



**2017/2018 California Department of Forestry and Fire Protection
California Climate Investments - Forest Health Grant Program
Concept Proposal Form**



CAL FIRE CCI Grants
Advertisement Number:
17-CCI-FH-01

CAL FIRE Tracking Number (CAL FIRE Use Only)

Please fill out this form completely. Applications that are not fully filled out will not be scored. Be sure to save a copy of this form for your records. Submit your application by attaching the saved form to an email and sending it to: calfire.grants@fire.ca.gov. It is recommended that you submit the form well before the due date of **February 21, 2018** by 3:00 PM PT in case you experience any technical difficulties.

1. Project Information: Please provide the requested information. The funding boxes will automatically fill when you complete the budget further down in the form. Click the boxes for each activity type to be undertaken.

Project Title: Cambria CSD Biomass Co-Generation Project

County: San Luis Obispo

Requested Grant \$ \$611,000.00

Matching \$ \$185,700.00

Total Project \$ \$796,700.00

Forest Health Project Activity Types

☐ Fuels Reduction

☐ Prescribed Fire

☐ Conservation Easement

☒ Biomass Utilization

acres:

acres:

acres:

acres:

tons:

☐ Pest Management

☐ Reforestation

☐ Research (only as a component)

acres:

acres:

trees:

Brief Project Description (limit to box) This biomass gasification project will reduce greenhouse gases by creating biofuel/syn gas to generate 150Kwh of clean electrical energy 24/7; create carbon sequestering bio-char; and avoid land filling or pile burning dead hazard trees. This project, combined with other active projects, includes long term monitoring and research in forest health and utilization of forest biomass for energy utilization.

2. Applicant Information: Make certain that the project manager listed will be the person with day-to-day responsibility for the project.

Applying Organization: Cambria Community Services District

Organization type: District

If other, specify:

Project Manager Title: General Manager

First Name

Jerry

Last Name

Gruber

Email

jgruber@cambriacsd.org

Phone Number

(805) 927-6223

Address 1

Cambria Community Services District

Address 2

1316 Tamsen Street, Suite 201

City

Cambria

State

California

Zip Code

93428

3. Cooperator information: List project cooperating organizations with contact name and email address in the box below. Briefly describe partner roles in the project and indicate if they have agreed to partner at this time.

- San Luis Obispo County Fire Safe Council, Dan Turner, Manager; firesafeslo@gmail.com: Currently cooperating with biomass harvested from Monterey Pine tree mortality projects managed by SLO FSC
- Cal Poly State University, Dr. Chris Dicus; cdicus@calpoly.edu: Currently cooperating; field monitoring of forest mortality and carbon sequestration post harvest results
- SLO County Air Pollution Control District, Mark Elliott, melliott@co.slo.ca.us: Currently cooperating; planning on biomass use

4. Grant Period: Please provide the estimated start date and completion date for your project (last possible end date is March 30, 2022). Note that final billing is due 30 days after project completion.

Project Start Date Jun 1, 2018

Project Completion Date Mar 30, 2022

5. Environmental Compliance: Please check the box that indicates the status of the environmental compliance (CEQA, NEPA, ESA, etc.) for the project. Please provide a brief description to justify the box checked. Note: must be complete within one year of project start date.

- ☐ Environmental compliance for the project is complete. ☐ Environmental compliance completed by project application submittal.
☐ Environmental compliance for the project not started.

County Planning has issued preliminary statement that bio-mass project will be compliant or exempt from Local Coastal Plan due to drought emergency conditions and installation is incidental to existing waste water treatment plant. Harvest/chipping operations that will supply feedstock are under environmental compliance in place or in progress (THP and Governor's Emergency Proclamation)

6. Project Location: Please identify the Township, Range, Section(s), Base Meridian and County(s) covered in your project.

Cambria, CA (San Luis Obispo County)

The proposed forest biomass GASIFICATION electric co-generation plant will be located at Cambria CSD waste water treatment plant
Sec: 7,8,9,11,15,16,17,18,19,27,28,29,30,31,32,34,35,36 TWP: 27S RGE: 8E Mt Diablo B&M

6a. Disadvantaged and low income communities: Please indicate which of the following, if any, your project will benefit per ARB's guidance for disadvantaged and low income communities. Guidance can be found at: <https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/communityinvestments.htm> and in the grant guidelines.

- ☐ In Disadvantaged community(s) ☐ In Low Income Community(s) ☐ Within 1/2 mile of Low Income Community(s)
☒ Provides benefits to residents of Low Income Households

7. Greenhouse Gas Reduction: Provide a description of how the project will provide significant greenhouse gas reductions. Justify your description. Be sure to discuss each project activity type checked above. Keep in mind that during the project application phase, calculations will be required to validate your description. Please refer to <http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/quantification.htm> for details on how project GHG reductions will need to be quantified.

This project will utilize un-millable biomass from salvage and sanitation harvest of pines from 750 acres across the 3,200 acre forest. Harvest (funded by other grants) will generate salvageable logs for use for milling. This project will use un-millable biomass for gasification electrical and bio-char production. Priority is to remove dead and dying trees and fire ladder understory to reduce crowning fire adjacent to urbanized area structures, release remaining stems for enhanced growth, and utilize the non-millable biomass in gasification. The project will reinforce and extend current work funded by others. As more funding becomes available for additional salvage/sanitation acreage or residential tree removals continue, gasification operations will continue to reduce greenhouse gases beyond the life of this grant.

Proposed gasification powerplant generates 150KwH of electricity 24/7; offsets fossil fuel generation and avoids land filling or pile burning of dead tree slash. Bio-char is also generated from gasification process and permanently sequesters carbon as soil amendment and other beneficial uses. Preliminary GHG calculations reflect Net GHG benefit (MT CO₂e) of 314,000 offset benefit during life of project and life expectancy of co-generation plants. Co-generation and Bio Char GHG reduction actual quantification will be straightforward by measuring feedstock throughput in gasification co-generation and bio char generator plants. Efficiency of these units is monitored by instrumentation allowing accurate measurement of electric generation and bio-char creation and resultant carbon sequestration from redirecting forest biomass from landfill, decomposition or pile burning.

Residential replacement tree plantings are required by County Tree Ordinance. In the last 2 years approximately 1500 residential parcel dead trees have been removed, chipped or tub ground, and piled at local greenwaste facility, this project plans to utilize the greenwaste pile in biomass gasification. New growth from replacement tree planting will sequester carbon and reduce use of energy for cooling since all residential parcels are very small (< 5,000 sq ft) therefore each tree shades a large portion of the buildings on site.

RESEARCH: Measure forest re-growth and sequestration, Cal Poly Forestry program has permanent test plots throughout forest stand for long term monitoring of forest health conditions before, during and after drought related tree mortality. Cal Poly tracks forest composition, changes (size and number of stems), health status and measures forest health changes, reforestation, and biomass utilization beyond this project lifeline. Cal Poly and Cambria High School will study gasification of wood waste as a carbon negative alternative fuel to generate electricity and bio-char.

8. Priority Areas: *Please describe below how the project proposed will benefit priority areas as described in the Grant Guidelines.*

Our overall forest management strategy addresses several Forest Health priority areas (hazard fuel reduction, reforestation, pest management, and biomass utilization.)

BIOMASS UTILIZATION FOR CO-GENERATION: This gasification plant project concept paper is a component of an overall strategy to manage the impact of massive tree mortality in Monterey Pine, by reducing extreme fire hazard, restoring forest health, and best use of forest biomass for carbon sequestration and reduce negative greenhouse gas impacts.

Dead, dying, and diseased trees will be harvested; salvageable logs will be milled with local portable sawmills and sawdust and fines will be composted (under other grants and funding). Un-millable logs and other biomass will be chipped for utilization in the gasification power plant or bio-char generator provided through this grant.

Removing the biomass from the forest floor stimulates reproduction seedling growth. Monterey pine is serotinous and reproduces best when mineral soil is exposed and solar exposure is increased due to disturbance (particularly fire, but also windthrow). The alternative is to leave biomass on forest floor which will deepen the duff layer and reduce natural regeneration, pile burn, or landfills.

9. Permanence: *Please describe how the project will increase average stem diameter and provide other site-specific improvement to forest complexity, as demonstrated by the expansion of the variety of tree age classes and species persisting for a period of at least 50 years.*

Native Monterey Pine is on World List of Threatened Forests. Existing conservation easements and forest management plans detail a overall goal of a healthy, growing forest in perpetuity.

Monterey Pine is one of the fastest growing pines in the world and sequesters carbon at a rate faster than most timber species. This rapid growth characteristic is why it is one of the most widely planted timber species in the world. Removing unhealthy and dying trees will release remaining stems to utilize available nutrients and resources to stimulate new growth and increase stem diameter. Monterey pine responds favorably to open areas created by disturbance and thrives in distributed even aged pockets to create an overall uneven aged stand. Natural disturbance occurs through means such as small fires and windthrow which exposes mineral soil for seed reproduction.

Town of Cambria was developed within the 3,200 acre native Monterey Pine forest that has severe mortality of forest species on public and private forest land. The town of Cambria consists of 23% of the forest subdivided into 25 x 100 home site parcels. The remaining land use zoning is agricultural and held by a hand-full of public and private property owners. This stand has been studied extensively and landscape scale forest management plans are in place. Community goal is to maintain a healthy forest in perpetuity. Much of the 3200-acre Cambria forest is publicly owned or regulated through conservation easements. Nearly 40% of the forest is under protection by conservation easement or held in-fee by public agencies (CA State Parks, CA Fish and Wildlife, UC Santa Barbara) and or conservation organizations (The Nature Conservancy). Protecting this publicly accessible native urban forest has great resource, recreation and educational value. It provides resource as well as recreation and educational value.

Removing dead, dying and diseased trees will reduce potential for devastating wildland urban interface fire that releases not only products of combustion from native vegetation, but also synthetic man made products (buildings, cars, and contents) that produce noxious and toxic smoke and gases. Due to mortality and massive hazardous fuel accumulation present in Cambria's pine stand, the danger of an unnatural and large scale stand replacement and wildland urban interface fire is very high.

This project will reduce the accumulation of forest duff (biomass) on the forest floor which will stimulate tree growth and natural reproduction. Absent this project, the only foreseeable alternative for massive dead forest biomass is to pile burn it, leave it on the forest floor, or place in landfills. Deep duff layers reduce natural regeneration. Removing and utilizing biomass from dead trees (rather than allowing to decompose on forest floor and creating an excessively deep duff layer) will stimulate natural reproduction resulting in more trees faster.

To measure biomass utilization, forest re-growth and resulting sequestration and storage, Cal Poly University Forestry program has already established permanent test plots throughout forest stand for long term monitoring of forest health conditions before, during and after drought related tree mortality. Cal Poly plots track forest composition, changes (size and number of stems), health status and measures forest health changes, reforestation, and biomass utilization. Cal Poly and UC Santa Barbara have studied this forest for more than 40 years and will continue to do so beyond this project's lifeline and in excess of ten (10) years.

10. Long Term Forest Management: Check the appropriate boxes for the project. Describe in the box below how the project will provide multiple benefits such as: carbon sequestration, forest resilience, and improved ecological outcomes that restore watershed health and function and support biodiversity and wildlife adaptation to climate change.

☒ The project will practice uneven aged management with diverse ages, sizes, and species.

☒ The project will be done under an approved timber harvest plan, non-industrial timber harvest plan, or a working forest mgmt. plan.

This biomass gasification project is one component in a long road to returning the native Monterey Pine (*P. radiata*) forest to a healthy status while protecting air quality and reducing greenhouse gas impacts associated with certain forest management practices; specifically as a highest and best use of un-millable forest biomass to reduce negative greenhouse gas impact and permanently sequester carbon.

This project's biomass component of the overall strategic forest management plan is an ideal scale for the goals of the Forest Health Grant Program because it impacts 100% of the native forest stand. The stand is small enough to manage as a single unit, with multiple ownerships. The Cambria stand of native *P. radiata* is 3,200 acres surrounded by ocean, oak woodland and grassland. It does not adjoin any other conifer forest and is remote from the two other native *P. radiata* stands located in Santa Cruz and Monterey counties.

The Cambria native Monterey Pine (*P. radiata*) forest is on the World List of Threatened Species and protection of this natural source of genetic stock is essential. Much of the Cambria acreage is under permanent conservation easement held by The Nature Conservancy, local land conservation organizations, or public (state and local government) owned land. The common goal of these easements and associated forest management plans is to maintain forest health in perpetuity. Multiple partners are engaged in overseeing the successful implementation of the existing forest management plan, including state and local government forest land owners, private forest land owners, Cal Poly and UC Santa Barbara, Fire Safe Council, and community organizations.

P. radiata has a small native range for critical genetic seed stock to a global resource in forest products. *P. radiata* is one of the most widely planted timber species in the world. Australia, New Zealand, and Chili are dependent on clones from these trees for genetic revitalization. Cambria represents a genetic diversity of native *P. radiata* valued by global multi-billion dollar lumber industry.

The Cambria Forest Management Plan (funded through CAL FIRE grant) details forest health conditions, goals and treatment methodology for attaining goals. The overarching goal of the forest management plan is improving overall forest health by reducing invasive species; thin overstocked areas; and remove diseased, dead and dying hazard trees thereby reducing risk of a stand replacement fire and releasing remaining stems for increased growth. Harvest is under authority of THP and Governor's State of Emergency Declaration. This gasification co-generation project is a component of the overall forest management plan strategy.

Having a small community built in the middle of the stand will make the tasks very visible. Wide-scale tasks across the entire stand (invasives) and localized tasks (thinning) will generate discussion in the community regarding proper steps to take for forest health thereby providing opportunity for education and demonstration of positive forest health outcomes.

11. Abbreviated Budget: Please fill in the budget below. Provide an estimate of costs for the project. A specific budget displaying detailed line items will be required if a project application is requested. The budget total may not be adjusted upward at a later time. Please justify the budget in the box provided below.

Line Item Description	Amount Requested	Matched Funds	Total Cost
Personnel/Labor		\$164,700.00	\$164,700.00
Contractual			
Travel	\$2,000.00		\$2,000.00
Supplies	\$60,000.00	\$6,000.00	\$66,000.00
Equipment	\$450,000.00		\$450,000.00
Forest Legacy			
Other Direct Costs	\$40,000.00	\$15,000.00	\$55,000.00
Indirect (limited to 12% max)	\$59,000.00		\$59,000.00
TOTALS	\$611,000.00	\$185,700.00	\$796,700.00
Percentages	77%	23%	Total % 100

- Salaries and wages: \$114,300 Waste Plant operators 4 years x 450 hours per year @ \$ 63.50/hour - MATCH
 Manufacturer recommends average 1.25 hour per day maintenance

- Employee benefits: \$ 50,400 Waste Plant operators 4 years x 450 hours per year @ \$ 28/hour - MATCH

- Contractual: none

- Travel: \$ 2,000 for Cambria CSD staff to travel to powerplant factory to train on powerplant operation

- Supplies: \$ 5,000 for powerplant maintenance supplies-MATCH
 \$ 1,000 for bio-char generation supplies-MATCH
 \$ 60,000 for 3 years of wood chips 1,460 tons per year (market price)

- Equipment: \$400,000 to acquire 150KwH powerplant co-generation power plant, installation, and setup
 \$ 50,000 to acquire bio char generator for Cambria High School and Cal Poly education and research

- Other: \$ 20,000 Cambria High School and Cal Poly faculty educational instruction in alternative energy production
 \$ 20,000 for 3 years of Cal Poly forest plot carbon sequestering monitoring/research
 \$ 10,000 Cambria HS and Cal Poly administration-MATCH
 \$ 5,000 tree planting in open space if needed-MATCH

- Indirect costs: \$ 59,000 12% indirect

Matching Sources: List other funding sources, grants or applications that are considered matching funds for this proposal. Include any active or planned California Climate Investments projects of any kind.

Project or Program Name	Source	Requested Amount	Is it Funded?
Cambria Forest Health Grant- SLO FSC grantee	2014-15 FY CAL FIRE GHGR Fund	\$498,000.00	YES
Cambria East Village Tree Mortality- SLO FSC grantee	2016-17 CAL FIRE Tree Mortality grant	\$199,000.00	YES
Cambria Community Services District	Waste water treatment funds	\$170,700.00	YES

12. Capacity: Please describe how your organization has the capacity to carry out a project of this magnitude and complexity. Provide examples of how you will be able to start the project and later be reimbursed. Additionally, provide examples of similar work done in the past.

1. Cambria CSD (CCSD) has access to adequate financial resources to initiate the project pending reimbursement. CCSD has previous similar project experience in design, permitting and construction of capital projects including recent multi-million dollar water desalinization plant.
2. CCSD removed 300 dead trees from CCSD owned Fiscalini Ranch Forest Preserve and is conducting testing to determine most effective biomass utilization and forest treatment methods to stimulate pine regrowth. Long term operation and maintenance of waste water treatment plant with licensed water water treatment staff. Gasification power plant operation will be incidental and within scope of skills of treatment plant operators.
3. SLO County Fire Safe Council has managed several state and federal grants for hazardous fuel removal including currently three (3) in Cambria that will be coordinating salvage and sanitation harvest of entire forest stand which will serve as feedstock for power plant.
4. PG&E powerline easement maintenance trims or removes hundreds of dead Monterey Pine trees from powerline right of way and will support feedstock supply.
5. Cal Poly Forestry program has been studying Pitch Canker and other forest health issues for several years.

13. Forest Legacy: Fill out the section below only if your project has a conservation easement component.

- ☐ Check here if the landowner wishes to sell in fee title. ☐ Check here if the landowner wishes to sell in conservation easement.

Acreage to be enrolled in the Forest Legacy Program: Estimated value of conveyance:

- ☐ Is there an existing management plan on the area? ☐ Has a preliminary title report been completed on the property?

All of the following criteria must be met in order to be eligible for Forest Legacy Funding. Please check all the boxes that apply.

- ☐ The parcel is threatened by conversion. ☐ The parcel owners are willing to sell or donate lands or interests in lands.
- ☐ The parcel is forested by at least 10% canopy cover or could be under natural conditions.
Provision for continuity of one or more traditional forest uses, such as timber harvesting and rangeland livestock production which is utilized for economic purposes, or habitat maintenance and restoration that addresses fire hazard, mortality from pests and disease, carbon storage, restocking of underutilized forests, and reduction of non-native invasive species.
- ☐ Be available for future timber harvesting, grazing or recreation (e.g. hunting, fishing, hiking and other similar uses) and not be prohibited from these activities by any statute, previous conservation easement, or other regulatory requirements.
- ☐ The parcel possesses environmental values that can be protected and managed effectively through conservation easements at reasonable costs.
- ☐ The parcel is at least partially within or adjacent to a Forest Legacy Area.

At least one of the following criteria must be met in order to be eligible for Forest Legacy Funding. Please check the boxes that apply.

- ☐ The parcel directly affects water quality and other watershed values. ☐ The parcel has ecological old growth forest.
- ☐ The parcel has oak woodlands. ☐ Parcel supports rare plants. ☐ The parcel is biodiverse.
- ☐ The parcel is important for fish or wildlife habitat. ☐ The parcel has other key poorly represented forest types or seral stages.
- ☐ The parcel has riparian habitat. ☐ Parcel helps maintain habitat connectivity.

Please add
any specific
information