Incentive Program (CIP) for which funding will be made available to help offset costs associated with participation in the *Clarus* Initiative (e.g., setup activities, metadata collection and organization, etc). Participation in the *Clarus* Initiative will benefit transportation agencies by providing participants an opportunity to have their ESS observations processed through advanced quality checking algorithms which in turn will provide them feedback on the operational and functional status of their ESS networks. The sharing of this ESS data through *Clarus* will also allow other agencies and the general weather enterprise to benefit from better weather and road condition information and forecasts.

For purposes of clarification, an ESS is defined as a fixed platform that contains sensors for measuring atmospheric conditions, pavement conditions and/or water level conditions. It can also be a mobile platform if it is associated with a government vehicle that contains Automated Vehicle Location (AVL) technology and environmental sensors.

**DATES:** Applications will be reviewed on a first-come, first-served basis. Decisions regarding the acceptance of specific applications for funding will be made within 30 business days of receipt.

**ADDRESSES:** Applications for the *Clarus* CIP should be submitted electronically via e-mail to [weatherfeedback@dot.gov](mailto:weatherfeedback@dot.gov), or mailed directly to the Federal Highway Administration, Office of Transportation Operations, Mailstop E86-205, 1200 New Jersey Avenue, SE, Washington, D.C. 20590.

**FOR FURTHER INFORMATION CONTACT:** Mr. Paul Pisano, Team Leader Road Weather Management Program, 202-366-1301 or Mr. Pat Kennedy, Transportation Specialist, 202-366-9498. Department of Transportation, Federal Highway

Administration, 1200 New Jersey Avenue, SE, Washington, D.C. 20590. Office hours are from 8 a.m. to 4:30 p.m. Eastern Time, Monday through Friday, except Federal holidays.

## **SUPPLEMENTARY INFORMATION:**

### **Electronic Access**

An electronic copy of this document may be downloaded using a modem and suitable communications software from the *Clarus* Initiative web site at <http://www.clarusinitiative.org>.

### **Background**

The *Clarus* Initiative was established in 2004 as a multi-year program administered and funded by the Federal Highway Administration (FHWA). The *Clarus* Initiative will demonstrate a data management system that collects, stores, quality checks and disseminates road weather and pavement condition observations generated by publicly funded ESS. To realize this vision and to enable the public and private information service providers to create new tools and techniques to improve surface transportation weather analyses, forecasts and ultimately safety, participation in the program from all public transportation agencies is desired.

To create a suite of tools or new analysis techniques, such as high-resolution surface transportation weather forecasts and tailored decision support products for the surface transportation community, requires a diverse network of reliable, calibrated, maintained, and available roadside observational data from both the atmosphere and pavement. The challenge that exists is that currently available sources of data are not managed or organized to develop a comprehensive and coherent picture of conditions on or near the road surface. This deficiency was well documented in the National Research Council report, “*Where the Weather Meets the Road: A Research Agenda for Improving Road Weather Services*”<sup>1</sup>. This report described the need for a robust, integrated road weather observational network and database management system. Such a system, also referred to as the *Clarus* System, would fulfill the needs of transportation communities as well as other stakeholders such as the National Oceanic and Atmospheric Administration (NOAA), the U.S. Department of Agriculture, the private sector, and the research community.

Implementation of the *Clarus* System will demonstrate how an open and integrated approach to observational data management can be used to overcome deficiencies identified in the National Research Council report and improve surface transportation weather information products. The *Clarus* System is designed to enable public agencies to more accurately assess weather and pavement conditions as well as the weather’s impact on operations. Such knowledge is critical for planning, conducting, and evaluating the effectiveness of activities such as winter road maintenance, weather-responsive traffic management, traveler information dissemination, safety management, transit vehicle dispatching, and flood control. As emerging mobile and remote sensing technologies are

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<sup>1</sup> “Where the Weather Meets the Road: A Research Agenda for Improving Road Weather Services”, National Academy of Sciences, [www.nap.edu/catalog/10893.html](http://www.nap.edu/catalog/10893.html), 2004.

deployed, the tools enabled through the *Clarus* System will be further refined to address the surface transportation weather information needs of stakeholders, who have been engaged throughout the *Clarus* Initiative.

The progress of the *Clarus* Initiative has advanced to a stage in which the Government is conducting Multi-state Regional Demonstrations. Through the *Clarus* Multi-state Regional Demonstrations, the Government aims to achieve the following objectives:

- (1) Demonstrate that the *Clarus* System functions as designed by incentivizing a large number of State and local agencies to contribute data from their ESS;
- (2) Enable proactive transportation system management through utilization of *Clarus* System data; and,
- (3) Provide an environment so that private sector information service providers can innovate and create new and improved road weather products that will benefit the public, academia and other private industries.

This request for applications is being made to all State transportation agencies that have deployed ESS. This includes those States that have participated in the *Clarus* Multi-state Regional Demonstration Concept of Operations Development activity and the *Clarus* Proof of Concept demonstration.

This request for applications specifically targets the first objective as stated above to incentivize transportation agencies to make their data available to the *Clarus* System. Public agencies will benefit from participation by being able to obtain quality checked observations and information about their ESS networks and individual sensors. In addition, the more agencies that participate, the easier it will be for other agencies to obtain and utilize ESS data from entire regions for their operations. It is the goal of the FHWA to have all State transportation agencies participate in the *Clarus* Initiative.

### **Objectives of the *Clarus* Connection Incentive Program**

The objectives of this request for applications include:

1. Increasing interest and providing incentives within State transportation agencies that have invested in ESS to participate in the *Clarus* Initiative thus maximizing the utility and benefits of their investments.
2. Participation in the *Clarus* CIP includes:
  - a. Permitting the exchange of ESS observations from a transportation agency collection server to the *Clarus* System.
  - b. Assuring network communications and routine collection of ESS observations within the transportation agency collection server.
  - c. Permitting distribution of ESS observations to the greater community.
  - d. Collecting and organizing metadata associated with each ESS. Metadata fields include geographic and instrument-related data as well as climate information.
  - e. Providing feedback on the *Clarus* quality checking reports so that ultimately the quality of the State ESS network improves, which will benefit the entire surface transportation community.

Funding will be provided to interested public U.S. transportation agencies to assist in offsetting costs associated with the objectives set forth above.

While there is no obligation for a State transportation agency to continue their affiliation with the *Clarus* Initiative, it is the expectation of the FHWA Road Weather Management Program that participating agencies will want to freely continue making their ESS data available to *Clarus* for several reasons: 1) to easily monitor the health of the ESS network and optimize network performance through the quality checking services, 2) to gain access to road weather observations from the entire *Clarus* network, and 3) to benefit from the new tools, techniques and improved forecasts enabled through the *Clarus* System. In addition, there are no ongoing maintenance and operations fees expected from the State agencies to continue participating in the regional demonstration of this initiative.

**Funding**

The FHWA will provide to State transportation agencies funding in the form of a grant to support activities directly associated with participation in the *Clarus* Initiative. In general, funding amounts will be based on the number of ESS deployed. A schedule of funding can be found in the table below.

<b>Number of ESS</b>	<b>Site Metadata</b>	<b>Climate Metadata</b>	<b>Equipment</b>	<b>Software/ Hardware</b>	<b>Maximum Funding</b>
1 to 25 ESS	\$3,000	\$500	\$2,000	\$4,500	\$10,000
26 to 50 ESS	\$5,000	\$1,000	\$2,000	\$4,500	\$12,500
51 to 100 ESS	\$8,000	\$1,500	\$2,000	\$4,500	\$16,000
101 to 150 ESS	\$10,000	\$2,000	\$2,000	\$4,500	\$18,500
More than 150 ESS	\$12,000	\$2,500	\$2,000	\$4,500	\$21,000

Funds cannot be used to purchase new sensors or replace faulty sensors for ESS.

The maximum payout to any transportation agency shall not exceed \$21,000. Award of funds will be subject to funding availability.

Specifically, resources listed in the above table can be used for:

- Travel-related costs (e.g., mileage, lodging) to reach ESS sites to collect metadata
- Costs associated with compiling climate metadata
- Costs for equipment used in the acquisition of site metadata. Examples include:
  - A calibrated, land survey qualified handheld GPS Unit
  - A digital camera to record images of each ESS location and their surroundings
- Costs to modify ESS collection server software so that observation files conform to the *Clarus* interface standard

For those State transportation agencies that have already connected to *Clarus* or are affiliated with a Regional Demonstration team, awards are available for activities such as

metadata augmentation. For these agencies, a fixed sum grant award of \$10,000 per DOT is available.

### **Matching Share/Cost Sharing**

The Recipient shall provide a non-federal matching contribution based on the total of the grant award. Pursuant to SAFETEA-LU section 5306(c), the Federal share of this grant shall not exceed 80 percent of the total project cost.

For example, if the total project value is \$26,250, the share of federal funds distributed under this award is \$21,000 and the non-federal share incurred by the transportation agency will be \$5,250.

The cost share requirement can be met through direct financial contribution or through “in-kind” services. Proposed cost sharing contributions shall not be derived from other Federal funding sources and must comply with the cost sharing requirements at 49 CFR Part 18.24, available online at <http://www.fhwa.dot.gov/hep/49cfr18.htm>.

### **Eligibility**

To be eligible to receive a grant award under this request for applications, the following qualifications must be met:

1. Applicants must be a State transportation agency.
2. The applicant must have deployed one (1) or more ESS and have established a network to collect the observations. At least one (1) ESS must be “operational” and providing observations to a server. The ESS may be fixed, or mobile as long as they are associated with a government vehicle equipped with AVL.
3. Applicants must allow their collected ESS observations that reside on a server(s) to be accessed and processed by the *Clarus* System and made available to the community at large.

Note: local agencies that have invested in ESS are encouraged to partner with State agencies to have their observations incorporated into the *Clarus* System and achieve the benefits of participation.

### **Instructions to Applicants**

An application for a *Clarus* CIP grant shall consist of two parts: a **technical plan** and a **financial plan**. Together these plans describe the proposed activities to be conducted with this funding. The complete application shall not exceed 15 pages in length, including the technical plan, the financial plan, the title page, index, and tables. A page is defined as one side of an 8½ by 11-inch paper, with a type font no smaller than 12 point.

Applications shall be submitted in an electronic format compatible with Microsoft Office 2000 or in Portable Document Format (PDF). The cover sheet or title page of the application shall include the name, address, and phone number of an individual to whom correspondence and questions about the application may be directed. Any portion of the application or its contents that may contain proprietary information shall be clearly

indicated; otherwise, the application and its contents shall be assumed to be non-proprietary.

### **Application Content**

Those States already participating in the *Clarus* Multi-state Regional Demonstration Concept of Operations or who participated in the Proof-of-Concept demonstration do not need to fill out section 1, Technical Plan, of the application. These agencies should provide section 2, Financial Plan with associated justifications.

All other applicants must submit both an acceptable technical plan and a financial plan that together provide sound evidence that the objectives of this program can successfully be completed in a timely fashion.

Applications should be organized into the following two sections:

#### *Section 1. Technical Plan*

The technical application shall consist of the following sections:

1. Applicant Details:
  - a. Provide the name and location of the contributing transportation agency
  - b. Provide the name and contact information for the key personnel that will be responsible for carrying out the technical aspects of this grant. This may include ITS specialists as well as network administrators.
2. ESS Network Details:
  - a. Provide the number of ESS that will be used in this activity. It is hoped that the entire ESS network will be made available. Provide a graphic map showing the locations of the ESS.
  - b. Provide a sample of a text-based, comma delimited file containing a collection of ESS observations (if available).
  - c. Provide information about polling frequency and update rates throughout the year.
  - d. ESS data can either be “pushed” to the *Clarus* System or the *Clarus* System can “pull” observation collectives from the State ESS server(s) via File Transfer Protocol (FTP). Describe the best method for sharing data with the *Clarus* System and if there are any security or firewall concerns.
3. Implementation Details. Each applicant should describe how they plan to fulfill the objectives of the CIP. Specifically, participation in the CIP includes:
  - a. Permitting the exchange of ESS observations from a transportation agency collection server to the *Clarus* System.
  - b. Assuring network communications and routine collection of ESS within the transportation agency collection server.
  - c. Permitting distribution of ESS observations to the greater community.
  - d. Collecting and organizing metadata associated with each ESS. Metadata fields include geographic and instrument-related data as well as climate information.

- e. Providing feedback on the *Clarus* quality checking reports so that ultimately the quality of the State ESS network improves, which will benefit the entire surface transportation community.
- f. Participating in web-based training to understand *Clarus* System administration and metadata requirements.

### *Section 2. Financial Plan*

Funding from this grant must be used either for *Clarus* System connection activities (e.g., metadata collection and organization, etc.) or to improve ESS network connectivity (e.g., improving ESS collection server hardware, etc.). All applicants shall fill out this section to provide justification for expenditures.

For those agencies that have participated in the *Clarus* Proof-of-Concept demonstration or the Multi-state Regional Demonstration, the maximum amount of the award shall be \$10,000. For all other transportation agencies, the amount of the award will be based upon the number of ESS that are currently deployed and operational and will be made available to the *Clarus* System.

Funding has been broken down into four categories:

1. Site Metadata: expenses associated with travel to or collecting metadata about ESS and its site
2. Climate Metadata: expenses associated with compiling and organizing climate data to support quality checking algorithms for each ESS
3. Equipment: expenses for equipment used in the acquisition of site metadata
4. Software/Hardware: expenses related to necessary hardware or software changes or upgrades which directly support connectivity of the agency ESS network

Provide a sentence or two justifying the need for each item. Then, provide a total amount of funding requested from this request for applications. The maximum amount provided to participants in the *Clarus* Multi-state Regional Demonstration Concept of Operations activity shall not exceed \$10,000, and for all other applicants shall not exceed \$21,000.

Finally, provide an explanation as to how the awardee will satisfy the required 20 percent cost share.

**Reference Material:** The *Clarus* Interface Guide and the *Clarus* Critical Owner Provided Metadata Field documents can be downloaded from the *Clarus* Initiative Website at <http://www.clarusinitiative.org>.

**Authority:** The authority to award a grant for this effort is established in SAFETEA-LU, Section 5308.

Issued on July 6, 2007