**CED9: Woody Biomass and Forest Products Advisor**

**DESCRIPTION**

The regional advisor will work across the central Sierra Nevada including El Dorado, Alpine, Amador, Calaveras, Tuolumne, and Mariposa counties with a disciplinary focus on woody feedstock aggregation and biomass manufacturing. The advisor will serve as the regional lead for integrating biomass vegetation management work and community resilience. High priority subject areas include connecting natural resources professionals to private industry and evaluating impact on community development and resiliency. The advisor will be expected to work cooperatively with numerous state, federal and county agencies and departments including; state of California Office of Planning and Research, Business and Economic Development, United States Forest Service (El Dorado, Tahoe, Lake Tahoe Basin, Humboldt-Toiyabe, Stanislaus, and Sierra National Forests), Central Sierra Economic Development District, community water groups, UC scientists, and other relevant agencies. The advisor is expected to 1) provide technical assistance for community vegetation management towards biomass business and wood products innovation 2) provide technical assistance for communities to meet local and regional regulatory forest management program goals (such as air quality regulations, governing biomass conversion, and manufacturing), 3) create collaborative synergistic relationships with local and non-governmental partners, and 4) develop, implement, and evaluate an educational and research program that will have significant impacts in the area of woody biomass and forest products.

The advisor will focus on providing technical assistance for community scaled vegetation management and natural resources manufacturing enhancing both private industry biomass utilization and long-term community resiliency in the face of a changing climate and pressure on keeping communities safe in the face of increased wildfire. The preferred educational and professional background requirements include a minimum of a Master’s degree in forestry, wood science, manufacturing, engineering, design, or related fields and should possess knowledge of engineered wood products, wood science, biomass energy, and/or advanced manufacturing.

The position will report to the UC ANR Central Sierra and Mariposa County Directors and work with many supporting agencies/units including; ANR statewide programs (Agricultural Issues Center, California Institute for Water Resources, and Informatics and Geographical Information Systems), ANR Program Teams (California Communities, Forest & Rangeland Systems, and Water Resources), UC research facilities (Tahoe Environmental Research Lab, Blodgett forest), the Central Sierra Natural Resources Supply Organization, regional and county Economic Development Districts, and others.

**JUSTIFICATION**

While ANR has long had a focus in technical fields such as agronomy, forestry, natural resources, and environment-related issues such as agricultural pests, climate change, fire, etc, as well as a focus on community development and rural assistance, these two areas have tended to work separately. Given the increasing pressure on communities to reduce fuels and make themselves fire safe due to climate change and increased fire threat, it is an important time to integrate ANR's forestry/natural resources and community development efforts to better ensure long-term community resiliency, particularly in forested communities of the Sierra Nevada.

Sierra Nevada forests are a beautiful, diverse, and an extensive resource to California residents that consist of over 10 million acres of productive forests. Of the 10 million acres, 70% is owned by the public while 30% is privately owned. Over 1/3 of the forest lands throughout the Sierra Nevada are covered by this proposed Advisor position. Although the Sierra’s forest resources are diverse and abundant, the ability of these forests to supply services to California is dependent on the health and integrity of the forest ecosystem. Multiple threats to Sierra forests include an increase in scale and intensity of wildfires, a rapidly changing climate with warming and a decreased snow pack, lack of biomass removal, and increased residential and urban development in forested areas.

A CALFIRE 2010 assessment found that, in general, forests are growing more quickly than they are currently being removed by harvesting so that standing forest biomass in the state continues to build. Another recent analysis by the U.S. Forest Service predicts that standing biomass and associated carbon storage is at risk from wildfire and pest damage in the long-term and so will be determined by how the forest is managed for those risks over the next 100 years (Goines and Nechodom, 2009). Sierra Nevada forests are currently storing over 840 million tons of biomass. This is probably an increase from historic levels due in part to fire suppression and the reduction in harvesting on public lands. Increasing carbon storage in this way is a benefit to moderating the causes of climate change in the short term. However, in the longer term, it elevates the risk because dense forests are more likely to experience stand-replacing fires that kill many trees and so lead to a large release of carbon when fire-killed trees decay.

Another recent analysis by the U.S. Forest Service predicts that standing biomass and associated carbon storage is at risk in the long-term. California national forests will become net emitters of carbon by the end of the century because by mid-century forests will accumulate carbon at a slower rate than they lose through wildfire, pest mortality and inter-tree competition. Carbon storage will be determined by how the forest is managed for those risks over the next 100 years (Goines and Nechodom, 2009). Sustainable resource management and restoration in California will not succeed without investment in the wood utilization infrastructure and development of markets that will increase the value of low-value wood products.

This position will contribute to UC ANR's goals of 1) promoting economic prosperity in California, particularly through enhanced community economic development, 2) protecting California’s natural resources through increased community vegetation management, connecting industries to biomass and wood product projects, and 3) building climate-resilient communities and ecosystems.

**EXTENSION**

The advisor will serve as the regional lead for integrating biomass vegetation management work and community resilience. High priority subject areas include connecting natural resources professionals to private industry and evaluating its impact on community development and resiliency. The advisor will be expected to work cooperatively with California state agencies, community water groups, UC investigators, and other relevant agencies to 1) provide technical assistance for community vegetation management towards biomass business and wood products innovation 2) provide technical assistance for communities to meet local and regional regulatory forest management program goals (such as air quality regulations, governing biomass conversion, and manufacturing) and 3) create collaborative synergistic relationships with local and non-governmental partners.

**RESEARCH**

The candidate would address key questions in areas such as the following: 1. How do sustainable, climate smart forestry practices increase community resilience? 2. How do investments in sustainable, values-based supply chains, wood products businesses and biomass industries impact the regional economy? 3. How can local/regional/state policies be designed to better promote utilization and manufacture of high-value biobased products? The candidate will need the skills and competencies to cross disparate research fields, to address critical issues that will ensure the long-term resiliency of rural/urban/other communities.

**ANR NETWORK**

The advisor will work with several UC ANR networks including the Woody Biomass Utilization group (https://ucanr.edu/WoodyBiomass/). The group is an outgrowth of the former University of California Forest Products Laboratory (UCFPL) which has worked on the properties, mechanical processing, durability, and chemical processing of commercial species for over 50 years. The group has funding from the California Department of Forestry and the US Forest Service – Region 5 State and Private Forestry to improve the capacity and markets for wood biomass utilization, improve hazardous fuels removal technologies and research the commercialization of bioenergy with carbon capture and storage.

The advisor will also work with the California Communities Program Team, and the Forest and Rangeland Systems Program Team. This position will be supported by CE specialists in Community Economic Development at UC Davis (Keith Taylor), Forest Economics (Bill Stewart) and Woody Biomass (Dan Sanchez) at UC Berkeley. AES researchers at UC Davis (Agriculture & Resource Economics, and Agriculture Sustainability Institute), and UC Berkeley Department of Agriculture & Resource Economics, and Environmental Science, Policy and Management will be important collaborators. This advisor will complement the programs of other advisors in the MCP including forestry advisor (Susie Kocher) and natural resources advisor (Scott Oneto) in the Central Sierra. The Advisor will also collaborate with livestock and natural resources advisor (Fadzayi Mashiri) and Area Fire Advisor.

**EXTERNAL NETWORK**

The advisor will interact with a variety of stakeholders including county and regional wood products firms such as American Wood Fiber, Pacific Ultrapower, Sierra Energy, Sierra Pacific Industries, Mariposa Biomass Project, Blue Mountain and Buena Vista Power. The advisor will also work with county based economic development organizations and government agencies such as USDA’s Forest Service including the El Dorado and Stanislaus National Forests, Sierra National Forest, and Region 5 State and Private Forestry. Other partners will include the National Resources Conservation Service, USDA Farm Service Agency, Resource Conservation Districts, and county Agricultural Commissioners. Non-profits working on increasing the potential include the Sierra Institute and Blue Forest. There is also a very strong network of forest collaboratives across the region that has advocated for increased fuels reduction work and woody biomass utilization. The advisor will also work with local community development agencies such as the Central Sierra Natural Resources Supply Organization and County Economic Development Districts. The advisor will collaborate with these partners providing expertise and support for further expanding woody biomass economic opportunities throughout the region.

Additional non-UCANR academics with a potential for collaboration include Kevin Fingerman from Humboldt State University, Aindrila Mukhopadhyay from the Joint BioEnergy Institute (JBEI), George Peridas from Lawrence Livermore National Laboratory.

**SUPPORT**

The advisor will be provided with an office, telephone, high speed wireless internet access, storage space, access to KARE laboratories, office supplies, clerical and administrative support.

**HEADQUARTERS AND COVERAGE AREA**

This position will cover the UCANR Central Sierra Counties (El Dorado, Amador, Calaveras, and Tuolumne), plus two additional counties (Alpine and Mariposa). Its headquartered office will be in Sonora, California.

**DEVELOPED AND PROPOSED BY**

Daniel Sanchez (Cooperative Extension Specialist, UC Berkeley), Glenda Humiston (UCANR Vice President), JoLynn Miller (UCANR Central Sierra Area Director), Coly Przybyla (Director, Tuolumne County Office of Innovation and Business Assistance), Scott Oneto (UCANR Central Sierra Agriculture and Natural Resources Advisor), Susie Kocher (UCANR Central Sierra Forestry Advisor), Fadzayi Mashiri (UCANR Mariposa County Director)