

**State and Private Forestry
FY 2010 Western Competitive
Resource Allocation
Single-State Project Proposal**

Filename	
HI_Urban.pdf	
Administration Information	
Dollar Amount Requested:	\$146,000
Match/Leverage:	\$146,000

Applicant Information	
State Forestry Agency:	Hawaii Division of Forestry & Wildlife
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Project Information			
Title of Proposed Project:	Urban Tree Canopy Assessment in Two Cities in Hawaii		
Names of Partnering Agencies / Organizations:	University of Vermont's Spatial Analysis Labrotory (SAL), City and County of Honolulu (CCH), University of Hawaii, Friends of Hawaii's Urban Forests, The Outdoor Circle (TOC), The Nature Conservancy of Hawaii (TNC), NOAA, The Urban & Community Forestry Advisory Council		
State(s):	Hawaii	Congressional Districts:	1
Counties:	Honolulu	Forest Service Regions:	5

3 rd Party Contributors							
Please specify each 3 rd party contributor and the dollar value of each contribution. Please DO NOT show grant requested funds in this table. This is for 3 rd party matching and leverage only.							
Contributors: (Please specify by name)	UCF Advisory Council	Friends of Hawaii's UF	City & County of Honolulu	The Outdoor Circle	SAL	The Nature Conservancy	TOTAL
Value of Contributions:	\$6,000	\$2,500	\$103,500	\$7,000	\$10,000	\$2,000	\$131,000

Total Project Expense					
	Grant Share (\$ requested)	Applicant	3 rd Party Contributors	TOTAL	
		Cash ¹	In-Kind ²		
4	Personnel / Labor:	\$7,000	\$7,000	\$30,000	\$44,000
	Fringe Benefits:	\$3,000	\$2,000	\$8,000	\$13,000
	Travel:	\$7,500	\$2,000	\$5,000	\$14,500
	Equipment:	\$5,000	\$0	\$2,000	\$7,000
	Supplies:	\$4,000	\$0	\$7,000	\$11,000
	Contractual:	\$105,500	\$0	\$68,500	\$174,000
	Construction:	\$0	\$0	\$0	\$ 0
	Other:	\$14,000	\$4,000	\$5,500	\$23,500
	Indirect Costs:	\$0	\$0	\$5,000	\$5,000
	TOTAL:	\$146,000	\$15,000	\$131,000	\$292,000

5	Project Duration		
	What is the duration of this project? <input type="checkbox"/> One Year <input checked="" type="checkbox"/> Two Years <input type="checkbox"/> Three Years		

6	National Relevance		
	Conserve Working Forest Landscapes <input type="checkbox"/>	Protect Forests From Harm <input checked="" type="checkbox"/>	
	Enhance Public Benefits From Trees and Forests <input checked="" type="checkbox"/>		

7	Project Description		
	Maximum 4500 Characters Including Spaces		
	<p>Stimulated by regulatory edict, the need to improve air quality, reduce energy consumption and ease storm water flows, cities are turning to trees as problem solvers and sustainable futures.</p> <p>The County of Honolulu is the 13th largest city in the US with a population of 905,034. The City of Honolulu has a population of 375,571. Kapolei (West of Honolulu) is a planned community/city and has a young tree program. It is expected that by 2025 Kapolei will have 173,170, for Hawaii that is a sizable city.</p> <p>The urban forests in Hawai'i have not been mapped for distribution, change or species composition. Readily available land cover data, such as National Land Cover Database is too coarse to effectively map Honolulu's urban forests. There are other imagery available but it was all taken at difference scales and/or using different methods (color infra-red, natural color, etc.), and none of it do we have in sequential timeperiods so urban forest trends can effectively be examined.</p> <p>Hawaii's UCF Program is proposing a 2-year project to 1) map and assess the distribution & composition of the</p>		

¹ 'Cash' is the value of any qualifying match the applicant pays for such as cash, staff time, supplies, or equipment.

² 'In-Kind' is the value of any qualifying match contributed by a 3rd Party contributor such as cash, donated time, supplies, or equipment.

urban tree canopy in Honolulu and Kapolei, a developing city just west of the Honolulu airport, using the Urban Tree Canopy (UTC) tool developed by the Forest Service and the Univ. of Vermont - Spatial Analysis Laboratory (SAL), 2) ground truth much of this urban forest canopy to ensure accuracy of imagery used and 3) develop educational materials that describe the outcomes, trends and suggested strategies to decision makers and the general public.

Goals

The goal of this project is to examine the urban forest canopy in Honolulu and Kapolei, and to use this information to ensure that sound urban forest planning is implemented prior to the installation of various infrastructures in Kapolei. We hope to have a positive impact on how the city of Kapolei expands, as well as their urban forests, so it does not face the same problems found in Honolulu. Another goal is to establish regular urban tree canopy inventories (3 to 5 yr intervals) that can be used to track changes in urban forests, and make smart decisions as human populations expand on these small Hawaiian Islands.

Objectives

The objectives of this project are 1) bring sound urban forest canopy assessment tools [Jarlath O'Neil-Dunne of the University of Vermont's SAL] to Hawaii, 2) use those tools to gather various urban forest information in 2 cities, 3) elevate awareness about the importance of tree canopy in urban areas among decision makers and the general public, and 4) use this new information and compare Honolulu urban forests with other cities in the US who have this kind of information.

Measurable Outcomes

The outcomes from this project will be measured both in the short and long term. In the short term outcomes will be measured by the number of agencies and individuals that want access and/or utilize the information generated from this project. All meetings and discussions that occur related to this information will be tracked and recorded. Long term outcomes that will be measured are those pertaining to information implementation, changes in existing plans due to this information, and the establishment of regular interval inventories done not only in Honolulu and Kapolei, but also in other major urban areas in Hawaii.

Funds

Funds will be used to create detailed maps of spatially-explicit, high-resolution data using QuickBird Satellite Images at 0.6 meter resolution. LiDAR imaging will be used for location and structure of urban forests in Honolulu and Kapolei. A portion of the funds will be used to develop education materials, contracting a project team leader and ground truthing crews.

Year One

- High resolution imagery to produce urban forest canopy maps of Honolulu and Kapolei
- LiDAR images will also be procured. Costs include flight, LiDAR collection & post processing
- UTC information delivered to Spatial Analysis Lab (SAL)

Year Two

- SAL will process data with imagery to ascertain tree canopy size and break it down by parcel, determining trees location and ownership
- Ground truthing UTC assessment
- Final assessment and educational reports will be published on CD, online and presentations at professional meetings.

Program Integration

Maximum 1250 Characters Including Spaces

8 The State of Hawaii and the City and County of Honolulu use GIS extensively for both natural resources and growth planning. The proposed UTC assessment, which has never been done in a tropical area, will build on Urban Forest research pioneered by the US Forest Service, and on studies conducted in other cities that integrate various imagery with GIS modeling to improve population growth affects on forests. The results from this study will provide spatially-explicit, high-resolution, attribute-rich information on the location and structure of Honolulu & Kapolei's urban forests. As such, the data will be used at State and County levels for various tree related needs such as hazardous tree removal, planning arborist activities, species selection requirements, etc.

The UTC assessment will be used to model future planting scenarios, identify invasive species vectors to upland forests, and reduce high erosion areas. The Forest Health Protection program will be using these results to plan invasive species suppression activities in important urban buffer areas.

Collaboration

Maximum 1250 Characters Including Spaces

9 The Univ. of Vermont's Spatial Analysis Lab significantly contributed to developing this project. Other partners that have contributed to and demonstrated their commitment to this project include the City and County of Honolulu, the Friends of Hawaii's Urban Forest, The Outdoor Circle (TOC), and The Nature Conservancy. The City and County of Honolulu encompasses the entire island of Oahu and as such makes planting decisions for both Honolulu and Kapolei. A network of groups across the state make up the TOC, who are known for their ability to work & influence decision makers on tree related issues. The results from this project will help TOC be more informed, thus make their advocacy more focused.

NOAA and The Nature Conservancy are partners by offering existing and ongoing imagery in coastal areas. They will use the UTC imagery and maps generated from this project in collaboration with various coastal programs they are involved in.

Leveraging

Maximum 1250 Characters Including Spaces

10 All partners will be providing some form of cash or in-kind match that is related to this project. The State will provide staff oversight and assistance with procuring satellite and LiDAR images, GIS mapping and liaise with the SAL. The City and County of Honolulu will provide cash for the LiDAR images, GIS resources, and field crew for ground truthing. The products from this project will leverage NOAA and The Nature Conservancy existing and new satellite and LiDAR imagery and analysis assistance. The State Urban & Community Forestry Advisory Council will provide substantial oversight regarding collaboration with partners and with final reports that are shared with decision makers.

The Friends of Urban Forests (a local non-profit) will provide technical expertise with contracting & procurement needs. The Outdoor Circle will provide support with the development of educational materials and outreach to the general public and decision makers.

These resources are all necessary to successfully accomplish this project. The State specifically chose these entities because they share common goals with the UCF and Forest Health Programs, and those of the State as a whole.

Meaningful Scale

Maximum 1250 Characters Including Spaces

The UTC assessment metrics will be summarized at scales ranging from the fine (individual property parcels) to the coarse (census block groups and zoning boundaries). This will allow the information to be used in the broadest way possible such as residents seeking to determine the available tree planting space for their property, to city managers seeking to adjust zoning codes, to supporting the preservation of tree canopy for various public benefit.

- 11** While this project requires lofty technical input, the proposed scale is appropriate because in the short term it is focusing on two discrete areas/cities. Once completed and in the long term, the State and its partners will assess the ability to engage in these activities elsewhere in Hawaii. At the broadest scale, the project aims to establish a greater understanding of the urban tree canopy so it can be seen and used as a problem solver and contributor to more sustainability at the island and state levels.

Sphere of Influence

Maximum 1250 Characters Including Spaces

According to STRATUM (Street Tree Analysis - Dr. Greg McPherson) Hawai'i is a reference State for the tropics, however an Urban Tree Canopy assessment and UFORE (Urban Forests Effects Model) have not been conducted.

At a local level the outcomes will be presented through workshop(s) and presentations at a state, county and community level. The CCH is very excited about the immediate results of this project, but equally has expressed an interest to plan their future budget to reflect outcomes from this project.

This project will provide value beyond the Honolulu County (Oahu) due to the metrics established and used to extrapolate in other Hawaiian cities.

Mainland tools used in the tropics often do not work for various reasons. Once completed the utility of the UTC in the tropics will be better understood before implementation elsewhere in US tropical areas.

- 12** At regional and international levels, the outcomes of this project will be shared with other tropical territories in the Pacific, the Caribbean, as well as our international neighbors who are interested in understanding where and what constitutes their urban forests, and who want to affect positive change to them.

Sustainability of Outcomes

Maximum 1250 Characters Including Spaces

In many cities the UTC assessment is the basis for tree canopy goal setting. The UTC will begin to provide strategic planning goals for both the State's Urban Forestry Program, as well as the County of Honolulu. Once the UTC is completed, the Urban Forest industry (including landscapers, planners and nurseries) will be one step closer to understanding tropical urban forestry as a whole, and not just one piece of it that they play a role in.

- 13** The metrics generated from this project can be integrated into the county's existing GIS database, which will enable decision makers to incorporate canopy cover (or lack of) into the decision-making process.

Other important and measurable outcomes that demonstrate sustainability will be 1) Kapolei's growth being smart and forest conscious, 2) infrastructure is designed with urban forest values in mind, and 3) similar assessments conducted every 3 to 5 years so trends can be evaluated in time to implement appropriate change.

Data will be made publicly available via a website allowing non-profit organizations and private citizens to use and query the UTC assessment metrics. The more this is used, the greater the chance urban forests will be appreciated.