



## Board Agenda

### *Action*

**Agenda Date:** December 13, 2012

**Prepared By:** Bruce Springsteen, Compliance and Enforcement Manager

**Topic:** Approval of a Budget Revision to Support a Biomass Waste for Energy Greenhouse Gas Offset Credit Project in Partnership with the University of California Berkeley Center for Forestry, Blodgett Forest Research Station

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**Action Requested:** Approve Budget Revision #12-04 (Attachment #1) thereby increasing the budgeted revenue and expenditure of funds by \$60,000, that is to be taken from the Sierra Pacific Industries Supplemental Environmental Project funds (received on June 21, 2010) and are contained in the District's Operations Fund, to support a Biomass Waste for Energy Greenhouse Gas Offset Credit project in partnership with the University of California Berkeley Center for Forestry, Blodgett Forest Research Station.

**Discussion:** The District manages an on-going Supplemental Environmental Project (SEP) supporting sustainable forest management practices that reduce air pollution. The SEP has included sponsoring projects that utilize forest biomass wastes for energy as an alternative to in-field open pile burning, mastication, or chip and scatter. The District has also developed a greenhouse gas (GHG) offset protocol for biomass waste for energy projects. The protocol is a formal accounting procedure to quantify and value the GHG benefits derived from biomass waste for energy projects. The SEP was an outcome of the settlement of an enforcement case with Sierra Pacific Industries. Those funds were received into the District's Operation Fund on June 21, 2010. The SEP portion of the Operations Fund has remaining funds of \$353,325 (which includes \$19,667 for encumbered contracts).

The District has an opportunity to sponsor a biomass waste for energy GHG offset credit project, utilizing up to \$60,000 in SEP funds, in partnership with the University of California (U.C.) Berkeley's Department of Natural Resources Center for Forestry. The project will provide funding to allow the processing and transport of approximately 1,350 bone dry tons of forest slash waste for use as energy as an alternative to the planned disposal by open pile burning. The forest slash waste has been generated from timber harvesting and thinning fuel treatments at the Center for Forestry Blodgett Forest Research Station. The Station manages 5,000 acres of mixed-conifer forested land located in the Sierra Nevada Mountains of neighboring El Dorado County, five miles from the southern border of Placer County. The slash was destined for disposal through open burning as the cost to process and transport to the nearest utilization source is higher than the money that can be obtained for the material.

Based on the results of similar prior programs, District staff estimate a reduction of 500 metric tons of GHG and production of 1,500 MWh of renewable electricity. Additionally, criteria air pollutant reductions are projected at eight (8) tons of particulate matter, 80 tons of carbon monoxide, six (6) tons of volatile organic compounds, and two (2) tons of nitrogen oxides.

The District will enter into a research project contract with U.C. Berkeley for the District's funding of biomass processing and transport costs not recovered by biomass waste sales and for U.C. Berkeley support of project studies. Under this research project contract agreement, GHG offsets credits from the program will be controlled by, and accrue to, the District. GHG offset credits may be listed for sale on the California Air Pollution Control Officers Association GHG Registry, or issued through the District and sold to either the University of California Center for Sustainability or other entities desiring GHG offsets. The GHG offset credits will be sold at the cost required to generate, determined as the ratio of the District investment to the quantity of GHG offsets. Accordingly, some or all of the District's investment in the project may be recovered through the GHG offset credit sales and may then be available for investment into new local biomass waste for energy projects or other SEP projects.

See Attachment #2 (Project Plan) for additional biomass project details. See Attachment #3 for the Blodgett Forest Research Station Research Project Proposal.

With the approval of Budget Revision #12-04 the District will utilize up to \$60,000 in SEP funds to support a Biomass Waste for Energy project at the University of California Berkeley, Blodgett Forest Research Station. The District's Air Pollution Control Officer will negotiate and enter into necessary agreements on behalf of the District.

**Fiscal Impact:** Budget Revision #12-04 is to utilize no more than \$60,000 from the SEP portion of the District's Operations Fund that is currently held and managed by the District. Accordingly, unless the District is reimbursed the cost for the project implementation through the combination of the sales of GHG offset credits and power generation the District's budgeted fund balance will be reduced by \$60,000 if all expenditures occur.

**Recommendation:** Staff recommends that the Board approve and authorize the Chairperson to sign on its behalf Budget Revision #12-04 to utilize up to \$60,000 in SEP funding to support the University of California Berkeley Center for Forestry, Blodgett Forest Research Station biomass energy project.

**Attachment(s)**      #1: Budget Revision #12-04 for FY 2012-13 – appropriating SEP funding from the District's Operation Fund to the Forest Research Station Biomass Energy project.  
#2: Project Plan  
#3: Blodgett Forest Research Station Research Project Proposal

**ATTACHMENT #1**

**SUBJECT:**

Budget Revision #12-04 for FY 2012-13

**ATTACHMENT #2**

**SUBJECT:**

Project Plan

Biomass Waste for Energy Greenhouse Gas Offset Credit Project in Partnership with the University of California Berkeley Center for Forestry, Blodgett Forest Research Station

## UC Berkeley Blodgett Biomass Waste for Energy GHG Project

### Project Plan

The University of California Berkeley Center for Forestry, Blodgett Forest Research Station forest has forest slash wastes in seven (7) separate piles, ranging in size from 100 to 550 bone dry tons (BDT), with a total of approximately 1,350 BDT. The location of the Station is shown in Figure 1. A pile is shown in Figure 2.

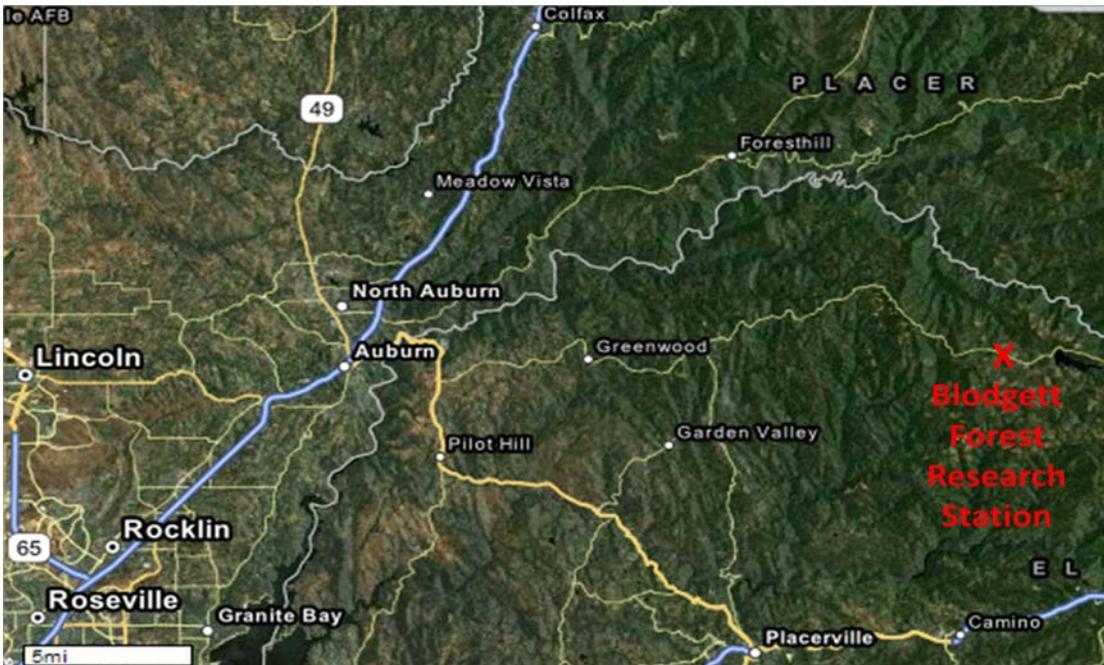


Figure 1. Location of Blodgett Forest Research Station



Figure 2. Slash pile at Blodgett Forest Research Station

The District has obtained a preliminary proposal from a local forest biomass contractor to grind and transport the slash to the Buena Vista Biomass Facility (in the vicinity of Ione and Jackson) for use as energy at a delivered cost of approximately \$55-60/BDT. The biomass energy facility gate price is currently \$40-45/BDT. The District will cover the difference of approximately \$27,000 (moving 1,350 BDT at a cost deficit of \$20/BDT). Additional funds, up to a total of \$60,000, will be used to manage the program and conduct data analysis and reporting.

The District will enter into a research project contract with U.C. Berkeley for project funding in return for University support of project studies and District ownership of GHG credits. The Station and District team will enter into a formal contract with a local biomass contractor to conduct the biomass processing and transport activities. The contractor will be selected based on a competitive request for proposal bid. The contractor will work with Station staff to conduct the work during the summer of 2013. The contractor will track program operations including diesel fuel usage for the grinder and chip vans, forest slash delivered production rate, equipment operating hours, and biomass facility electricity production.

The data gathered during the project operations will be used by the Station and District team to determine project economics and air pollutant impacts. The District Biomass Waste for Energy GHG Offset Protocol will be used to determine the quantity of GHG offsets that result from the program. District staff who have obtained GHG offset verification certification from the California Air Resources Board will conduct a formal verification of the program results.

**ATTACHMENT #3**

**SUBJECT:**

Blodgett Forest Research Station Research Project Proposal

**SUMMARY REVIEW AND APPROVAL FORM FOR RESEARCH PROJECTS**

<b>Blodgett Forest Research Station</b> <i>College of Natural Resources Center for Forestry University of California, Berkeley</i>	<b><u>Review &amp; Approvals:</u></b>	<b><u>Date</u></b>
	Site Manager [York]	_____
	Center Director [Stewart]	_____
	Center Co-Director [Stephens]	_____

Please use a **DIFFERENT FONT** to fill out the proposal.

1) **BLODGETT PROJECT #** (assigned by Blodgett staff)  
BF12-05RY

2) **PROJECT TITLE: Forest Biomass Diversion - Tracking the Economic Costs and Air Emissions of Forest Biomass Diversion and Allocating the Air Emissions Credits Generated**

3) **PROJECT DESCRIPTION:**

Current business as usual activities for biomass disposal in much of the Sierra Nevada include pile and burn, mastication and drop/scatter techniques. The utilization of biomass material for energy production is an appealing outlet for biomass disposal that can benefit objectives of density management, forest health, and fire hazard reduction. In this project, we propose to collaborate with the Placer County Air Pollution Control District on a research project that tracks the economic costs and air emissions generated from the collection, processing and transport of forest harvest residuals generated at Blodgett in 2012. Destination for the processed forest biomass would be either the Rio Bravo Rocklin biomass plant or the SPI - Lincoln cogeneration plant. Implementation of collection, processing and transport activities would occur mid to late summer 2013. Using the Biomass Waste for Energy Project Reporting Protocol (version 4), developed by the Air District, greenhouse gas emissions offset credits that result from this project will be issued. These credits may have value for the UCB Office of Sustainability to mitigate the carbon footprint of the Berkeley campus. In addition to this potential campus-level benefit, the project represents an opportunity to dispose of large debris piles that would otherwise be burned.

4) **PROJECT PERSONNEL:**

**Principal Investigator: Rob York, Center for Forestry**

**Co-PI's: Tom Christofk, PCAPCD**

**Bruce Springsteen, PCAPCD**

**Tad Mason, TSS Consultants**

**Ken Somers, Center for Forestry**

Name:

Title:

Address:

e-mail:

Tel:

Signature: \_\_\_\_\_ Date: \_\_\_\_\_.

***The signature above signifies acceptance of the terms and agreements described in this proposal.***

**Other personnel:**

Please list all other personnel involved with this project (collaborators, graduate students, field personnel). Provide names and e-mail addresses. E-mail addresses will be added to the Center for Forestry's Researchers' list-serve to deliver periodic announcements.

5) **PAYMENT INFORMATION:**

Projects where use of Blodgett housing, equipment, or significant staff time are expected must provide information on how payments will be made. Center for Forestry staff will provide an invoice to non-UC researchers plus an income chart string for intra-UC transfers. Rates are updated annually and can be provided prior to the field season. Method of payment must be given below:

The market value of forest biomass material is not currently sufficient to cover 100% of the forecasted costs to collect, process and transport material to the closest biomass power generation facility. The Placer County Air Pollution Control District will offset the cost differential between the forest biomass market value and actual costs of collection, processing and transport. We do not expect any direct costs for Blodgett housing, equipment, or staff time to be incurred. Because of the potential significant benefit of this project to Center for Forestry's operation, staff will provide in-kind support in the form of study design, contract administration and field measurements.

6) **TIME FRAME**

Date project submitted: 9/17/12

Planned date for starting field work: August/September 2013

Planned date of field work completion: 11/1/13  
(including removal of ALL field equipment)

Date field sites can be released for other studies: 12/1/13  
(Typically this is the same date of field work completion)

Planned type and date of publication:

7) **RESEARCH OBJECTIVE OR HYPOTHESES EXAMINED:**  
PLEASE BE AS COMPLETE AS POSSIBLE. ATTACH PAGES, IF NECESSARY  
A 2008 research project sponsored by Placer County, Placer County Air Pollution Control District and the Sierra Nevada Conservancy demonstrated significant air emissions reduction through the diversion of forest biomass that was scheduled for open burning. Results of this research effort were delivered in the form of a November 2008 final report and were later published in the January 2011 Journal of the Air and Waste Management Association. A similar protocol will be used for the Blodgett study, with the objective of quantifying the emissions reductions gained from utilizing the biomass for energy production compared to open burning.

8) **SUMMARIZE MAIN AND INDEPENDENT VARIABLES, ANALYTICAL MODELS, TECHNIQUES, INSTRUMENTATION AND TREATMENTS USED, ETC.** If Chemicals, Insects, Fungi, Bacteria, Animals, Plants, Seeds, Toxic Materials, etc. are to be brought to the research station as part of the project, the amount, time, and location of use on the forest needs detailed specification (attach a detailed study plan if one has been prepared). Each Toxic Material must have a MSDS attached.  
An independent biomass processing contractor will be retained to collect, process and transport as many of the 7 existing forest biomass piles now stockpiled on the research forest. Plans are to monitor equipment operating costs and efficiencies, as well as equipment air emissions.

9) **DATA TO BE COLLECTED**  
Cost of biomass collection, processing and transport operations. Air emissions from biomass collection, processing and transport. Biomass power generation facility air emissions. Open pile burning air emissions. Processed forest biomass will be sampled and sent to a third party lab for testing of high heat value, moisture content and percent ash. Some biomass may also be sampled for nutrient content, in coordination with the on-going CEC study that is measuring biomass harvest effects on soil properties

10) **FREQUENCY (OR SCHEDULE) OF MEASUREMENTS**  
Plan to commence measurements in August/September 2013 and complete field operations and measurements by November 2013. The study will involve the move-in and set up of a contractor with the appropriate equipment necessary for processing

and hauling the biomass material. The contractor will work with BFRS staff to ensure that waterbars and road drainage features are returned to a functioning status.

11) **SAFETY PROTOCOL TO BE IMPLEMENTED**

The Center for Forestry is not responsible for ensuring safe handling of researchers' own equipment. However, it is required that appropriate documentation be provided to assure that appropriate safety measures will be in place when field work is done. Please provide a list of equipment or materials that will be used and any safe handling instructions that will be provided to users.

Biomass processing contractor will provide proof of insurance and safety equipment. Use of Blodgett roads will be coordinated with Blodgett staff. Contractor will provide BFRS with an insurance certificate naming UC Regents as additional insured. Restrictions on timber operation activities are further defined in the Blodgett Timber Harvest Plan that covers the operation areas for this study.

12) **COORDINATING REQUIREMENTS** (necessary relationships to other research projects, the annual timber sale, and forest management program at Blodgett). For larger area habitat-related or longer term longitudinal studies, this needs careful planning and consulting with the Research Station Manager to be sure the research is feasible and possible conflicts are resolved or mitigated.

The Research Stations Manager and Operations Forester will work closely with the collaborators and contractor to avoid conflicts with other research and management objectives.

13) **LOCATION OF ACTIVITY (ATTACH MAP, INCLUDE TEXT DESCRIPTIONS):**

Identify and list the number of plots, treatments, and other activities by Blodgett Compartment number. If desired study locations change, approval from the Research Station Manager must be obtained. This may require a new proposal review.

A site visit in fall of 2012 will confirm which of the 7 piles currently on Blodgett may be feasible for the study. A map of the piles (see "stroker piles" in the legend) is included as an appendix. The piles are in compartments 301, 511, 461/462, 620, and 640.

14) **USE OF FACILITIES:** For example, expected needs for station data base, GIS, housing, lab space, shop space, access to power, computers, phones, equipment, or support of technical staff. Center for Forestry has annually updated costs for these services. An initial estimate can be provided with project approval.

Besides the facilities used by permanent staff for day-to-day operations, no use of facilities are expected.

15) **REQUESTED STATION SUPPORT:** Do you request any portion of the items listed in Item #14 to be subsidized (most service charges are designed to only partially offset actual station operating costs) by the Center for Forestry?

YES:  NO:

IF "YES" -- Please describe why you believe extra Center support is appropriate.

Center for Forestry will contribute research, administrative, and technical expertise to this project. It is necessary for Center for Forestry staff to be directly involved with this project, because of the technical nature of the operations proposed. Because of the clear benefits of fire hazard reduction and the "proof of concept" outcome that will potentially benefit future biomass operations, the staff involvement is clearly justified. While the implications of this study's results are potentially Sierra Nevada-wide, the project also has the potential to open the door to further operations specifically at Blodgett. Such operations have the potential to reduce current impacts on air quality and fire hazard.

16) **PUBLICATION(S) / FACILITIES USE**

Use of Blodgett Forest for research requires all users agree to adhere to the following guidelines.

- 1) Any publication or presentation must acknowledge the University of California, Berkeley, Center for Forestry, Blodgett Forest Research Station as a cooperator.
- 2) Center for Forestry staff will be provided by Principal Investigator a copy of all papers or reports (including conference proceedings), when published.
- 3) Principal Investigator will not expand this proposed research project nor add research personnel without prior approval from Forestry Center Co-Directors.
- 4) Unless arranged otherwise, the Principal Investigator agrees to remove all materials from field sites by the end of the project date.

**(Signature on the first page signifies acceptance of these conditions)**

17) **BLODGETT FOREST RESEARCH WORKSHOP**

The Center for Forestry annually or semi-annually (depending on activity level of research) reviews active research projects. A mid-winter workshop is presented at Blodgett Forest Research Station for all researchers and interested parties, usually scheduled for late January or early February.

The annual workshop provides many benefits including:

- \*opportunity for undergraduate and graduate students to present their work
- \*communication of research ideas and results
- \*opportunities for collaboration
- \*enhancement of the intellectual life of our research community
- \*expansion of the research profile and potential of Blodgett Forest
- \*information on new and proposed research projects
- \*an update on proposed management activities at Blodgett and other Center properties

All Researchers are asked to submit a brief ABSTRACT of research-in-progress, and are encouraged to make a 20 to 30 minute verbal presentation at the Workshop.

**AN ANNUAL REFUNDABLE FEE OF \$100 MAY BE CHARGED TO EACH ACTIVE RESEARCH PROJECT TO SUPPORT THIS WORKSHOP.** (Half the fee will be cancelled upon receipt of an abstract by the announced deadline – typically before December 31; the second half will be cancelled upon attendance at the Workshop.)

I EXPECT TO SUBMIT AN ABSTRACT OF MY RESEARCH ANNUALLY UNTIL THE PROJECT IS COMPLETE.

I AGREE TO MAKE EVERY EFFORT TO ATTEND THE ANNUAL RESEARCHWORKSHOP.

I UNDERSTAND MY PROJECT MAY BE CHARGED AN ANNUAL (REFUNDABLE) FEE OF \$100 FOR WORKSHOP SUPPORT.

**PLEASE SUBMIT THIS COMPLETED FORM IN ELECTRONIC FORMAT TO:**

[ryork@berkeley.edu](mailto:ryork@berkeley.edu)

**Mail or fax the signature page to:**

**Blodgett Forest Research Station  
4501 Blodgett Forest Road  
Georgetown, CA 95634  
(530) 333-4475  
fax: 530-333-2012**

**ADDITIONAL INFORMATION ON LAST PAGE:**

Continued from Item #:

