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COVER SHEET

2010 U.S. Forest Service

National Urban And Community Forestry
Challenge Cost-Share Grant Program

INNOVATION GRANT CATEGORY:

ENERGY AND URBAN FORESTS
CLIMATE CHANGE AND URBAN FORESTS
X **PUBLIC HEALTH AND URBAN FORESTS**
GREEN INFRASTRUCTURE ASSESSMENT

PROJECT CONTACT NAME, ORGANIZATION, ADDRESS, PHONE NUMBER, FAX NUMBER AND EMAIL ADDRESS:

Kathleen L. Wolf, Ph.D.
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PROJECT TITLE:
URBAN FOREST HUMAN HEALTH AND WELL-BEING BENEFITS: TRANSLATING EVIDENCE TO ECONOMIC VALUATION MODELS

FUNDING REQUEST AND MATCH:

REQUESTED: $136,385 + MATCHING: $136,525 = TOTAL PROJECT: $272,910

OUTREACH:
Note: if one checks "Yes" in either of the boxes below, the applicant will be required to describe either how the plan to outreach to the identified population and/or provide a description of your minority or underserved organization.

Is this project being developed to reach a minority or underserved population? ___Yes _X__No

Is this pre-proposal being submitted by a minority or underserved population (owned/operated/directed) business, organization or college/university? ___Yes _X__No

PROJECT PARTNERS:

NAME: **Stephen C. Grado** LETTER OF SUPPORT INCLUDED: **YES** NO
NAME OF ORGANIZATION: **Mississippi State University**
MAILING ADDRESS 1: **Department of Forestry**
MAILING ADDRESS 2: **Box 9681**
CITY: STATE: ZIP CODE: **Mississippi State, MS 39762-9681**
PHONE: **662-325-2792** E-MAIL: **sgrado@cfr.msstate.edu**

ABSTRACT: Summarize the proposed project in 200 words or less.

Anecdotes and stories recount how urban trees and forests contribute to human health and well-being (HHWB). A broad base of scientific evidence also describes such benefits. Yet the studies are distributed widely across disciplines and publications, making them difficult to access. A USFS supported team at the UW is preparing a compendium of the studies, with summaries to be available on the web in 2010. The research compilation could serve as the foundation for development of "i-Tree Community" to provide a practical analysis tool. This cost-share project would move the literature review one more step in development of the i-Tree model. Our project approach includes a multidisciplinary collaborative team to translate the evidence of HHWB benefits to economic valuation. The team will prepare a comprehensive framework of valuation approaches and outcomes, demonstrating why communities should invest in urban forestry to enhance social benefits. An expert panel will be recruited to review and revise the core work of the project team. This project will generate the economic basis of an i-Tree Community tool, expanding the current environmental benefit focus of i-Tree to include an expanded range of urban forest benefits, and build better support for urban forestry across U.S. cities.

PROPOSAL PACKAGE:

Letter of Intent

1. Category Application
2. Scope and Applicability/Justification – Proposal Objectives
3. Literature Review (in narrative and references list in Appendix)
4. Organization/Methodology
5. Product
6. Collaboration
7. National Distribution/Technology Transfer of Findings
8. Project Evaluation
9. Experience/Personnel/Adequacy of Resources (Appendix)
10. Budget and Funding

Appendices

A. Detailed Budget
B. Budget Narrative (including indirect cost rate agreement)
C. List of Literature
D. Partners/Collaborators
E. SF 424, SF424a, SF424b (with DUNS number)

December 14, 2009

UNIVERSITY of WASHINGTON
School of Forest Resources

To the National Urban and Community Forestry Council:

This letter of intent summarizes a project submitted for funding in the Public Health and Urban Forests Category of the 2010 Challenge Cost-Share Grant Program, entitled, **Urban Forest Human Health and Well-Being Benefits: Translating Evidence to Economic Valuation Models**.

Challenge: The i-Tree analysis suite does not yet include human health and well being (HHWB) benefits analysis. Nearly four decades of studies have established multiple domains of such benefits. Economic valuation of the evidence will enable development of "i-Tree Community," and generate broader stakeholder support for urban forestry in U.S. cities.

General Methods: A bibliographic review of HHWB benefits is underway, and will provide the platform of research evidence. This project will build on that knowledge set to generate the economic valuation algorithms as the PIs work from their respective expertise, and assemble an expert panel to review and confirm results.

Expected Outcomes: A comprehensive approach to economic valuation of HHWB benefits will provide the urban forestry professional and management community with another set of tools to demonstrate why trees are integral elements of urban systems. This knowledge will appeal to stakeholder groups that have not traditionally been included as partners in urban forestry efforts (e.g., public health, human services, therapy and healing facilities).

Partners: The applicant team is a unique partnership of science disciplines and institutions, one that has taken years to come together. In addition to our collaborative team, we will recruit unique panel of science experts to construct and review the HHWB benefits valuation models.

Post Project Information: The HHWB economic valuation models will be prepared for peer reviewed publication, to validate the work in the urban natural resources and economics disciplines. Results will then be translated to products for public policy and community use.

Technology Transfer: The valuation results will be prepared for practical applications in appropriate graphic and text formats as a series of briefing sheets or brochures. All content will be Web accessible, accompanied by national print and internet notification of their availability. We will work with USFS research labs to begin development of i-Tree Community.

Approximate Cost: We request $136,385. All funds will be matched by non-federal sources.

Sincerely,

Kathleen L. Wolf, PhD,
Research Social Scientist
University of Washington

Stephen C. Grado, Ph.D.
Professor of Forestry
Mississippi State University

URBAN FOREST HUMAN HEALTH AND WELL-BEING BENEFITS: TRANSLATING EVIDENCE TO ECONOMIC VALUATION MODELS

Kathleen L. Wolf, University of Washington (UW); kwolf@uw.edu
Stephen C. Grado, Mississippi State University (MSU); sgrado@cfr.msstate.edu

ABSTRACT

Anecdotes and stories recount how urban trees and forests contribute to human health and well-being (HHWB). A broad base of scientific evidence also describes such benefits. Yet the studies are distributed widely across disciplines and publications, making them difficult to access. A USFS supported team at the UW is preparing a compendium of the studies, with summaries to be available on the web in 2010. The research compilation could serve as the foundation for development of "i-Tree Community" to provide a practical analysis tool. This cost-share project would move the literature review one more step in development of the i-Tree model. Our project approach includes a multidisciplinary collaborative team to translate the evidence of HHWB benefits to economic valuation. The team will prepare a comprehensive framework of valuation approaches and outcomes, demonstrating why communities should invest in urban forestry to enhance social benefits. An expert panel will be recruited to review and revise the core work of the project team. This project will generate the economic basis of an i-Tree Community tool, expanding the current environmental benefit focus of i-Tree to include an expanded range of urban forest benefits, and build better support for urban forestry across U.S. cities.

1. PURPOSE & CATEGORY APPLICATION

In recent decades, a vast collection of studies has provided evidence of the broad array of human health and well-being (HHWB) benefits provided by urban forests and urban greening. Perhaps some of the largest impacts of NUCFAC-funded research on policy have come from such social benefits research – research showing the impacts of the urban forest on such outcomes as transportation behavior, crime rates, incidences of aggression and violence in the inner city, and Attention Deficit Hyperactivity Disorder (ADHD) symptoms. For instance, trees contribute to the vitality of business districts as people spend more in lush, green places. Communities are paying attention. The City of Chicago continues to plant 1,000s of trees each year in response to some of these findings. And the U.S. Conference of Mayors' urban forestry resolution draws heavily on such findings.

Constructing i-Tree Community

This proposal leverages the broad set of compelling findings on social benefits for even greater impact. While environmental benefits research (e.g., air and water quality, stormwater management, climate effects) has been translated into economic terms, economic valuation of social benefits has yet to be fully accomplished. As a consequence, the i-Tree analysis models employ mostly environmental benefits to assess the function and value of the urban forest. This

is a major omission, both because policymakers and the public have shown that they also find social benefits of urban forestry to be compelling, and because the economic ramifications of the social benefits of nature, within moderate to high density population centers, may be greater than environmental benefits.

Nearly 40 years of research has empirically expanded on anecdotal reports about the importance of nearby nature in urban environments. This science-based literature is scattered across the presentations and publications of multiple disciplines, including forestry, environmental sciences, psychology, sociology, urban planning, geography, and landscape architecture. This literature is now being compiled and summarized, with results to be presented as a national resource on a Web site. The work is now being done at the University of Washington (supported by US Forest Service funding) with the research summaries targeted for completion in late 2010.

There is an important opportunity before use – to compile and then assess the economic value to communities and the nation of city trees and greening. With this proposal, we will jumpstart the process of economic valuation of social benefits. We will initiate the process of creating an "i-Tree Community" analysis module for the i-Tree suite of analysis products. Economic valuation is needed to better integrate social benefits knowledge into municipal, state, and federal urban forestry policy and programs, and would better enable communities to comprehensively consider and commit to urban forest investments, programs, and activities.

Economic Valuation Process

Generally, the valuation process starts with identification and definition of ranges of benefits or services. Benefit units are described (such as per tree, per individual, per neighborhood) and valued (using deferred costs, hedonic pricing, contingent valuation, and other econometrics). Value units are then aggregated across specific populations or geographic units. Multiple benefit types may be combined into models (such as was done to construct UFORE and STRATUM).

Three major activities are needed to comprehensively understand and analyze economic value:

A. **Research Assessment and Summary**. Assess and compile scientific studies about city trees and urban nature experience and resulting impacts on human health and well-being. This literature is extensive but dispersed widely across a multitude of disciplines and publications. Compiling existing evidence is the foundation step of economic analysis.

B. **Geospatial Modeling.** Once the full range and scope of HHWB benefits and their costs are understood, there are opportunities for map-based analysis to demonstrate the importance of urban forest planning and management for human functioning and health. Positive correlations and relationships are highly likely between the presence of trees (now readily mapped) and psychosocial outcomes (i.e., mappable effects such as increased physical activity or reduced crime rates).

C. **Economic Valuation.** Once the full range and scope of HHWB benefits are compiled it is then possible to express those benefits and costs in economic terms. Well-being net benefits are intangible, nonmarket "products" that urban forests provide. Economists have developed a number of strategies for nonmarket valuation (e.g., public health

benefits and costs) and such approaches could be applied to psychological, social, and other HHWB outcomes across entire human populations of cities and towns.

Activity A., the Research Assessment is now being prepared by Dr. Kathleen Wolf at the University of Washington, with support of the USDA Forest Service. By December 2010 an expansive, annotated bibliography will be compiled, and will present benefit and cost summaries within a 12 theme classification system to be made available on-line. [1] As that information takes shape it will then be possible to formulate concepts and methods for C. Economic Valuation.

The first steps of creating i-Tree Community have begun, but support is now only available to complete a literature review and research assessment. This will be a valuable foundational product, but NUCFAC funding for this proposal would allow us to take the literature results to another level of usefulness for communities across the entire U.S. Once drafted, an economic valuation model will be distributed for review and critique by economists, other social scientists, and urban forestry professionals. Critical feedback will be used to refine the model and create a credible, scientifically valid product. The overall research purpose is to construct a practical, science-based economic analysis of improved human health and well-being attributed to urban trees and nature.

2. SCOPE AND APPLICABILITY/JUSTIFICATION

Well-managed urban forests offer tremendous social, health, and well-being benefits. There is extensive scientific evidence of these benefits, yet there is poor understanding as the documentation is widely distributed and not readily accessible to professionals, officials, and managers that make key decisions about urban forestry in U.S. cities and towns. This project will build on existing empirical findings to advance the role of urban forests in promoting HHWB in densely populated settings.

This project will also produce a valuation model for HHWB benefits of urban forestry and urban areas. It will not generate new benefits from research, but rather, will collate existing research results to launch a valuation model, with applications to local government policy throughout our nation. This process will create a knowledge foundation to initiate development of an i-Tree Community.

This innovative collaboration and research will enable non-traditional partners across the United States to better understand and communicate why city trees and forests are profoundly important elements in urban environments. This project will utilize an unusual and productive collaboration between the social science disciplines and economics. It will also pursue existing evidence of HHWB benefits and expand the expression of this knowledge base using economic terms.

This project will be valuable to cities throughout the U.S. While based in the Pacific Northwest, the approach and methods will produce a product that is useful on a national scale, and address benefits that are occurring in municipalities throughout the nation. This research will be valuable to USDA FS research labs, Urban and Community Forestry (U&CF) staff in states and cities,

[1] Literature summaries to be completed December 2010. Web site prototype (Note: not for public distribution): http://depts.washington.edu/hhwb/

staff of non-profit organizations (NPOs), and all others who communicate about the need for better urban forestry programs and activities. The project will provide new, practical ways to communicate about urban forestry economics and benefit/cost analysis.

3. LITERATURE REVIEW

All references in this section can be found in Appendix C: Literature Review List

Urban forest benefits and costs have been analyzed for nearly 20 years.[i] Environmental benefit/cost analysis has advanced more than social benefit/cost analysis – creating a situation of need that we will address with this work. Two components of the social science literature are important to this project – social benefits and nonmarket valuation. Project collaborators have contributed to studies, articles, presentations, and other works in both domains.

Urban Forestry Human Health and Well Being Benefits – Current Knowledge

There are four broad categories of social benefits – ranging from the individual to community scale. Below are brief summaries (these are expanded in the literature assessment being done at UW):

Individual Health: Hospital patients who have a view of nature recover faster from surgery and require less medication for pain.[ii]. Views of nature reduce physiological stress response,[iii] including driving stress.[iv] Trees and landscapes contribute to more walkable cities and increase recreation benefits.[v] More active lifestyles combat obesity, improve cardiovascular health, increase longevity, and enhance physical and psychological development of children.[vi] City trees may help reduce escalating personal and public spending for health services.

Individual Mental Functioning: Nearby nature provides restorative experiences that help us to overcome the mental fatigue associated with urban lifestyles.[vii] Desk workers who have a view of nature report greater job productivity and satisfaction.[viii] Experiences of urban nature help children be more disciplined,[ix] and can reduce attention deficit disorders.[x]

Community Wellness: Well-managed urban forests can strengthen communities by empowering citizens,[xi] improving social ties,[xii] reducing crime,[xiii] and revitalizing neighborhoods.[xiv] The urban forest contributes to a sense of place.[xv] Trees add to our quality of life and make our cities and towns better places to live,[xvi] work, play,[xvii] and learn.[xviii]

Community Development: The economic value of a well-managed urban forest includes increased property values,[xix] higher rental rates for commercial properties,[xx] and positive consumer response in business districts.[xxi] A city having high environmental quality is an attractive environment for new businesses.[xxii] These benefits can generate a larger local tax base, providing revenue to offset urban forest management costs.

Nonmarket Economic Valuation – A Starting Point

There is an extensive literature on nonmarket valuation of ecosystems and natural resources. Many of the approaches used to derive economic values of ecosystem goods and services (such as work of Robert Costanza and colleagues[xxiii]) could be applied to HHWB benefits. In addition,

economic valuation approaches used within the disciplines of public health and risk assessment will be applied.

At the next level, recent studies have investigated the role of urban open spaces and parks on property valuation and other community values. These are potentially useful in this project, as they provide ideas for valuation approaches.[xxiv] In addition, an array of studies have tested the effects of urban forests on property values and other land based outcomes.[xxv]

Few of these approaches have been applied to social benefits. Initial valuation concepts have been constructed for HHWB by Kathleen Wolf, PI.[xxvi] More sophisticated economics approaches are needed to move this valuation process forward. Stephen Grado, co-PI, and colleagues will provide that expertise. Building on initial efforts this project will carry the valuation work to its full potential by fully embracing all aspects of the social perspective. Additional, more detailed valuations will be done and then strategically shared with social science and economics experts for feedback and critique. It is of utmost importance that valuation approaches do no overlap or leave gaps within their construct. This process will generate a model that is credible and accepted and can be shared with various communities for benefit/cost analysis, leading to the i-Tree Community model.

4. METHODOLOGY/ORGANIZATION

Figure 1 outlines a valuation process and general timeline. The work starts with a conceptual model of a wide range of potential valuations across diverse benefits types. Coinciding with this effort is an examination of the costs involved with implementing a particular program or activity. First efforts will be broad in scope, proposing a full conceptual model of valuation approaches. Once a full framework is drafted, several specific valuation analyses will be done, premised on existing research findings of net benefit outcomes.

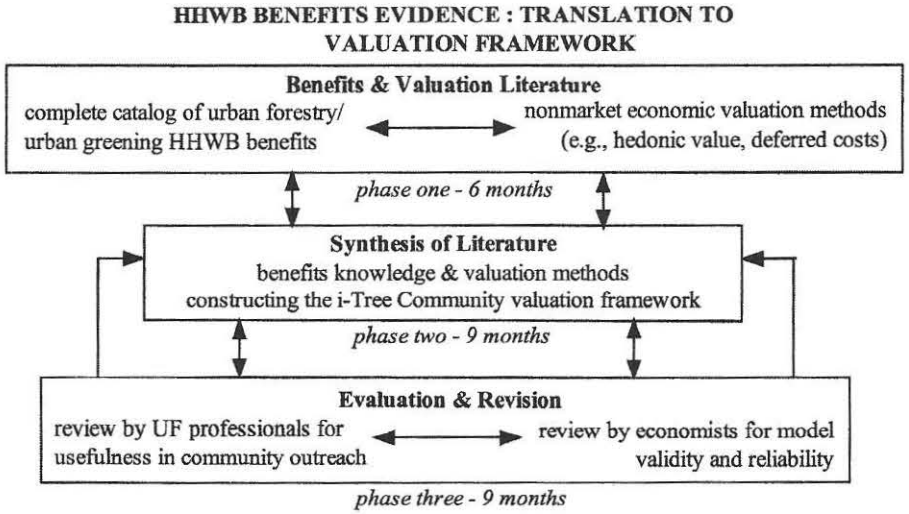

Figure 1: Modeling Economic Valuation of Human Health and Well-Being Benefits

Drs. Kathleen Wolf (UW) and Stephen Grado (MSU) are the project collaborators, and each brings extensive expertise within their disciplines. This project will be a strategic, phased process. Collaborators will direct the project, providing theoretical and conceptual foundations. An economics post doc will be hired to execute model construction. The post doc will be based at MSU, and will work from the research literature to assemble valuation approaches, develop valuation scenarios based on benefits literature and urban lands applications, and assist with model application to pilot situations.

As the valuation models takes form the collaborators will recruit colleagues to provide important feedback and model revisions. This will happen via e-communications, and culminate in one face-to-face meeting in which preliminary models are critiqued and expanded.

The emerging valuation models will be published and publicized to attract critiques from economists, and perhaps, to stimulate interdisciplinary collaboration. It is expected that the preliminary valuation modeling will attract economists who have an interest in nonmarket value theory and urban natural resources, and then their feedback can be integrated into this project through active collaboration.

The project will be conducted in 3 phases, as seen in Figure 1.

a. Phase One – Two Literature Reviews. One comprehensive literature review will focus on HHWB benefits studies, and the other on techniques for nonmarket valuation. Wolf, in alignment with the currently funded work, will collect and sort HHWB benefits studies. Grado (assisted by a post doc associate) will compile materials on nonmarket valuation, to include for example, hedonic value, travel cost, and deferred costs approaches.

b. Phase Two – Literature Synthesis. The two literature sets will be synthesized to construct a valuation framework. In other words, benefits will be itemized and the appropriate valuation technique(s) applied. Then valuations will be aggregated and totaled. This is similar to the STRATUM and UFORE models of urban forest environmental benefits. For example, one particular environmental benefit of trees has been identified and measured, such as particulate interception from the air. The economic equivalent of the measurement was constructed, such as air quality improvement, to continue the example. Then the value across all benefits is modeled to provide a value tally across a neighborhood or city, with values dependent on the degree of vegetation presence (such as canopy cover).

c. Phase Three – Evaluation & Refining. The draft model will be directed to two audiences for critique and evaluation. The model will first be directed to economists using a "white paper" format, shared through academic networks and publications. As a start, these organizations will be targeted to recruit economic review: United States Society for Ecological Economics, Gund Institute for Ecological Economics (U of VT), Renewable Natural Resources Foundation, EPA/NSF Environmental Policy and Economics Workshops. The model will also be shared with urban forestry professionals at national, state, and local government levels using professional networks and professional publications.

In addition, a designated expert panel will review the conceptual framework and valuation models. The panel will include a combination of social scientists and economists. Participants would be recruited and asked to pledge to participate in a one face-to-face workshop, followed by six months of feedback review of follow-up materials. Resulting critique and feedback will be used to refine the model, resulting in a credible and valid framework of value. Resulting economic values will be shared nationally as outreach products.

5. OUTCOMES & PRODUCTS

Expected outcomes for this project:

- Demonstrate HHWB benefits and the importance of nearby nature in moderate to high density population centers in a complete and comprehensive way.
- Improve understanding of HHWB benefits and their importance for local government decision making concerning urban forestry.
- Provide a more complete understanding of return-on-investment for public spending on urban forest planning and management
- Explore ways to entice a buy-in on the part of the private sector for urban forestry.
- Provide justification for public investment in urban nature in health, healing, and human services.
- Expand ecosystem services conceptualization to include distinctly urban services and reveal the value potential.

Products will be developed to explain and distribute the project outcomes:

- **comprehensive summaries of urban forestry social benefits**, derived from the literature review
- **comprehensive summary of nonmarket economic valuation techniques** that apply to social benefits
- **draft social benefits valuation model**, including summary of economic value, formatted for review and critique, and
- final **social benefits valuation model**, including suggestions for **integration with environmental economics models**, (e.g., STRATUM and UFORE).
- initiating **development of the i-Tree Community module**.

See 7. for description of the products format and their distribution.

6. COLLABORATION

Collaborative efforts will begin with the shared work of UW and MSU. The co-PIs share a strong interest in this work, and the opportunities to build new knowledge about urban forestry across our respective disciplines. As the HHWB valuation model proceeds other collaborators will be recruited to participate on an expert panel, to serve as a "sounding board," assuring the reliability and validity of the draft model(s). We have not yet contacted the panel members (nor asked for letters of collaboration) as the final list will depend on literature reviews and response to outreach about the project. We have begun to consider who we might ask to serve; Table 1 lists potential participants.

Table 1: Potential members of an expert review panel

Social & Health Scientists	Economists
Ming Kuo, Ph.D., University of Illinois	Jean Daniels, Ph.D., USDA Forest Service, Pacific NW Research Station
Desiree Backman, Ph.D., Sacramento Tree Foundation	Donald Grebner, Ph.D., Mississippi State University
Robert Ryan, Ph.D., University of Massachusetts, Amherst	John Harris, M.S., Landscape Economics, LLC
Lynne, Westphal, Ph.D., USDA Forest Service, Northern Research Station	Scott Grosse, Ph.D., Centers for Disease Control
Wm. Elmendorf, Ph.D. Pennsylvania State University	Seong-Hoon Cho, Ph.D., University of Tennessee

7. NATIONAL DISTRIBUTION/TECHNOLOGY TRANSFER

Project outcomes will have national significance! The methodology will produce results that are generalizable to cities and towns across the nation and will be shared throughout the U.S. Products will be targeted to organizations and individuals who work on behalf of, and advocate for, urban forestry in their communities. This will include state U&CF Coordinators, NPOs, and consulting and municipal foresters. We will also reach out to secondary dispersers, such as professional organizations (e.g., public works, planners), citizen groups, and local U&CF advocates. In addition, outreach will be targeted to groups that have an interest in municipal economics such as planners and elected leaders.

Primary products (described in 5.) will be shared in multiple formats and venues, so that results are widely available:

- **Scientific Literature** – At least one manuscript will be submitted to a peer-reviewed scholarly journal, and results presented at conferences,
- **Professional Publications and Conferences** – Manuscript(s) and other documents will be submitted to professional arenas: public sector economists and local elected officials, planners, urban foresters and arborists, urban greening and urban forestry advocates. See partners list in 6. for specific outreach opportunities. Such articles often generate speaking requests; all opportunities to present the information at state, regional, or national conferences will be considered.
- **Research Fact Sheets** – These hard copy and on-line documents will provide concise summaries of results. The fact sheets series each developed by UW have proven to be a successful strategy for explaining and sharing urban forest research with diverse stakeholders.
- **On-Line Access** – The UW sponsors Web sites that share information about research on the human dimensions of urban forestry and urban greening: www.cfr.washington.edu/research.envmind. Results will be posted to the site (which is linked to other U&CF sites, such as TreeLink). Project partners will provide links to the outcomes on their Web sites.

All print materials will be made available at no cost as downloadable Web versions (PDF), and will be available indefinitely on partner Web sites. Up to 100 hard copies of all print materials will be available for at least one year following the study, to be mailed on request.

All professional and research articles will be available subject to copyright conditions of the magazines, journals, or conference proceedings where published.

A PowerPoint presentation of project results will be produced, used for project reporting, and will be downloadable from Web sites indefinitely.

Products notification will be sent to partner organizations and key contacts. Notification will be also directed to urban forestry listserves, TreeLink, the national Sustainable Urban Forests coalition and state urban forestry coordinators.

Materials generated from this project will be incorporated into a currently taught course by Grado, titled "Nonmarket Forest Values." In addition, plans are in place to create a basic course in Urban Forestry with the Department of Forestry at MSU, whereby projects results can also be used.

8. PROJECT EVALUATION

The UW/MSU project team (investigators and research staff) will be responsible for project design and execution. As nationally recognized social scientists, the co-PIs will provide ongoing internal evaluation of the project. Once the draft valuation model is crafted, economists will be actively recruited to provide critique. Providing a framework and examples of social benefits valuation should attract more collaborating economists. Cutting edge work often attracts collaborators once the potential impact of the work becomes obvious.

In addition, non-academic partners will assist with communicating project outcomes (see 7.). They will evaluate and edit model presentation so the technology transfer is relevant to professionals and local decision makers. Strategic communications to both scientific and professional audiences will make outcomes highly visible.

9. EXPERIENCE/PERSONNEL/ADEQUACY OF RESOURCES

Two social scientists will serve as co-PIs for the project. Dr. Kathleen L. Wolf has extensive social science experience, with her work being based on the theory and methods of environmental psychology. The project will build on her preliminary publications on valuation (see literature review). Wolf will guide development and implementation of the research approach. University of Washington will provide administrative and telecommunications resources. Appendix D contains a curriculum vita for Dr. Wolf.

Dr. Stephen Grado is a natural resource economist who has worked for the last 10 years on various projects in urban and community forestry. He has published a numbers of referred articles and manuals related to urban and community forestry and valuation of natural resources. Grado will assist with development and implementation of the research approach, including the

post doc oversight. MSU will provide administrative and telecommunications resources. Appendix D contains a curriculum vita for Dr. Grado.

10. BUDGET JUSTIFICATION

We request a total of $136,385 for this study (details in Appendices B and C). Funds will be used primarily for research materials and procedures, and will be matched dollar for dollar by non-federal partners and participants. Phase One study will commence in October 2010. We believe this is an exciting and distinctly unique project and plan to complete all work by December 2012. It is felt that this work will significantly add to the body of knowledge in the field of urban forestry.

It is important to note that most of the proposed budget covers personnel costs. There are several reasons for this. First, the project activity is based on extensive conceptual development, which will be provided by salary support for Dr. Kathy Wolf (who has a soft money position at the University of Washington) and a post doc research associate (at Mississippi State University). Second, outreach costs (such as printing and mailing) have been reduced in recent years due to the use of Web downloads. Finally, travel for project outreach and reporting will likely be covered by entities wishing to learn about valuation results. Thus requested salary costs will be largely leveraged by organizations interested in communications about the project results.

APPENDIX A: BUDGET

Itemized Budget for 2-year Project

Applicant: Kathleen Wolf, U of WA

Project: Economic Valuation of Urban Forest Human Health & Well-Being Benefits

Total Project: $272,910 ($136,385 funding request)

Project Duration: 2 years

Cost Item	Federal Req'sted	Non-Federal Match Cash	Non-Federal Match In-kind	Total Cost	Source of Match
SALARIES & WAGES					
Dr. Kathleen Wolf, PI *(1)	27,985			27,985	
Dr. Stephen Grado, Co-PI	8,000		18,000	26,000	Miss State U, state salary
Post doc research associate	50,000			50,000	
Professional services	4,000		24,000	28,000	scientists, NPO, non-fed age
BENEFITS (% of salary)*(2)					
K. Wolf (29.3%)	8,200			8,200	
S. Grado (25%)			4,500	4,500	
Post doc (19.4%)	9,700			9,700	
Total Salaries & Benefits:	**107,885**	**0**	**46,500**	**154,385**	
TRAVEL					
Results reporting, U.S. *(3)	7,500	2,700	5,750	15,950	NPO, non-fed agencies
Co-PI meeting	2,500			2,500	
Expert Panel (4 persons @ one trip)	10,000			10,000	scientists
DATA ACCESS					
Local govt data *(4)	1,000		1,500	2,500	non-fed agencies
LAYOUT & PRINTING					
Reports & web design *(5)	7,000		3,000	10,000	NPOs, local orgs
MAILING					
Reports mailing *(6)	500		700	1,200	NPOs
TOTAL DIRECT	136,385	2,700	57,450	196,535	
TOTAL INDIRECT (56%)			76,375	76,375	U of WA
GRAND TOTAL	**136,385**	**2,700**	**133,825**	**272,910**	
Total Match			**$136,525**		

NOTES:

*(1) PI 0.25 FTE for portion of grant period
*(2) all benefits rates established by UW & MSU
*(3) regional/national conferences, up to $2.5K each
*(4) data access and acquisition
*(5) economics "white papers," final reports, & Web
*(6) fact sheets, outcomes reports
variable pricing, all available one year post project

MATCH SOURCES:

scientists - expert panel participants
NPO - nonprofit partner organizations
non-fed agencies - state & regional
U of WA - unreimbursed indirects

APPENDIX B – BUDGET NARRATIVE

We request a total of $136,385 for this project, with a commitment of $136,525 match from non-federal sources. This is a detailed description of the line item budget of Appendix A.

Salaries, Wages and Benefits

Federal Requested $107,885: Dr. Kathleen Wolf is Principal Investigator on the project, and will supervise the research design and implementation of the project. She will also define and coordinate collaborators' contributions and act as liaison with the University of Washington (UW). Dr. Wolf will be responsible for overseeing all grant administration, cost-share administration, products development and technology transfer. Support is requested for Wolf's salary (0.25 FTE) for a portion of each of the project years. The request includes a 3% annual increase.

A post doctoral research associate will be hired for one year. This researcher will work primarily on the nonmarket valuation modeling, so will be based at Mississippi State University under the supervision of Dr. Grado.

Pay rates are established by UW's and MSU's personnel offices. Benefits rates are standardized by each university's annual negotiation with federal agencies.

Match $46,500: Co-PI Stephen Grado will contribute 8% of annual salary for each of two years. Other salary contributions are from (non-federal) professional staff of partner organizations. Scientists on the expert panel will contribute time for a face-to-face meeting and subsequent project review. Time spent on project review, outreach and communications will be tallied for match.

Domestic Travel

Federal Requested $20,000: Travel funds are requested to achieve three purposes. First, one of the co-PIs will travel to the other host university to participate in an intensive project launch meeting and discussion. Second, a panel of experts will be assembled and hosted for a face-to-face meeting to brainstorm the foundations of the economic valuation models. Finally, Dr. Wolf or Dr. Grado will travel to present valuation results at economics and natural resources meetings, to invite review and critique of the valuation models. This will include travel to one NUCFAC meeting to present results.

Match $8,450: The match sum represents the cumulative contribution of travel costs incurred by professional staff of partner organizations and agencies, and the Co-PIs. Cash and in-kind contributions are for non-federal sponsored travel to meetings and conferences to present both social benefits summaries, and valuation results. Such meetings will have an economics focus and/or an urban forestry focus.

Data, Publications & Mailings

Federal Requested $8,500: Funds are requested for expendable project materials and supplies that are specific to the project. The University of Washington will provide basic office supplies. Funds are needed to access socioeconomic data for the economic model. Other costs are for graphic layout, printing and mailing of project report(s). At least 100 copies will be

printed, and will be available for a year following project close at no charge.

Match $5,200: Match will be provided by partners who assist with the production and distribution of project findings and outcomes reports, including printing and mailing costs. Partners may also contribute to Web development for on-line results distribution.

Indirect Costs

Federal requested $0: The project will be conducted as a Cooperative Agreement with the U.S. Forest Service, Pacific Northwest Region.

Match $76,375: The University of Washington's unrecovered on-campus Facilities and Administrative Costs (calculated at 56% of the project's total direct costs) will be provided as cost-share match for the award.

TOTAL PROJECT REQUEST: $136,385

TOTAL COST-SHARE MATCH: $136,525

Note: The University of Washington Facilities and Administrative Costs (aka indirect costs) Rate Agreement Letter Follows

COLLEGES AND UNIVERSITIES RATE AGREEMENT

EIN #:

DATE: October 13, 2009

INSTITUTION:
University of Washington
Management Accounting and Analysis
UW Box 354165

FILING REF.: The preceding Agreement was dated November 5, 2008

Seattle WA 98195

The rates approved in this agreement are for use on grants, contracts and other agreements with the Federal Government, subject to the conditions in Section III.

SECTION I: FACILITIES AND ADMINISTRATIVE COST RATES*

RATE TYPES: FIXED FINAL PROV.(PROVISIONAL) PRED.(PREDETERMINED)

TYPE	EFFECTIVE PERIOD FROM	TO	RATE(%)	LOCATIONS	APPLICABLE TO
PRED.	07/01/04	06/30/05	51.6	(1) & (A)	(G)
PRED.	07/01/05	06/30/07	55.5	(1) & (A)	(G)
PRED.	07/01/07	06/30/09	56.0	(1) & (A)	(G)
PRED.	07/01/04	06/30/09	26.0	(1) & (B)	(H)
PRED.	07/01/04	06/30/05	55.0	(1) & (A)	(I)
PRED.	07/01/05	06/30/09	58.0	(1) & (A)	(I)
PRED.	07/01/04	06/30/09	26.0	(1) & (B)	(I)
PRED.	07/01/04	06/30/05	30.0	(1) & (C)	(J)
PRED.	07/01/04	06/30/05	60.0	(1) & (C)	(K)
PRED.	07/01/05	06/30/09	44.0	(1) & (C)	(J)
PRED.	07/01/05	06/30/09	75.0	(1) & (C)	(K)
PRED.	07/01/04	06/30/09	17.0	(1) & (D)	
PRED.	07/01/04	06/30/09	25.0	(2) & (F)	
PRED.	07/01/05	06/30/09	66.0	(1) & (L)	(G)
PROV.	07/01/09	UNTIL AMENDED	Use same rates and conditions as those cited for fiscal year ending June 30, 2009.		

(A) On-Campus
(B) Off-Campus
(C) Regional Primate Center
(D) Applied Physics Laboratory
(E) (Intentionally Blank)
(F) Vessel Operations
(G) Organized Research
(H) Organized Research & General Clinical Research Center
(I) Instruction
(J) Core Grant Only
(K) Regional Primate Center Research except Core Grant
(L) Lake Union Campus

*BASE:
(1) Modified total direct costs, consisting of all salaries and wages, fringe benefits, materials and supplies, services, travel, and subgrants and subcontracts up to the first $25,000 of each subgrant or subcontract (regardless of the period covered by the subgrant or subcontract). Equipment, capital expenditures, charges for patient care and tuition remission, rental costs, scholarships, and fellowships as well as the portion of each subgrant and subcontract in excess of $25,000 shall be excluded from modified total direct costs.

(2) Direct salaries and wages including vacation, holiday and sick pay and other paid absences but excluding other fringe benefits.

INSTITUTION:
University of Washington
Management Accounting and Analysis

AGREEMENT DATE: October 13, 2009

SECTION I: FRINGE BENEFITS RATES**

RATE TYPES: FIXED FINAL PROV.(PROVISIONAL) PRED.(PREDETERMINED)

TYPE	EFFECTIVE PERIOD FROM	TO	RATE(%)	LOCATIONS	APPLICABLE TO
FIXED	07/01/09	06/30/10	23.6	(1) & (B)	Faculty
FIXED	07/01/09	06/30/10	25.7	(1) & (A)	Auxiliary Teaching
FIXED	07/01/09	06/30/10	24.5	(1) & (A)	Residents
FIXED	07/01/09	06/30/10	12.9	(1) & (A)	Graduate Students
FIXED	07/01/09	06/30/10	19.4	(1) & (A)	Post Doctorate
FIXED	07/01/09	06/30/10	38.3	(1) & (B)	Classified Staff
FIXED	07/01/09	06/30/10	29.3	(1) & (B)	Professional Staff
FIXED	07/01/09	06/30/10	15.9	(1) & (B)	(D)
FIXED	07/01/09	06/30/10	20.8	(1) & (B)	(E)
FIXED	07/01/09	06/30/10	7.4	(1) & (B)	(F)
FIXED	07/01/09	06/30/10	13.0	(1) & (A)	Hourly
FIXED	07/01/09	06/30/10	10.3	(1) & (A)	Pre-Doctoral Fellows
FIXED	07/01/09	06/30/10	62.8	(2) & (C)	Classified Staff
FIXED	07/01/09	06/30/10	51.2	(2) & (C)	Professional Staff
FIXED	07/01/09	06/30/10	39.6	(2) & (C)	Faculty

(A) Entire University
(B) All except Applied Physics Laboratory
(C) Applied Physics Laboratory
(D) Professional Staff - Global (No Health)
(E) Professional Staff - Global (No Retirement)
(F) Professional Staff - Global (No Health or Retirement)

**BASE:
(1) Direct salaries and wages including vacation, holiday, and sick pay but excluding other fringe benefits.

(2) Direct salaries and wages excluding vacation, sick leave, holidays, other paid absences and all other fringe benefits.

INSTITUTION:
University of Washington
Management Accounting and Analysis

AGREEMENT DATE: October 13, 2009

SECTION II: SPECIAL REMARKS

TREATMENT OF FRINGE BENEFITS:
This organization uses a fringe benefit rate which is applied to salaries and wages for both budgeting and charging purposes for Federal projects.

TREATMENT OF PAID ABSENCES:
Vacation, holiday, sick leave pay and other paid absences are included in salaries and wages and are claimed on grants, contracts and other agreements as part of the normal cost for salaries and wages. Separate claims for the costs of these paid absences are not made.

Beginning October 1, 1996 the Applied Physics Laboratory (APL) has separate fringe benefit rates from the remainder of the University of Washington. These rates include paid absences. Therefore, charges for direct salaries and wages from APL must exclude charges for paid absences, including vacation, sick leave, holidays, and other paid absences.

DEFINITION OF EQUIPMENT
Equipment is defined as tangible nonexpendable personal property having a useful life of more than one year, and an acquisition cost of $2,000 or more per unit.

The following fringe benefits are included in the fringe benefit rate(s):
TIAA/CREF, HEALTH INSURANCE, MEDICAL AID, INDUSTRIAL INSURANCE, WORKERS COMPENSATION, STATE RETIREMENT, SOCIAL SECURITY, AND UNEMPLOYMENT COMPENSATION.

DEFINITION OF ON-CAMPUS, OFF-CAMPUS AND SPECIAL RATES:
DEFINITION OF OFF-CAMPUS RATE
a. An off-campus program is one that is conducted (1) in leased facilities where space related costs (e.g. rent, utilities and maintenance) are charged directly to the program, or (2) in facilities made available (at no cost) to the program by a non-University organization, or (3) away from the University over an uninterrupted period of time in excess of 30 days for field work. The Off-Campus rate is not to be used as a substitute for the Vessel Operations rate or the Applied Physics Laboratory rate. Even though Pack Forest, Big Beef Creek, and Olympic Natural Resource Center are owned and operated by the University, these facilities are considered to be off campus.

b. Projects conducted at two or more locations:
There are instances where a project supported by a single grant or contract is conducted at two or more locations, thus requiring special consideration in determining the appropriate indirect cost provision. The following should be observed in such circumstances:

(1) Where the total annual amount of the grant or contract direct costs is less than $250,000, a single indirect cost rate will be applied. This rate will be the one currently applicable to the location where the preponderance of project salaries is located.

(2) Where the total annual amount of the grant or contract direct costs is $250,000 or more, the appropriate rate for each location will be applied to the modified total direct costs specifically assigned to the respective location. In the absence of the institution's ability to specifically identify and assign costs to each location, the appropriate rate for each location will be applied to total project costs in the same ratio as direct salary costs incurred at each location during the period covered by the project billing or accounting.

The Regional Primate Center changed to a dual rate structure beginning July 1, 1997. When applying the rate for RPCR except Core Grant, the difference in recoveries between this rate and the Core Grant only rate shall be retained by the Core Grant.

This rate agreement updates the fringe benefits only.

INSTITUTION:
University of Washington
Management Accounting and Analysis

AGREEMENT DATE: October 13, 2009

SECTION III: GENERAL

A. LIMITATIONS:
The rates in this Agreement are subject to any statutory or administrative limitations and apply to a given grant, contract or other agreement only to the extent that funds are available. Acceptance of the rates is subject to the following conditions: (1) Only costs incurred by the organization were included in its facilities and administrative cost pools as finally accepted: such costs are legal obligations of the organization and are allowable under the governing cost principles; (2) The same costs that have been treated as facilities and administrative costs are not claimed as direct costs; (3) Similar types of costs have been accorded consistent accounting treatment; and (4) The information provided by the organization which was used to establish the rates is not later found to be materially incomplete or inaccurate by the Federal Government. In such situations the rate(s) would be subject to renegotiation at the discretion of the Federal Government.

B. ACCOUNTING CHANGES:
This Agreement is based on the accounting system purported by the organization to be in effect during the Agreement period. Changes to the method of accounting for costs which affect the amount of reimbursement resulting from the use of this Agreement require prior approval of the authorized representative of the cognizant agency. Such changes include, but are not limited to, changes in the charging of a particular type of cost from facilities and administrative to direct. Failure to obtain approval may result in cost disallowances.

C. FIXED RATES:
If a fixed rate is in this Agreement, it is based on an estimate of the costs for the period covered by the rate. When the actual costs for this period are determined, an adjustment will be made to a rate of a future year(s) to compensate for the difference between the costs used to establish the fixed rate and actual costs.

D. USE BY OTHER FEDERAL AGENCIES:
The rates in this Agreement were approved in accordance with the authority in Office of Management and Budget Circular A-21 Circular, and should be applied to grants, contracts and other agreements covered by this Circular, subject to any limitations in A above. The organization may provide copies of the Agreement to other Federal Agencies to give them early notification of the Agreement.

BY THE INSTITUTION:
University of Washington
Management Accounting and Analysis
(INSTITUTION)

(SIGNATURE)
V'ella Warren
(NAME)
Senior Vice President - Treasurer Board of Regents
(TITLE)
November 2, 2009
(DATE)

ON BEHALF OF THE FEDERAL GOVERNMENT:
DEPARTMENT OF HEALTH AND HUMAN SERVICES
(AGENCY)

(SIGNATURE)
Wallace Chan
(NAME)
DIRECTOR, DIVISION OF COST ALLOCATION
(TITLE)
October 13, 2009
(DATE) 2129

HHS REPRESENTATIVE: Patrick Smith
Telephone: (415) 437-7820

Appendix C: Literature Review List

[i] Dwyer, J.F., E.G. McPherson, H.W. Schroeder, and R.A. Rowntree. 1992. Assessing the benefits and costs of the urban forest. Journal of Arboriculture 185: 227–234.

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[xv] Wolf, K.L. 2003. Freeway roadside management: The urban forest beyond the white line. Special Issue on Social Aspects of Urban Forestry. Journal of Arboriculture 29 (3): 127-136.

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Ulrich, R.S. 1986. Human responses to vegetation and landscapes. Landscape and Urban Planning 13: 29-44.

[xvii] Faber Taylor, A., A. Wiley, F.E. Kuo, and W.C. Sullivan. 1998. Growing up in the inner city: Green spaces as places to grow. Environment and Behavior 301: 3–27.

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APPENDIX D – INVESTIGATORS' & PARTNERS' CONTRIBUTIONS

The Co-PIs will develop a valuation model, and carry it through a review and refinement process, including critique from economists.

Non-scientific partners will be recruited as the economic model begins to take shape. This work will be premised on sophisticated models of nonmarket economic valuation. As the work proceeds it will become more apparent what and which non-federal organizations and agencies would like to collaborate. These eventual partners will enhance the project as they:

- provide input and feedback on the project content and process
- network to facilitate economic review
- develop and distribute results communications products

1. Co-PI: Dr. Kathleen Wolf, Research Social Scientist, University of Washington - The University and School of Forest Resources (SFR) are committed to research and teaching about applied and theoretical topics in urban forestry and urban ecology. The College is also dedicated to public outreach, to providing the latest information about urban horticulture and forestry to citizens and interested groups. This project is a good example of the work promoted by resource sustainability goals of the School, as well as the College of the Environment.

SFR will house and provide day-to-day leadership for this project. Project design and methodology, analysis and synthesis - each of these tasks will be guided by this partner. SFR will serve as the telecommunications and administrative centers for the study. Research support and services (e.g. statistical processing) will be provided. Kathleen L. Wolf will be principal investigator for the project. Her curriculum vita is attached.

2. Co-PI: Dr. Stephen Grado, Professor of Forestry, Mississippi State University – Dr. Stephen Grado is the George L. Switzer Professor of Forestry at MSU. Dr. Grado is a natural resource economist who has worked for the last 10 years on various projects in urban and community forestry. His research and teaching interests span several topics that contribute to the economic principles he will bring to this project: human dimensions of natural resources, wildlife economics, eco-tourism, and forest certification. Grado has published a numbers of refereed articles and manuals related to urban and community forestry and valuation of natural resources.

Grado will assist with development and implementation of the research approach. His unit will provide office space and support to the post doctoral research associate. Dr. Grado will provide oversight on the valuation model development. MSU will provide administrative and telecommunications resources. Dr. Grado's curriculum vita is attached.

Kathleen L. Wolf, Ph.D.

University of Washington, School of Forest Resources, Box 352199, Seattle WA 98195
Phone: (206) 780-3619 Fax: (206) 685-0790 Email: kwolf@u.washington.edu

***Professional preparation*:**

Whitman College (WA)	Biology	B.A. 1979
University of Michigan	Landscape Architecture	M.L.A. 1987
University of Michigan	Land Arch/Environmental Psych	Ph.D. 1993

Appointments:

2009 – present	Research Social Scientist IPA, US Forest Service, Pacific NW Station, Seattle WA
2004 - present:	Research Social Scientist, University of Washington
2008, 2003:	Visiting Scholar, Awaji Landscape Planning & Horticulture Academy, University of Hyogo, Kobe, Japan
1994 - 2003	Research Assistant Professor, University of Washington
1986 – 1992	Lecturer/Teaching Assistant, School of Natural Resources, University of Michigan
1989 – 1992	Landscape Architect, Wm. J. Johnson Associates, Ann Arbor Michigan
1981 – 1984	Urban Forester, City of Key West, Florida

***Selected publications*:**

Wolf, K.L., & L.E. Kruger (in press). Urban Forestry Research Needs: A Participatory Assessment Process. *Journal of Forestry*.

Wolf, K.L. 2008. Metro Nature Services: Functions, Benefits and Values, pp. 294-315. In: S.M. Wachter and E.L. Birch (Eds.), *Growing Greener Cities: Urban Sustainability in the Twenty-First Century*. Philadelphia: University of Pennsylvania Press, 416 pp.

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***Other significant publications*:**

Wolf, K.L. 2008. Community Context and Strip Mall Retail: Public Response to the Roadside Landscape. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2060, 95-103.

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***Synergistic activities*:**

- Generally I have developed and conducted an independently supported research program as a Research Social Scientist while at the University of Washington. This scholarly work concerns the Human Dimensions of Urban Forestry and Urban Greening, including topics of public preference, perception and behavior concerning urban natural resources and green spaces. The work has contributed to an empirical literature concerning the psychosocial and economic benefits of city trees, complementing other research on the environmental benefits of urban forests. Research work is now turning to understanding and implementing benefits knowledge in local government policy and institutional practices. The research has been aided by extensive collaborations with scientific and professional urban natural resources entities including state agencies, NGOs (federal, state, and metro), and local governments. Research outreach: http://www.naturewithin.info/)
- My research on urban forestry and urban greening benefits have lead to numerous tech transfer publications and presentations in collaboration with national to local organizations. I also serve on advisory or technical committees that provide input on policy and programs. These activities include extensive interactions with scientific and professional colleagues: Sustainable Urban Forests Coalition (national), Transportation Research Board Landscape and Environmental Design Committee, Washington State Evergreen Communities Task Force, Associate Editor for Arboriculture and Urban Forestry.
- A particular exciting collaborative activity has been my service on the Human Health and Well Being subcommittee of the Sustainable Sites Initiative. My colleagues and I are translating the urban resources benefits literature into performance metrics for a site-based LEED companion certification. Information at: http://www.sustainablesites.org/

***Collaborators and Co-Editors* 2004-2009:**

Linda Kruger, U.S. Forest Service
Susan Wachter, University of Pennsylvania
Frances Kuo, University of Illinois
Robert Ryan, University of Massachusetts
Barbara Hollenbeck, U.S. Forest Service
Steve Dubiel, EarthCorps, Seattle
Lynne Westphal, U.S. Forest Service
Gary Watson, Morton Arboretum
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Jody Naderi, Texas A & M University
Fujio Hirata, University of Hyogo, Japan
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***Graduate advisors and post-doctoral sponsors*:**

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Ken Polakowski, University of Michigan
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***Served as thesis advisor or post-graduate scholar sponsor 2004-2009*:**

Jana Dilley, City of Seattle
Patricia Byers, Environmental Law
Sean Dugan, Tree Solutions
Ara Ericksen, Cascade Land Conservancy
Ann Gibson, environmental education
Marie Demmy Bidwell, environmental planning
Nicholas Bratton, Cascade Land Conservancy
Noelle Studer, Portland State University

***Total number of graduate students advised*:** 21
***Total number of post-doctoral scholars sponsored*:** 0

VITA
Stephen C. Grado, PhD, George L. Switzer Professor
College of Forest Resources, Mississippi State University

Education: 1986-1992, Ph.D. The Pennsylvania State University, University Park, Pennsylvania, (Major: Forest Resources; Minor: Operations Research); 1980-1984, M.S. The Pennsylvania State University, University Park, Pennsylvania, (Dual Major: Forest Resources and Operations Research), 1967-1971, B.A. Villanova University, Villanova, Pennsylvania, (Major: Political Science; Minor: Philosophy)

Experience: Mississippi State University-Assistant Professor (1995-2000); Associate Professor (2000-2004); Professor of Forestry (2004-present).

Committee and Leadership Positions:
Undergraduate Coordinator, Department of Forestry (2003-present).
Member of the Department of Forestry's Undergraduate Committee (September 1995-November 2001; November 2003 to present). Chair of the Committee (2003-present).
Member of the Department of Forestry's Graduate Committee (November 2001-present).
Member of the Department of Forestry's Extension Committee (July 1997 to December 2008).
MS SAF Past Chair (2008). MS SAF Chair (2007). MS SAF Treasurer (2002-2005). Faculty Advisor to the Department of Forestry's Society of American Foresters Student Chapter (1995-2001).
Member of the Mississippi Forestry Association (MFA). Member of MFA's Communications Committee (2001-present), Chair for 2009.
Associate Editor of the *Journal of Wildlife Management* (2007-present).
Member of the Board of Directors for the Mississippi Urban Forest Council (September 2007-present).
Member of the Sustainable Natural Resource-Based Alternative Enterprises Advisory Committee, Mississippi State University (2001-present).
Member of the Faculty Advisory Committee for The Center for Teaching & Learning, Mississippi State University, (2009-present).

Memberships: Society of American Foresters (Past Chair), Certified Forester No. 1155 (2002-present); Forest Certification Auditor (2003-present); Mississippi Forestry Association, The Wildlife Society

Graduate Student Responsibilities (currently): Major advisor for 3 at Ph.D. level, 1 at master's level.

Honors and Awards: The 1996 Ottilie Schillig Special Teaching Project Award; recognition at 1997 National Convention in Memphis, Tennessee as the Faculty Representative of the SAF Student Chapter, as the Student Chapter achieved first place in 1996/97 SAF Student Chapter Award for the United States; recognition at 1998 MS SAF annual state meeting in Laurel, Mississippi as the Faculty Representative of the SAF Student Chapter; 1998 Outstanding Forestry Faculty Member, presented by the SAF Student Chapter at the annual College of Forest Resources Awards Banquet; recognition at 1999 National Convention in Portland, Oregon as the Faculty Representative of the SAF Student Chapter, as the Student Chapter achieved second place in 1998/99 SAF Student Chapter Award for the United States; Award for Distinguished Service at the 2000 MS SAF annual state meeting in Biloxi, Mississippi from the MS SAF; recognition from the Society of American Foresters as the Faculty Representative of the SAF Student Chapter, as the Student Chapter achieved first place in 2000/2001 SAF Student Chapter Award for the United States; recognition at the 2002 MS SAF annual state meeting in Philadelphia, Mississippi as the Faculty Representative of the SAF Student Chapter; the CFR/FWRC Dean/Director's AWARD FOR EXCELLENCE on in 2002; certificate of recognition in 2004 from the Mississippi Urban Forestry Council for outstanding commitment to urban forestry in Mississippi; Mississippi State University's Gamma Sigma Delta Research Award in 2005; Mississippi State University's 2005 College of Forest Resources Faulty Research Award, distinction of Fellow from the Society of American Foresters, November 2006, CFR George L. Switzer Professorship in Forestry in 2007.

Refereed Publications: 59; Proceedings Articles: 60; Total Grant Funding to Date: $3,297,382 (n=50)

Selected Publications:

Grado, S.C., D.L. Grebner, R.J. Barlow, and R.O. Drier. 2009. Valuing habitat regime models for the red-cockaded woodpecker in Mississippi. *Journal of Forest Economics*. 15-277-295.

Grado, S.C., K.M. Hunt, and M.A. Whiteside. 2008. The economic impacts of white-tailed deer hunting in Mississippi. *Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies* 61:60-68.

Hussain, A., I.A. Munn, and **S.C. Grado.** 2008. Economic impact of Mississippi wildlife-associated outfitters and their clientele. *Human Dimensions of Wildlife* 13:4, 243-251

Perez-Verdin, G., D.L. Grebner, I.A. Munn, C. Sun, and **S.C. Grado**. 2008. Economic impacts of Woody biomass utilization for bioenergy in Mississippi. *Forest Products Journal* 58(11):75-83.

Tweddale, S., S. H.A. Londo, J.M. Carney, D.L. Evans, S.D. Roberts, R.C. Parker, and **S.C. Grado**. 2008. Red-cockaded woodpecker (*Picoides borealis*) habitat analysis via remote sensing. *SilviLaser,* pp. 586-595. Edinburgh, UK on September 17-19, 2008.

Barlow, R.J., **S.C. Grado**, D.A. Miller, and J.C. Jones. 2007. Opportunity costs of managing for wildlife habitat in the North Central Hills region of Mississippi on industrial and nonindustrial forest landownerships. *Southern Journal of Applied Forestry*. 31(1):39-46.

Brunke, K., K.M. Hunt, and **S.C. Grado**. 2007. Willingness to pay for fall and spring turkey hunting permits in Mississippi. *Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies*. 60:43-48.

Fujisaki, I., M.J. Mohammadi-Aragh, D.L. Evans, R.J. Moorhead, D.W. Irby, S.D. Roberts, **S.C. Grado**, and E.B. Schultz. 2007. Comparing forest assessment based on computer visualization versus videography. *Landscape and Urban Planning*. 81:146-154.

Grebner, D.L., A.J. Londo, C. Sun, **S.C. Grado**, D.C. Sumerall, J.C. Dewey, B.F. Nero, and R.P. Maiers. 2007. Potential carbon sequestration opportunities and issues for bottomland hardwood afforestation in the Lower Mississippi Alluvial Valley. *Forum of Public Policy: A Journal of the Oxford Round Table*. 3(4):305-312. Released in 2008.

Hussain, A., I. A. Munn, **S.C. Grado**, B.C. West, W.D. Jones, and J.C. Jones. 2007. Hedonic analysis of hunting lease revenue and landowner willingness to allow hunting access. *Forest Science.* 53(4)493-506.

Munn, I.A., A. Hussain, B. West, **S.C. Grado**, and W.D. Jones. 2007. Targeting forestry and wildlife management outreach programs. *Journal of Agricultural and Applied Economics* 39(3):557-569.

Sun, C., S. Pokharel, W.D. Jones, **S.C. Grado**, and D.L. Grebner. 2007. Extent of recreational incidents and determinants of liability insurance coverage for hunters and anglers in Mississippi. Southern Journal of Applied Forestry 31(3):151-158.

Cason, J.D., Grebner, D.L., Londo, A.J., and **S.C. Grado**. 2006. Potential for carbon storage and technology transfer in the Southeastern United States. *Journal of Extension*. 44(4):9pp.

Grado, S.C., D.L. Grebner, M.K. Measells, and A.L. Husak. 2006. Status, needs, and knowledge levels of Mississippi's communities relative to urban forestry. *J. of Arboriculture*. 32(1):24-32.

Jones, W.D., J.C. Jones, I.A. Munn, and **S.C. Grado**. 2006. Wildlife enterprises on Mississippi private lands. *Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies*. 58:344-355.

Measells, M.K., **S.C. Grado**, H.G., Hughes, M.A. Dunn, J.O. Idassi, and R.J. Zielinske. 2006. Educational needs of southern forest landowners. *Journal of Extension.* 44(5):5RIB4.

Habig, R.B., **S.C. Grado**, and L.A. Grace. 2005. Attitudes and perceptions of loggers and environmental groups toward the forest industry in Mississippi. *Bulletin of Science, Technology & Society*. 25(3):260-270.

Hughes, H.G., M.K. Measells, **S.C. Grado**, M.A. Dunn, J.O. Idassi, and R.J. Zielinske. 2005. Underserved forest landowner workshops: opportunities for landowners and extension. *Journal of Extension*. 43(4):4FEA5.

Husak, A.L., **S.C. Grado**, S.H. Bullard, and S.O. Moffat. 2005. Silvicultural Best Management Practice compliance monitoring programs in the Southern United States. *Southern Journal of Applied Forestry*. 29(1):48:52.

Measells, M.K., **S.C. Grado**, H.G. Hughes, M.A. Dunn, J.O. Idassi, and R.J. Zielinske. 2005. Nonindustrial private forest landowner characteristics and use of forestry services in four southern states: results from a 2002-2003 mail survey. *Southern Journal of Applied Forestry*. 29(4):194-199.

Habig, R.B., **S.C. Grado**, and L.A. Grace. 2005. Attitudes and perceptions of loggers and environmental groups toward the forest industry in Mississippi. *Bulletin of Science, Technology & Society*. 25(3):260-270.

Hughes, H.G., M.K. Measells, **S.C. Grado**, M.A. Dunn, J.O. Idassi, and R.J. Zielinske. 2005. Underserved forest landowner workshops: opportunities for landowners and extension. *Journal of Extension*. 43(4):4FEA5.

DAVEY

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National Urban and Community Forestry Advisory Council
USDA Forest Service
Sidney Yates Building (1- Central)
201 14th Street S.W., MS-1151
Washington, DC 20250-1151

Subject: Letter of Partnership

To Whom It May Concern:

I am writing to inform you of Davey's interest and willingness to collaborate and support the project titled "Urban Forest Human Health and Well-Being Benefits: Translating Evidence to Economic Valuation Models" with Drs. Kathleen Wolf and Stephen Grado. We believe this work will be instrumental in providing the foundation for incorporating human health and well being benefits analyses into the i-Tree platform (www.itreetools.org). In doing so, this project would leverage and advance a substantial investment already made by Davey Tree and our cooperators to develop i-Tree.

We look forward to making "i-Tree Community" a reality. With our collaboration and early involvement, we will provide the necessary programming and support expertise needed to make efficient use of funds for broad dissemination of these new models through i-Tree.

Thank you for your consideration.

Sincerely,

/s/ *Scott Maco*

Scott Maco

Manager, Ecosystem Services
Davey Tree Expert Company
11253 Champagne Pt. Rd. NE
Kirkland, WA 98034
Phone: 425-605-0383
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Cc: Kathleen L. Wolf, PhD
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ACT
Tree by Tree
Street by Street

January 7, 2010

Nancy Stremple, RLA
U.S. Forest Service
Executive Staff to National Urban and
Community Forestry Advisory Council
1400 Independence Ave SW,
Yates building (1 Central)
Washington, DC 20250-1151

Dear Ms. Stremple:

The Alliance for Community Trees (ACT) supports the NUCFAC grant project, *Urban Forest Human Health and Well-Being Benefits: Translating Evidence to Economic Valuation Models*. ACT supports innovative nonprofit organizations and other groups that work to increase awareness and demonstrate the connections between city trees and the overall health and economic success of U.S. communities. We think that this project will help to more clearly demonstrate the economic benefits of our programs, as it will make the research on human health and well being more relevant to local officials and decision-makers.

We will support this project through public outreach and communications on a national scale. As results become available we will share the information with our 170 member organizations and utilize the findings to help make the case for trees in public policy and corporate partnerships. Possible outreach may include results updates in our member newsletters, links on our web site, and a webinar.

ACT often shares research results about the benefits of trees and forests in cities. Economic valuation of the social and health benefits of urban nature is a timely and important topic that deserves this more detailed study. We recommend funding support for this important work.

Sincerely,

Alice Ewen

Alice C. Ewen, Executive Director