

Application for Federal Assistance SF-424

* 1. Type of Submission:

- Preapplication
- Application
- Changed/Corrected Application

* 2. Type of Application:

- New
- Continuation
- Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

* 3. Date Received:

Completed by Grants.gov upon submission.

4. Applicant Identifier:

5a. Federal Entity Identifier:

5b. Federal Award Identifier:

14-DG-11132544-097

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name:

University of Florida Board of Trustees

* b. Employer/Taxpayer Identification Number (EIN/TIN):

596002052

* c. Organizational DUNS:

9696638140000

d. Address:

* Street1:

219 Grinter Hall

Street2:

PO Box 115500

* City:

Gainesville

County/Parish:

Alachua

* State:

FL: Florida

Province:

* Country:

USA: UNITED STATES

* Zip / Postal Code:

32611-5500

e. Organizational Unit:

Department Name:

Office of Research

Division Name:

Division of Sponsored Research

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:

Mr.

* First Name:

Brian

Middle Name:

* Last Name:

Prindle

Suffix:

Title:

Associate Director

Organizational Affiliation:

University of Florida Board of Trustees

* Telephone Number:

352-392-1582

Fax Number:

352-392-4400

* Email:

ufproposals@ufl.edu

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

H: Public/State Controlled Institution of Higher Education

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Forest Service

11. Catalog of Federal Domestic Assistance Number:

10.675

CFDA Title:

Urban and Community Forestry Program

*** 12. Funding Opportunity Number:**

USDA-FS-UCF-01-2014

* Title:

2014 National Urban and Community Forestry Grant Program

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment

Delete Attachment

View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Mobile Tree Failure Prediction for Storm Preparation and Response.

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant

b. Program/Project

Attach an additional list of Program/Project Congressional Districts if needed.

17. Proposed Project:

* a. Start Date:

* b. End Date:

18. Estimated Funding (\$):

* a. Federal	<input type="text" value="281,648.00"/>
* b. Applicant	<input type="text" value="281,718.38"/>
* c. State	<input type="text" value="0.00"/>
* d. Local	<input type="text" value="0.00"/>
* e. Other	<input type="text" value="0.00"/>
* f. Program Income	<input type="text" value="0.00"/>
* g. TOTAL	<input type="text" value="563,366.38"/>

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

- a. This application was made available to the State under the Executive Order 12372 Process for review on
- b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

- Yes
- No

If "Yes", provide explanation and attach

21. *By signing this application, I certify (1) to the statements contained in the list of certifications** and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)

** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.


Authorized Representative:

Prefix: * First Name:
 Middle Name:
 * Last Name:
 Suffix:

* Title:

* Telephone Number: Fax Number:

* Email:

* Signature of Authorized Representative:  Date Signed:

BUDGET INFORMATION - Non-Construction Programs

SECTION A - BUDGET SUMMARY

OMB Number: 4040-0006
Expiration Date: 06/30/2014

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		Total (g)
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	
1. National Urban and Community Forestry Challenge Cost Share Grant	10.675	\$	\$	\$ 281,648.00	\$ 281,718.38	\$ 563,366.38
2.						
3.						
4.						
5. Totals		\$	\$	\$ 281,648.00	\$ 281,718.38	\$ 563,366.38

SECTION C - NON-FEDERAL RESOURCES					
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS	
8.	\$ 145,608.97	\$	\$ 136,109.41	\$ 281,718.38	
9.					
10.					
11.					
12. TOTAL (sum of lines 8-11)	\$ 145,608.97	\$	\$ 136,109.41	\$ 281,718.38	
SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$ 281,648.00	\$ 70,411.92	\$ 70,411.92	\$ 70,411.92	\$ 70,412.24
14. Non-Federal	\$ 281,718.38	\$ 70,429.50	\$ 70,429.50	\$ 70,429.50	\$ 70,429.88
15. TOTAL (sum of lines 13 and 14)	\$ 563,366.38	\$ 140,841.42	\$ 140,841.42	\$ 140,841.42	\$ 140,842.12
SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program	FUTURE FUNDING PERIODS (YEARS)				
	(b) First	(c) Second	(d) Third	(e) Fourth	
16.	\$	\$	\$	\$	
17.					
18.					
19.					
20. TOTAL (sum of lines 16 - 19)	\$	\$	\$	\$	
SECTION F - OTHER BUDGET INFORMATION					
21. Direct Charges: \$245,191	22. Indirect Charges: \$36,457				
23. Remarks: See appendix for negotiated indirect cost rate.					

ABSTRACT

Urban forest managers are limited in their ability to predict tree failure during storms. If funded, we would create an openly available data collection and GIS mapping mobile application to help professionals quantify tree risk in the urban forest. This process would begin with a systematic, nation-wide survey of wind-related tree failure data. Predictive models built from the data would then be incorporated into a tree-failure prediction tool, offering a direct application of the research conducted. Model building is a continual process, which requires additional data to gauge and increase predictive success. To encourage pre-storm data collection, the tree-failure prediction tool will provide users with multiple outputs (i.e. risk maps, i-Tree Eco estimates, and i-Tree Storm inputs) that can maximize the return on investment in an inventory. In the wake of a storm, the data could be easily updated by municipal staff, members of the USDA Forest Service's Urban Forest Strike Teams, or community volunteers. Tree failure data derived from these applications will be made openly available to all researchers and professionals through the International Tree Failure Database, providing the standardized data needed to enhance our understanding of wind-related tree failure. Finally, a "Best Management Practices" guidebook that addresses storm preparation and response will be developed. The guidebook will help urban forest managers utilize the proposed application, as well as other tools currently available, to their fullest potential as part of an integrated storm preparation and response strategy.

PROJECT NARRATIVE

1. Project Description:

Introduction:

A sizable and expanding body of research has documented the wide array of environmental, social, and economic benefits provided by urban trees. These benefits increase as a tree grows in size and may not peak for several decades after planting. Unfortunately, as trees mature the potential risk they pose to nearby targets (should they fail) also increases.

While qualitative risk assessment methods meet the current industry need in the absence of more precise prediction methods, research has shown that individual tree care practitioners and urban resource managers ultimately have the largest say in the conclusions drawn from these assessment tools (Norris 2007). This subjectivity sets the stage for cases of both premature removal and ill-advised retention.

Past attempts to quantify the likelihood of tree failure have largely been isolated as individual site- or region-specific studies with no comprehensive analysis or synthesis of data between projects. We propose a systematic, nationwide survey and review to identify existing inventory/storm response data sets and storm preparation capacity. To gather as much data as possible, this process would include: conducting snowball surveys (i.e., where recipients are encouraged to refer others) of members associated with our partnering organizations [Society of Municipal Arborists (SMA) and International Society of Arboriculture]; soliciting referrals from each state's urban forestry coordinators and regional USDA Forest Service coordinators; working with industry partners who perform inventories (such as the Davey Resource Group), and contacting corresponding authors from publications describing storm-related tree failures.

The results of the review will be used to create a baseline data set for a tree failure prediction model. The model would serve as the backbone of a mobile data collection and online risk mapping application included as part of an updated and comprehensive storm preparation and response toolkit. Core components of this toolkit include:

- An online/mobile tree-failure prediction and risk application [built using OpenTreeMap source code and structured to integrate with Urban Tree Risk Index (UTRI; Barker and Hartel 2012) output] and iTree Storm.
- A post-storm, cross-validation protocol designed to integrate the tree-failure prediction application with existing USDA Forest Service Strike Team (UFST) data collection efforts (or volunteer inspection groups).
- A storm preparation and response best management practice publication
- Application user manuals (pdf and epub)
- Online video training and other promotional/educational materials
- Openly available user data through the International Tree Failure Database (also including data for trees that survive storm events intact)

We acknowledge that the data collected in our initial systematic search will vary in completeness and may not include all species or locations of interest. In these instances, arborists will be able to use the prediction application as a digital version of the ISA Risk Assessment BMP form – providing users with an industry-accepted qualitative rating to meet their current

needs while still generating the standardized data needed to eventually quantify tree failure potential in a current gap.

Tree-Failure-Prediction Application:

The proposed tree-failure prediction application will utilize statistical modeling methods (e.g., logistic regression, generalized additive modeling, generalized linear modeling) and ensemble data mining methods (e.g., Random Forests) – perhaps in combination with principal components and spatial analysis – to predict wind-induced tree failure during storms. This data-driven approach has been successfully used by a co-PI (Guikema) and a major Gulf Coast utility to predict and prepare for hurricane-induced power system failures (Han et al. 2009; Nateghi et al. 2011; Guikema and Quiring 2012). It has also been used in a number of other application areas, such as predicting the effects of utility vegetation management on power system reliability (Guikema et al. 2006) and estimating salinity in the Chesapeake Bay from remotely sensed data (Urquhart et al. 2013). To date, such big data approaches remain underutilized in arboriculture and urban forestry research given their reliance on large data sets and advanced mathematical methods.

Potential variables to include in the predictive model are: species, diameter, tree height, presence/absence of specific defects, soil conditions, rainfall, wind speed, years since last pruning/storm, planting space/tree lawn width, and a failure potential rating from a well-known qualitative rating method (Smiley et al. 2011). The latter would serve as an aggregation of a variety of factors for prediction and, if significant, could allow us to quantify actual differences in failure potential between the various rating levels. A co-PI and a partner (Guikema and Kane) have conducted a preliminary analysis of tree-failure data from a state park in Massachusetts and have shown that models using species, diameter, height, and weather information can yield reliable predictions of the probability of tree failure. This provides a starting point for the work in this proposal.

Once the training model is completed in the R statistical language, it will be integrated and released for use and further testing/cross-validation as a web-based modeling and mapping tool. The modeling tool will also accept tree inventory data uploaded as a flat-file with pre-defined variables. In addition, to increase dissemination of the risk modeling tool, we will modify the open-source inventory tool, OpenTreeMap (OTM), to allow field data collection of the variables required for the model. The outputs of the model (e.g., tables, graphs, and maps) will then be made accessible online (Fig 1.)

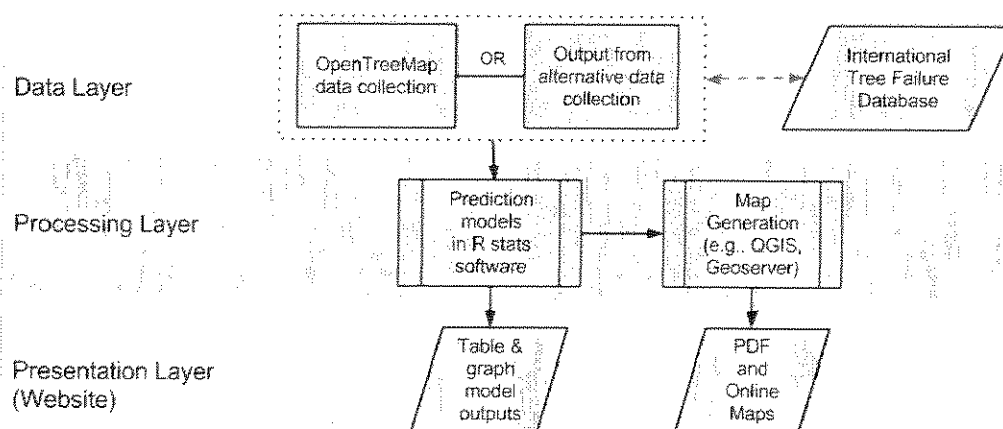


Figure 1. Conceptual design of tree risk prediction applications.

The OTM application will be extended to add additional tree risk assessment capabilities for use by qualified users (e.g., the user group functionality in OTM). This program serves as a base platform for an ongoing series of crowd-sourced urban forestry inventories in Philadelphia, Sacramento, San Diego, San Francisco, and numerous other North American cities. Use of this program continues to grow given past success and start-up support offered by various state/regional forestry agencies. The tree inventory web data collection form of OTM will be modified to be usable on small-screen mobile devices and tablets. Rather than extend the iOS and Android apps, this approach is platform independent so that the application can be used by windows tablet/laptops and other mobile devices with a web browser and cellular internet connection (or internal/external mobile hotspot).

The tree-risk prediction and mapping application proposed would be applied to inventories of urban tree populations of interest. Depending on the user and their available resources, this could be an entire street tree population, a heavily utilized city park, or a key population of trees along main traffic ways (as identified by Urban Tree Risk Index or an internal prioritization method). The outputs of the model would be made accessible online, allowing users to access their results in the field or at the office.

Addressing earlier comments from our initial review, the timeframe for all risk predictions would draw on existing industry guidelines that suggest 1-5 years is an appropriate projection period (ISA TRAQ manual). Our analysis of the data sources identified in the initial survey may help us determine whether these conventions are appropriate, but until then we will abide by current industry standards and norms. We see this as a pressing research need that goes beyond our project. As data enters our system (and as we seek additional funds to address this issue), we may be able to project tree decline over time and extend the time allowed between follow-up inspections. Alternatively, future research may show the value of less expensive remote sensing options (i.e., LIDAR) for extending the time between on-the-ground inspections.

To jump start the collection of additional datasets, three competitive internships will be funded to perform pre-storm screening and application testing in actively managed urban forests. Interns will be selected through our partner organization, the Society of Municipal Arborists as part of their existing urban forestry intern program (which includes a monthly housing allowance). One intern will be hosted by the City of Tampa, FL and the University of South Florida to for initial testing of the risk application on an existing OTM project. The remaining two positions would be open to all municipal forestry programs in the United States, especially those in areas with a history of severe wind events and/or existing OTM programs. As a condition for application and award, the partnering municipalities will commit to conducting one follow-up inspection of their plots, preferably after a storm event.

Storm Preparation and Response Best Management Practice publication/epub:

Storms Over the Urban Forest (Burban and Andresen 1994) is now two decades old, and an updated, comprehensive framework for planning and responding to natural disasters is clearly needed. The best management practices (BMP) format adopted by the International Society of Arboriculture (ISA) and many other organizations provides an effective means of providing a full, yet concise overview of often complex aspects of arboriculture and urban forestry. Typically

fewer than 30 pages [with exceptions like Smiley et al. (2011)], these documents read quickly and provide professionals with a succinct overview the current industry consensus of a given management practice. In addition, they offer a selected list of more in-depth follow-up resources for the various topics covered. The BMP will draw on results from the comprehensive national storm preparation survey, interviews with key agencies and experts, and past published works in its assessment of industry practice. Before printing, all content will be vetted by a panel of peer reviewers with expertise in storm preparation and response.

As noted in our response to a reviewer comments, a pdf of the BMP document will be available for free as part of the online toolkit. Additionally, ISA will offer a print version as part of its existing BMP inventory. This arrangement is modeled after a past OSHA-funded project (a tree worker safety computer training module) and helps ensure the continued maintenance of the document. Like all recent ISA BMPs, the content will appear as a series of continuing education (CEU) articles in *Arborist News* – delivering the content to over 20,000 ISA members (2013 ISA Annual Report) while also giving them incentive to read it (beyond advancing their professional knowledge).

Application user manuals and video training:

The Tree Failure Prediction application will adopt the quick, intuitive functionality that is integral to OTM's success. This ease of use will be further supplemented with clear and concise written documentation, quick reference cards suitable for lamination and field use, and a series of short video instruction sequences featuring basic steps like data entry, report generation, and data exporting. All supporting materials will be available on the storm preparation and response toolkit website

Online database:

Users will be given the option to share data openly with the larger community of urban forestry researchers and practitioners. Data imported as flat files or uploaded from the OTM application to the web tree-prediction model will be openly available to the public and exported annually to the International Tree Failure Database (ITFD). Required data entry fields will depend on the final tree prediction model and the combination of factors that offers the greatest predictive success. However, users will have the option to add other data pertinent to the ITFD and/or the ISA Risk Assessment BMP.

2. Originality and Innovation:

This project offers a dynamic approach to advancing the science and practice of tree risk assessment, storm preparation, and storm response. By actively collecting user records (with permission) we will have the standardized data needed to regularly refine our failure and storm prediction models. Past and existing repositories of tree-failure data continue to look for ways to maintain long-term interest and often struggle to acquire data from the most important catastrophic storm events. Moreover, these databases only contain data on failed trees, omitting a comparison population of trees that did not fail during a storm. This additional information is required for the construction of a robust statistical model.

When cleanup efforts for a major storm are underway in earnest, most municipalities cannot justify the additional effort required to collect data on failed trees, let alone trees that have

weathered the event intact. The short-term cost of time and personnel far outweighs the promise of future scientific gains. In the weeks since the NUCFAC interview, the project PIs had a lengthy conversation with one of our partners, Dudley Hartel, to identify exactly how our project could integrate with the existing and future efforts of the UFSTs (which were established to address the limitations of municipalities coping with a severe weather event). This discussion made it abundantly clear that the UFSTs could be a tremendous source of post-storm data. Arriving after the frenzy of the initial cleanup efforts (where the sole focus is quickly tallying debris and clearing roads), the teams complete a 1-2 minute, 360-degree ground assessment of trees found in a storm's path – collecting data on damaged and intact trees and noting which injuries warrant tree removal. If a city adopted the OTM functionality of our toolkit, a UFST could gain access to pre-storm inventory data by merely creating an account, obtaining the appropriate permission levels to view and append data, and downloading the city's app on their mobile device¹. Mr. Hartel and other leaders within the strike team networks will serve on our advisory committee to assure the final deliverables match their specific needs.

Beyond inputs from the UFSTs, OTM is a program that fully embraces crowd-sourcing (i.e. the use of public volunteers to collect and generate data). It is feasible that engaged community members could be tapped for post-storm data collection. Dr. Gary Johnson at the University of Minnesota is already using this approach to gather storm-related failure data in Minneapolis-St. Paul. Beyond urban forestry, engineers have started to use volunteers to remotely survey buildings in areas damaged by earthquakes, hurricanes, and tsunamis. Similarly, researchers have successfully drawn on the birding community to assess avian populations with the Cornell University eBird program (<http://ebird.org/content/ebird/>). This data may not always be perfect, but leveraging larger numbers of volunteers who provide valid data can be a significant benefit when combined with appropriate statistical models that can account for greater variance. In most of the cases above, participants are required to complete a level of formal training sufficient to ensure meaningful data is collected. This would be the model recommended for our partnering communities.

While the tree-failure-prediction application produced as part of this proposal would stand on its own, it will be intentionally designed to dovetail with projects previously funded by NUCFAC. For example, our application would provide the additional assessment recommended for areas identified as priority risk zones by the recently developed Urban Tree Risk Index (UTRI; Barker and Hartel 2012). Similarly, pre-storm data collection with our application (utilizing the full OTM functionality) will provide users with:

- Summary reports and maps documenting risk and/or failure predictions for inventoried areas
- i-Tree Eco ecosystem services estimates
- i-Tree Storm pre-storm data (i.e. stem counts and diameters)

These connections, while adding complexity and cost to the proposed project, serve to maximize NUCFAC's overall return on investments made both past and present. This integration also

¹ As with the initial data collection efforts, post-storm sampling would accept formatted data from data collection methods beyond OpenTreeMap.

provides municipal users with the maximum return on their inventorying investment – a critical strategy for encouraging professional adoption of our product and encouraging pre-storm data collection.

The creation of a BMP will help link the various urban forestry storm tools noted above and place them in the greater context of disaster preparation and response. By partnering with the ISA, this BMP will undergo initial and continual peer-review, ensuring the document remains relevant for years or even decades to come.

3. Literature Review:

The majority of tree failures occur during extreme weather events (Matheny and Clark 2009) making tree risk assessment a core component of any storm preparation and response plan. Unfortunately, determining whether a tree poses an unacceptable risk to people and property presents a formidable challenge. Research voids have made it difficult to provide practitioners who maintain urban vegetation with reliable and validated approaches to quantify tree risk. Current industry standards and best management practices rely heavily on qualitative assessments and an individual's professional experience (ANSI 2011; Smiley et al. 2011). While these methods meet a current industry need, research has shown that rating biases for individual tree care practitioners and urban resource managers ultimately have the largest say in the somewhat subjective conclusions drawn from these qualitative assessment tools (Norris 2007). This reflects a more general issue in the risk analysis field where qualitative approaches, while useful, are recognized to have limitations (Cox 2008, 2009).

Conventional approaches to tree-risk assessment involve evaluating the target and the tree in an attempt to assess the likelihood of failure, the size of the defective part, the likelihood of damage and the target's value. Although some aspects of this approach are straightforward (e.g., measuring the diameter of a defective branch and the value of a car parked under the branch), assessing the likelihood of failure is not.

There are few rigorous empirical data to describe thresholds of defects (e.g., decay) that may predispose trees to failure. Attempts to assess the effect of decay on the strength of trunks and branches have been shown to be of questionable value (Kane and Ryan 2003; Kane and Ryan 2004). In addition, there are few data to quantify the breaking strength of typical urban trees (Kane and Clouston 2008). While mechanistic models to predict the critical wind speed at which plantation-grown trees (Gardiner et al. 2008) are supported by empirical data that describe important parameters, (e.g., breaking strength of trunks, drag coefficients, natural frequencies, and damping ratios), equivalent data for open-grown trees of decurrent form are sparse (e.g., Kane et al. 2008; Kane and James 2011). Without such parameters, it is impossible to develop mechanistic models to predict failure. Sophisticated assessment approaches, such as static pull tests (Brudi and van Wassanaer 2002), attempt to address the basic mechanics necessary to predict failure. However, they have never been experimentally validated. In other disciplines where empirical parameters are sparse and structural analysis is complex, statistical approaches to predicting failure are useful (Reed 2009; Han et al. 2009; Yamijala 2009).

4. Project planning and timeline:

Year	Task	UFL PI and Staff	UFL PhD Student	JHU PI	JHU PhD Student ¹	UFL Bio. Scientist	USF PI and Staff
1-3	Tree Failure Prediction/Mapping Application						
1	• Data gathering and synthesis	X	X*	X	n/a	X	
2	• Model Development			X	X*		
2-3	• Application Development			X	X		X*
3	• Application Testing and Release (w/ SMA interns)	X*					X
	Post-storm Data Collection Protocol						
2	• Sampling protocol	X*	X			X	
2	• Documentation	X*	X			X	
	Application User Manuals and Video Training						
2	Manual Development and Review	X*	X				X
2-3	• Video Development and Review	X*	X				X
3	• Manual Layout and Release	X*	X				X
3	• Video Production and Release	X*	X				X
	Storm Preparation and Response BMP						
1	• Initial Drafting and Review	X*	X			X	
2	• Layout and Release (w/ ISA)	X				X	
	Online Toolkit and Database						
1-3	Website Development and other deliverables	X	X	X	X	X	X*

*Task Lead

¹ Funded for Years 2 and 3

5. Products:

Expected final products linked to the various project components include:

1. **Tree-Failure Prediction Application:** a) The mobile web application itself; b) User manual/support documentation pdf/epub; c) User manual/support documentation video vignettes (5 to 10 sequences less than 3-minutes in length); d) Peer reviewed journal

article(s) linked to underlying model; e) 1-2 Scientific Conference presentations at Regional/National Level (featuring works of graduate students)

2. **Post-storm cross-validation protocol:** a) The protocol itself and b) User guide and support documentation video vignettes to be distributed to strike teams/volunteer groups.
3. **Storm Preparation and Response BMP:** a) The document itself (freely available online as a pdf and for sale in hardcopy from ISA); b) A series of ISA continuing Education Unit (CEU) feature articles (2-3) summarizing sections of the BMP and their associated self-assessment quizzes.
4. **Online toolkit and database:** a) A home webpage with links to all publications, tools, and presentations listed above; b) On-line, open-access database housing user-provided data (ITFD); c) Trade publication feature article featuring the completed toolkit; d) General press release featuring completed toolkit; and e) 1 Conference presentation and 1 webinar presentation featuring completed toolkit
5. **Intern Program:** a) Three intern experiences for undergraduate students; b) Baseline data for future model testing; c) Post-storm data (weather dependent) for model cross-validation.
6. **Project as a whole:** Two fully-trained Ph.D. researchers in urban forestry/risk analysis

6. Collaboration:

1. **Society of Municipal Arborists:** a) Identification of inventory/storm response data; b) Provide feedback on project advisory committee; c) Intern program promotion, screening, and matching; d) Intern program mid-term and post evaluation; and e) Promotion of toolkit.
2. **Urban Forestry South:** a) Identification of inventory/storm response data; b) Provide feedback on project advisory committee; c) Potential Funding for FYs 2014 and 2015 to support enhancements unknown at the time of NUCFAC application; and d) Hosting webinar and promotion of toolkit.
3. **International Tree-Failure Database:** a) Hosting data and b) Provide feedback on project advisory committee.
4. **International Society of Arboriculture:** a) Identification of inventory/storm response data; b) Provide feedback on project advisory committee; c) Publishing services for BMP; d) Initial BMP printing; and e) Promotion of toolkit.
5. **Stakeholders (Urban Foresters and Natural Resource Managers):** a) Supply data for model and b) Provide feedback on project advisory committee.

7. National Distribution/Technology Transfer of Your Findings:

The proposed application and BMP are technology transfer in its purest sense: original survey and tree failure modeling research directly adapted to field-ready resources for storm preparation and response. As noted in Section 5 (e.g., articles in *City Trees* and *Arborist News*,

conference presentations, press releases, etc.) these two tools will be distributed nationally using a variety of media formats and distribution networks. The BMP will benefit from the additional exposure that comes with being released as a series of CEU articles in *Arborist News*. Given their prominent location in the magazine and the associated quizzes for certification credit, CEU articles have the greatest readership in *Arborist News*. CEU articles are one of the most common sources of continuing education credits processed by ISA. With over 20,000 ISA members receiving *Arborist News*, no other distribution effort in the industry can compare.

The main website for the toolkit and its various deliverables will be housed on a dedicated project website hosted by the University of South Florida. We will provide all partnering organization and NUCFAC a link and synopsis of the project for posting on their associated webpages.

Additional exposure will be provided by the partnering organizations through their associated channels of communication, national conference presentations made by the principal investigators and graduate students, and a webinar hosted by Urban Forestry South.

8. Project Evaluation:

Our goal with this project is to provide urban forest managers with a useful set of tools for increasing urban forest resiliency in the face of more frequent storm events. Project evaluation is an ongoing process. Our proposal went through several iterations as we contacted urban foresters and natural resource managers, assessed their needs and technological requirements, and compared these findings to our existing plan of research. An example of this is our decision to adopt web forms instead of using iOS and Android applications (see Section 1).

As our letters of support show, there is significant interest from a broad range of organizations in this work. However, for our project to truly be deemed successful, the various tools and resources produced must actually be adopted by professional tree managers. Several metrics will be employed to quantify project use. These include: 1.) Web hits/Google Analytics for on-line toolkit and its associated content; 2.) Data added to on-line database; 3.) CEU quizzes submitted for *Arborist News* articles; 4.) Attendance records, CEU requests, and program evaluations associated with webinars/seminars; 5.) Post-program audience surveys at appropriate conference venues to assess pre-program knowledge of project (i.e., promotional effort success), interest in deliverables, and perceived barriers preventing implementation.

Other criteria not necessarily linked to usage, but which serve as an important assessment of the quality of the work include: 1.) Diagnostics associated with the model itself (e.g., cross-validation prediction error); 2.) Bug reports for prediction application; 3.) Acceptance of peer-reviewed publications and their associated citations; and 4.) Intern/sponsoring municipality evaluations.

Project success will also be judged on our ability to sustain and grow our efforts with additional partners and funding sources. If funded by NUCFAC, we are confident we will have the additional leverage needed to solicit new partners in industry and elsewhere. Just making it to this final round of assessment has opened dialog between members of the Davey Resource Group (a major contractor for tree inventories). Partnering with this group alone could help establish our tools in multiple communities across the United States and Canada.

Beyond partnerships, we will actively pursue funding to enhance the functionality of our application. We consider wind-induced events in our current proposal, but see a logical expansion of the methods to ice- and snowstorms. We plan to explore funding opportunities that may be offered through the Federal Emergency Management Agency (FEMA), The United States Council of Mayors, and other sources. We have also considered approaching insurance companies with this idea.

Additionally, while the project currently has a municipal forestry focus, there is opportunity to further expand functionality to address the needs of utility vegetation management (UVM). As mentioned in Section 1, past efforts by a member of our team have already shown the effectiveness of statistical modeling when assessing storm-related power outages.

9. Experience/Personnel/Adequacy of Resources:

The core research and outreach group (including partner Brian Kane) behind this effort includes investigators from four universities located across the entire East Coast (e.g., New England, the Mid-Atlantic, and South). Beyond this geographic diversity and the benefits/connections it brings, the team includes researchers from a wide range of disciplines and expertise (i.e., arboriculture, urban forestry, engineering, technology transfer, risk analysis, statistics, geographic information systems, and programming).

The unique skillsets offered by each of the research team members and the resources at their disposal are listed in detail as part of the proposal appendix (see expanded synopsis and CVs in Appendix below).

Beyond this team, we have a strong and growing list of partners ready to make real contributions to project. Urban foresters from major urban forestry programs and international tree care companies (i.e. Bartlett Tree Experts and The Davey Tree Expert Company) have embraced this idea and are willing to contribute time and data to the effort. If funded, the list would grow as several municipal foresters have shown strong interest, but given existing partnerships on other proposals, cannot offer written support. The combined experience offered by these professionals in dealing with pre-storm preparation and post-storm cleanup will be a tremendous asset to the project and those that benefit from its works.

APPENDIX

Budget Justification (Federal Financial Froms Submitted Separately)

Personnel including Fringe Benefits:

The PI, Dr. Andrew Koeser, will devote 8% time to the project over the three-year period (overseeing the grant, development of its deliverables, and his particular components as noted above). Dr. Koeser's Salary of \$20,279 (fringe rate 23.6%) will be provided as cost share from UFL.

Drew McLean, a Biological Scientist at UFL will contribute 9 months of his time towards this project and Dr. Andrew Koeser in the initial data collection/synthesis, technical writing, and dissemination efforts. He will lead the efforts to link the tree prediction model with the i-Tree Storm Utility. His total budget of \$24,000 (fringe rate 45.5%) will be requested from NUCFAC.

A Ph.D. student at UFL will lead efforts to assess the state of storm response efforts/data in the United States as part of a larger assessment of urban forestry capacity. This student will assist with the development of deliverables as noted in the proposal (including a conference presentation of the findings of the initial survey), and seek out additional funding sources to expand the functionality of this effort. His/her budget of \$120,000 covers salary and tuition over the three-year period.

Travel: UFL is requesting \$4,000 for Travel to cover the conference costs and travel to collect post storm data generated during the project period.

Equipment: No equipment costs included.

Supplies: No supply costs included.

Contractual:

Includes \$7,000 for contractual services to the Society of Municipal Arborists for their efforts promoting, placing, and reporting the intern program. The remainder of this balance (\$245,190) is tied to sub-contracts to **JHU** and **USF**.

Dr. Seth Guikema, an assistant professor at **Johns Hopkins University** is requesting \$26,987 in salary (2.5 months) with a fringe rate of 35.5% for the duration of the 3-year project. Dr. Guikema will assist in data collation and data error checking in year 1. In years 2 and 3, Dr. Guikema will oversee the graduate student working on the tree prediction model, contributing to the work and its eventual peer-review publication.

A Ph.D. Student at **JHU** will lead the modeling efforts and the associated peer review publications, which will follow. Additionally, this student will present findings at an academic conference. Student salary for 2 years is \$51,510. The request to the Forest Service of \$22,824 to cover 20% of tuition and fees garners an additional cost share of \$76,059 for the remaining 80%.

JHU is requesting \$4,500 for Travel to cover the conference costs and travel to collect post storm data generated during the project period.

Dr. Shawn Landry is the PI for USF and will oversee all aspects of the project. He is the Program Director of the Florida Center for Community Design and Research (FCCDR) where all of the USF personnel work. He will collaborate with the consortium of team members, develop project schedules for USF work efforts, oversee USF work efforts, oversee financial management of USF work efforts, and assist with product dissemination. Total project hours: 80, Hourly rate: \$38.90, Fringe rate: 58%. Bridgette Froeschke is a Research Assistant Professor (<http://www.fccdr.usf.edu/bio/143>) with the FCCDR. Dr. Froeschke has expertise in quantitative spatial and temporal modeling using the R Stats package and is currently implementing a project to connect a web interface to an R-based modeling application. She will assist with the configuration of the risk and debris models within R Stats for connection to the website interfaces. Total project hours: 40, Hourly rate: \$31.13, Fringe rate: 41%.

Rich Hammond is the Geographic Information Systems for the FCCDR. Mr. Hammond will assist with the design and implementation of all geographic data management systems during years 2 and 3. He is experienced with managing proprietary (e.g., ArcGIS) and open-source (e.g., Geoserver) GIS server systems. Total project hours: 160, Hourly rate: \$26.65, Fringe rate: 41%.

Jason Scolaro is the Database Applications Team Leader for the FCCDR. Mr. Scolaro has many years of experience as a database systems engineer and data manager and application developer. He will assist with the design and implementation of the online Tree-Failure-Prediction/Mapping Applications during years 2 and 3, and the design and implementation of the Online Toolkit and Database in years one-three. Total project hours: 220, Hourly rate: \$29.09, Fringe rate: 63%.

Keith Bornhorst is the Web Development Team Leader for the FCCDR. Mr. Bornhorst is an experienced web designer and programmer, with direct experience implementing the OpenTreeMap website and iOS app for the TampaTreeMap.org project. He will assist with all aspects of design and development of the online Tree-Failure-Prediction/Mapping Applications during years 2 and 3, and the Online Toolkit and Database in years one-three. Total project hours: 200, Hourly rate: \$27.40, Fringe rate: 52%.

USF is requesting \$2,000 to cover conference travel.

Johns Hopkins University secured a reduced IDC rate of 25%. The remaining balance of \$35,663 from the federal agreed cost rate (62%) is applied as cost share. A similar rate was negotiated with the University of South Florida. The difference in balance (\$8,187) from the federal agreed cost rate of 49.5% is applied as cost share.

Construction: No construction costs included.

Other: Includes as federal request for \$18,000 for the three interns. Each will be funded for 10 weeks at rate of \$12/hr. Additionally, interns will receive a \$400 housing stipend (per month for 3 months) if relocation is required to participate.

Cost share includes \$10,000 from the International Society of Arboriculture for staff and volunteer (review) time associated with the editing, illustration, and layout of the Best Management Practice book. Additionally \$5,000 is provided for printing of the BMP. Another \$1,200 in cost share is provided by Dr. Larry Costello (ITFD Partner) for time spent on the project.

Indirect Costs: Indirect for all direct charges requested by the University of Florida – GCREC (lead PI) are \$46,707

Expanded Literature Review Lists

Storm Damage Characterization/Modeling:

- Cutler, D. F., P. E. Gasson, and M. C. Farmer. 1990. The wind blow tree survey: analysis of results. *Arboricultural Journal*. 14:265–286.
- Duryea, Mary L. 1997. Wind and trees: Surveys of tree damage in the Florida panhandle after hurricanes Erin and Opal. *School of Forest Resources and Conservation, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida*. <http://edis.ifas.ufl.edu+FR010>.
- Duryea, Mary L., G. M. Blakeslee, W. G. Hubbard, and R. A. Vasquez. 1996. Wind and trees: A survey of homeowners after hurricane Andrew. *Journal of Arboriculture* 22: 44–50.
- Duryea, Mary L., Eliana Kampf, Ramon C. Littel, and Carlos D. Rodriguez-Pedraza. 2007. Hurricanes and the urban forest: II effects on tropical and subtropical tree species. *Arboriculture & Urban Forestry* 33:2: 98–112.
- Escobedo, Francisco J., Christopher J. Luley, Jerry Bond, Christina Staudhammer, and Charles Bartel. N.d. Hurricane debris and damage assessment for Florida urban forests. *Arboriculture & Urban Forestry* 35:2 100–106.
- Foster, David R. 1988. Species and stand response to catastrophic wind in central New England, U.S.A. *Journal of Ecology* 76:1:135–151.
- Francis, John K. 2000. Comparison of hurricane damage to several species of urban trees in San Juan, Puerto Rico. *Journal of Arboriculture* 26:4:189–196.
- Gibbs, J. N., and B. J. W. Greig. 1990. Survey of parkland trees after the Great Storm of October 16 1987. *Arboricultural Journal* 14: 321–347.
- Guikema, Seth D. 2009. Natural disaster risk analysis for critical infrastructure systems: An approach based on statistical learning theory. *Reliability Engineering & System Safety* 94:4 (April 2009):855–860. doi:10.1016/j.res.2008.09.003.
- Guikema, Seth D., Steven M. Quiring, and Seung-Ryong Han. 2010. Prestorm estimation of hurricane damage to electric power distribution systems. *Risk Analysis* 30:12: 1744–1752. doi:10.1111/j.1539-6924.2010.01510.x.
- Han, Seung-Ryong, Seth D. Guikema, and Steven M. Quiring. 2009. Improving the predictive accuracy of hurricane power outage forecasts using generalized additive models. *Risk Analysis* 29:10: 1443–1453. doi:10.1111/j.1539-6924.2009.01280.x.

ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee- 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.
10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.
19. Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. 7104) which prohibits grant award recipients or a sub-recipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

<p>* SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL</p> <p><i>[Handwritten Signature]</i></p> <p>Completed on submission to Grants.gov</p>	<p>* TITLE</p> <p>Signing Official Pre-Award Services</p>
<p>* APPLICANT ORGANIZATION</p> <p>University of Florida Board of Trustees</p>	<p>* DATE SUBMITTED</p> <p>Completed on submission to Grants.gov</p>

1/14/2014

U.S. DEPARTMENT OF AGRICULTURE

Certification Regarding Debarment, Suspension, and Other
Responsibility Matters - Primary Covered Transactions

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' responsibilities. The regulations were published as Part IV of the January 30, 1989 Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed covered transaction.

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
 - (a) are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) have not within a three-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

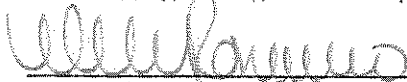
University of Florida

Organization Name

PR/Award Number or Project Name

Michele Romano, Signing Official Pre-Award Services

Name(s) and Title(s) of Authorized Representative(s)



Signature(s)



Date

**CERTIFICATION REGARDING
DRUG-FREE WORKPLACE REQUIREMENTS (GRANTS)
ALTERNATIVE I - FOR GRANTEEES OTHER THAN INDIVIDUALS**

This certification is required by the regulations implementing Sections 5151-5160, of the Drug-Free Workplace Act of 1988 (Pub. L. 100-690, Title V, Subtitle D; 41 U.S.C. 701 et seq.), 7 CFR Part 3017, Subpart F, Section 3017.600, Purpose. The January 31, 1989, regulations were amended and published as Part II of the MAY 25, 1990, Federal Register (pages 21681-21691). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the grant.

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)

Alternative I

- A. The grantee certifies that it will or will continue to provide a drug-free workplace by:
- (a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;
 - (b) Establishing an ongoing drug-free awareness program to inform employees about --
 - (1) The dangers of drug abuse in the workplace;
 - (2) The grantee's policy of maintaining a drug-free workplace;
 - (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
 - (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
 - (c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);
 - (d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will --
 - (1) Abide by the terms of the statement; and
 - (2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;
 - (e) Notify the agency in writing, within 10 calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position, title, to every grant officer on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;
 - (1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or
 - (2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;
 - (g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e) and (f).

B. The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (Street address, city, county, State, zip code)

Check if there are workplaces on file that are not identified here.

University of Florida

Organization Name

Award Number or Project Name

Michele Romano, Signing Official Pre-Award Services

Name and Title of Authorized Representative


Signature

7/14/2014
Date

Instructions for Certification

1. By signing and submitting this form, the grantee is providing the certification set out on pages 1 and 2.
2. The certification set out on pages 1 and 2 is a material representation of fact upon which reliance is placed when the agency awards the grant. If it is later determined that the grantee knowingly rendered a false certification, or otherwise violates the requirements of the Drug-Free Workplace Act, the agency, in addition to any other remedies available to the Federal Government, may take action authorized under the Drug-Free Workplace Act.
3. Workplaces under grants, for grantees other than individuals, need not be identified on the certification. If know, they may be identified in the grant application. If the grantee does not identify the workplaces at the time of application, or upon award, if there is no application, the grantee must keep the identity of the workplace(s) on file in its office and make the information available for Federal inspection. Failure to identify all known workplaces constitutes a violation of the grantee's drug-free workplace requirements.
4. Workplace identifications must include the actual address of buildings (or parts of buildings) or other sites where work under the grant takes place. Categorical descriptions may be used (e.g., all vehicles of a mass transit authority or State highway department while in operation, State employees in each local unemployment office, performers in concert halls or radio studios).
5. If the workplace identified to the agency changes during the performance of the grant, the grantee shall inform the agency of the change(s), if it previously identified the workplaces in question (see paragraph three).
6. Definitions of terms in the Nonprocurement Suspension and Debarment common rule and Drug-Free Workplace common rule apply to this certification. Grantees' attention is called, in particular, to the following definitions from these rules:

"Controlled substance" means a controlled substance in Schedules I through V of the Controlled Substances Act (21 U.S.C. 812) and as further defined by regulation (21 CFR 1308.11 through 1308.15);

"Conviction" means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes;

"Criminal drug statute" means a Federal or non-Federal criminal statute involving the manufacture, distribution, dispensing, use, or possession of any controlled substance;

"Employee" means the employee of a grantee directly engaged in the performance of work under a grant, including: (i) all "direct charge" employees; (ii) all "indirect charge" employees unless their impact or involvement is insignificant to the performance of the grant; and, (iii) temporary personnel and consultants who are directly engaged in the performance of work under the grant and who are on the grantee's payroll. This definition does not include workers not on the payroll of the grantee (e.g., volunteers, even if sued to meet a matching requirement; consultants or independent contractors not on the grantee's payroll; or employees of subrecipients or subcontractors in covered workplaces).


DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352

Approved by OMB

0348-0046

(See reverse for public burden disclosure.)

1. Type of Federal Action: <input type="checkbox"/> a. contract <input type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. Report Type: <input type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change For Material Change Only: year _____ quarter _____ date of last report _____
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if known: Congressional District, if known: FL-003	5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime: University of Florida 219 Grinter Hall, PO Box 115500 Gainesville, FL 32611-5500 Congressional District, if known: FL-003	
6. Federal Department/Agency: NA	7. Federal Program Name/Description: NA CFDA Number, if applicable: NA	
8. Federal Action Number, if known: NA	9. Award Amount, if known: \$ NA	
10. a. Name and Address of Lobbying Registrant (if individual, last name, first name, MI): NA	b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI): NA	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: <u></u> Print Name: <u>Michele Romano</u> Title: <u>Signing Official Pre-Award Services</u> Telephone No.: <u>352-392-1582</u> Date: _____	
Federal Use Only:		Authorized for Local Reproduction Standard Form LLL (Rev. 7-97)

* uf does not lobby.

AD-3030

U.S. DEPARTMENT OF AGRICULTURE

**REPRESENTATIONS REGARDING FELONY CONVICTION
AND TAX DELINQUENT STATUS FOR CORPORATE APPLICANTS**

Note: You only need to complete this form if you are a corporation. A corporation includes, but is not limited to, any entity that has filed articles of incorporation in one of the 50 States, the District of Columbia, or the various territories of the United States including American Samoa, Federated States of Micronesia, Guam, Midway Islands, Northern Mariana Islands, Puerto Rico, Republic of Palau, Republic of the Marshall Islands, or the U.S. Virgin Islands. Corporations include both for profit and non-profit entities.

The following statement is made in accordance with the Privacy Act of 1974 (5 U.S.C. 552(a), as amended). The authority for requesting the following information for USDA Agencies and staff offices is in §738 and 739 of the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2012, P.L. 112-55, as amended and/or subsequently enacted. The information will be used to confirm applicant status concerning entity conviction of a felony criminal violation, and/or unpaid Federal tax liability status.


According to the Paperwork Reduction Act of 1985 an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0505-0025. The time required to complete this information collection is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

1. APPLICANT'S NAME University of Florida	2. APPLICANT'S ADDRESS (Including Zip Code) 219 Grinter Hall, PO Box 115500 Gainesville, FL 32611-5500	3. TAX ID NO. (Last 4 digits) 2052
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- 4A. Has the Applicant been convicted of a felony criminal violation under Federal or State law in the 24 months preceding the date of application? YES NO
- 4B. Has any officer or agent of Applicant been convicted of a felony criminal violation for actions taken on behalf of Applicant under Federal or State law in the 24 months preceding the date of application? YES NO
- 4C. Does the Applicant have any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability? YES NO

Providing the requested information is voluntary. However, failure to furnish the requested information will make the applicant ineligible to enter into a contract, memorandum of understanding, grant, loan, loan guarantee, or cooperative agreement with USDA.

PART B – SIGNATURE

5A. APPLICANT'S SIGNATURE (BY) 	5B. TITLE/RELATIONSHIP OF THE INDIVIDUAL IF SIGNING IN A REPRESENTATIVE CAPACITY Michele Romano, Signing Official Pre-Award Services	5C. DATE SIGNED (MM-DD-YYYY) 7/14/2014
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