5. Narrative Description

a. Detailed Project Description Narrative

- **Project Description**

The LDSF Fuelbreak/Flat Top Biomass project site is located on LaTour Demonstration State Forest (LDSF), which is located approximately 45 miles east of Redding, in Shasta County. The project consists of creating a 400 foot wide fuelbreak, 200 feet on each side, along a series of four road segments located on LDSF covering 199 acres. In addition, a biomass thinning operation is planned on Table Top Mountain which encompasses 104 acres. In total, the Fuelbreak/ Table Top Biomass operation covers 303 acres on LDSF.

Location

One fuelbreak segment is located along a portion of the McMullen Mountain Road which is located on a main ridgeline that transects from east to west near the center of LDSF. This segment is 12,500 feet long and covers 100 acres. Another segment is located on the Cutter Road which is located in the northeastern portion of LDSF. This segment is 6,178 feet long and covers 57 acres. The last two fuelbreak segments are located on the Rim Road, another main ridgeline located in the southeastern portion of LDSF. The combined Rim Road segments are 4,544 feet long and will create 42 acres of fuelbreak. The 104 acre Table Top Biomass thinning operation is located on the eastern Forest boundary, covering the area from the south side of Flat Top Mountain west to the Rim Road and south to the Huckleberry Road.

Scope of Work

Both the fuelbreak and the biomass thinning operations have similar treatment criteria. In general, each treatment area will consist of harvesting small trees 3-12 inches in diameter at breast height (DBH) to achieve a desire spacing of approximately twenty feet between retained residuals. Harvesting will take place by means of mechanical sheers, skidding the resulting raw material referred to as doodles to nearby landings, chipping and blowing the material into chip vans, and transporting the chips to a co-generation plant located either in Redding or Burney.

All treatment area boundaries will be designated with florescent orange flagging. Sample treatment areas will be leave-tree marked in order to key equipment operators into tree selection and spacing criteria to allow completion of the operation using operator selection. With the exception of lodgepole pine and those infected trees, both criteria described below, those live trees that are larger than 12 inches in DBH shall be retained.

Those trees that are smaller than 14 inches to be retained to meet stocking and spacing criteria shall be those dominant trees that exhibit the best phenotype (physical characteristics) based on the immediately surrounding trees. Retained species in order of preference shall be Douglas-fir, sugar pine, ponderosa pine, western white pine, white fir and red fir. Where sufficient stocking exists in the preferred species to meet the twenty-foot spacing criteria, lodgepole pine smaller than 18 inches at DBH, based on ocular estimate, shall not be retained.

While similar in treatment criteria and objectives, the Table Top biomass thinning treatment is also targeted and intended to provide more than a fuelbreak and expanded growing space. The red fir in this area is infected with *Cytospora abietis*, a fungus widely found in California's true fir stands and commonly found in association with dwarf mistletoe. Therefore, this planned treatment covers a broader geographic area than those treatment areas specifically designed to create fuelbreaks. While this fungus can attack white fir and other tree species it is more specific to and prominent in the red fir in this stand and elsewhere on LDSF. Typical visible symptoms include increasing brick-red to brown flagging (needle die-back) in the crowns of infected trees, eventually leading to branch death and eventual tree mortality. Infected overstory trees also spread the disease to the understory, which perpetuates the infection cycle. In this area, those trees larger than 12 inches at DBH whose crowns exhibit Cytospora flagging greater than 50% and those trees that have succumbed to this disease shall be removed. Snags to be saved for wildlife purposes shall be marked (painted) with a "W" at DBH prior to operations. Trees in the 3-12 inch DBH range will be selected for removal based on spacing, species and the above described visible signs of infestation. The desired residual spacing for this area is also twenty feet.

Goals/Results

The objectives (goals/results) in each treatment area are also similar, and two-fold:

1) Resource protection by reducing the fuel loading in strategic areas, and thereby reducing the risk of and from catastrophic fire. This will be accomplished by reducing the number of conifer stems per acre in the smaller DBH classes. This will also reduce the ladder fuels that can allow ground fires to climb into the tree canopies resulting in catastrophic crown fires.
2) While a secondary by-product of the fuels reduction/biomass thinning, the operation will also serve to improve forest health and tree vigor by expanding growing space and reducing inter-tree competition for nutrients, moisture and sunlight.

3) Specific to the Table Top Biomass treatment area, an additional goal is to reduce the prevalence, impact and spread of the Cytospora fungus infection in the current and future crop of trees.

- **Project Summary**

The areas surrounding LDSF have a long history of devastating fires occurring on a regular basis, with significant fires occurring most recently in 1968, 1978, 1987, and 2003. The LDSF Fuelbreak/Flat Top Biomass project will create 303 acres of fuelbreak on LDSF (deliverable) which will reduce the risk of catastrophic wildfire while improving stand vigor and tree growth by thinning overstocked and/or Cytospora infected trees. In the event of fire on or approaching LDSF, these strategic fuelbreaks will act as natural barriers that will reduce the fire intensity, the potential for crown fire, the rate of spread, and provide logistical areas from which fire suppression efforts may more safely and successfully be undertaken. Additionally, the Flat Top biomass operation will improve the current and future stand health by removing much of the existing source of the ongoing Cytospora infection.

- **Environmental Setting**

The California Department of Forestry and Fire Protection (CAL FIRE) manages approximately 71,000 acres of Demonstration State Forests (DSFs), on behalf of the public. LaTour Demonstration State Forest (LDSF), a 9,033-acre mixed conifer forest located in the northern Sierra Nevada/southern Cascades is the second largest DSF. LDSF is located in eastern Shasta County in Townships 32 and 33 North, Ranges 2 and 3 East M.D.B & M. It ranges in elevation from 3,800 feet to over 6,700 feet with 80 percent of LDSF above 5,000 feet. The nearest community is Whitmore, eleven miles to the west.

LDSF is the headwater source of two major streams, Old Cow Creek and South Cow Creek. A tributary to the North Fork of Battle Creek and South Fork of Bear Creek drain small portions of the south side of LDSF.

The Board of Forestry and Fire Protection establishes policy which governs LDSF and other State Forests. Board policy states that the primary purpose of the state forest program is to conduct innovative demonstrations, experiments, and education in forest management. The entire LDSF has been zoned as a Timberland Production Zone (TPZ). This means the land is devoted to and used for growing and harvesting timber and compatible uses. Compatible use is defined as any use that does not significantly detract from the use of the land for, or inhibit, growing and harvesting timber. Compatible uses include watershed management, fish and wildlife habitat management, hunting and fishing, and grazing. No change in current land uses on or surrounding the project

areas are proposed or anticipated. The following is a list of management goals for LDSF (major goals synonymous with SNC mission and goals are underlined):

1. Maintain and strive to improve the research and demonstration program to provide valuable information regarding timber production, wildlife habitat requirements for various species that inhabit LDSF, and road management practices that result in reduced sediment. This information should be made available to the general public, small forest landowners, resource professionals, timber operators, and the timber industry. Research and demonstration projects will be aimed at providing practical information for forest landowners who need to manage a host of forest resources, including but not limited to, wildlife, water, soil, sensitive plants, and timber. Due to limited staff resources, cooperative research projects will be sought with other public and private researchers who share a common interest and direction in forest management. Staff will seek opportunities to disseminate to landowners and educate the public information on regarding Best Management Practices (BMPs) to maintain a healthy forest ecosystems. Continue research into forest-based carbon sequestration and forest management techniques to promote forest adaptation and resiliency to climate change.
2. Maintain a timber inventory for purposes of estimating growing stock by species and site class. The timber inventory data will be used to calculate timber growth and future sustained yield calculations. The timber inventory will also be used to estimate the quantity of certain wildlife habitat attributes such as snag retention and stand structure. The collection of this data will assist managers in evaluating wildlife use and habitat condition on LDSF.
3. Provide low impact recreational opportunities for forest visitors. Work toward expansion and improvement of existing facilities and the development of new recreational opportunities in suitable areas.
4. Harvest timber under sustained yield management (PRC 4513), methods and levels of harvest which permit continuous production of timber achieves maximum sustained production of high quality timber products (PRC 4513) without degrading the productivity and health of the forest, and contributes to local employment and tax revenue. Timber production will be conducted to provide local job opportunities, consistent with the overall objective of providing for recreation, wildlife, fisheries, aesthetic enjoyment, protection of soil resources, and protection of water quality.
5. Improve and maintain watershed protection through forest practices and erosion control efforts. Continue operating under the existing road management plan to maintain public access and prevent contamination of watercourses from road water runoff.
6. Continue an aggressive pest management program to help prevent the spread of insects and disease to keep tree mortality at a minimal level.

Harvest salvage material where feasible and compatible with the management of other forest resources.

7. Continue the fire prevention and hazard reduction programs and construct fuel breaks in critical areas to help keep the damage from wildfires at a minimum. Begin an aggressive prescribed burn program or other non-fire vegetation management program to help reduce the hazard associated with uncontrolled wildfires.

8. Work toward maintaining the widest possible diversity of managed forest stands in different successional stages, in order to foster ecosystem resiliency and adaptability to climate change, and develop a laboratory of representative forest conditions for research. Seek opportunities to maintain or increase functional wildlife habitat within the planning watersheds.

9. Prevent site degradation by using erosion controls and soil conservation practices in all management activities.

10. Continue to provide safe conditions for employees and visitors, identifying potentially hazardous situations, and where appropriate provide for safety guidelines, procedures, and equipment.

The surrounding property ownership includes private and National Forest lands. All adjacent lands are managed for timber production. Land to the north is administered by Beaty and Associates (Beaty) with Sierra Pacific Industries (SPI) owning a portion of the land. Property to the east is administered by Lassen National Forest and Beaty. SPI owns and administers lands to the south. Lands to the west are administered by Beaty and SPI.

b. Workplan and Schedule

- **Workplan**

The workplan, describing details and deliverables (underlined), necessary to successfully implement this project are included in the following outline and summarized in the “Schedule” table:

I. Prepare CAL FIRE Contract and Bid Package
   a. As a State Agency, CAL FIRE is required to prepare a contract, subject to review through the Department of General Services (DGS) for services in excess of $5,000, and solicit competitive bids through the CAL FIRE Business Services Office. The contract approval process typically requires several months to complete the internal review and must be approved prior to disseminating the bid package to potential bidders.

II. Prepare & Submit Harvest Exemption
   a. As described below under “Regulatory Requirements/Permits”, a harvest exemption will be required in order to conduct operations

for those portions of the project area not already covered under existing approved Timber Harvest Plans (THPs).

b. The exemption must be submitted to CAL FIRE at least five days prior to commencement of operations.
c. The exemption is only valid for one year from the date it is accepted for filing.
d. The exemption will be prepared and submitted by October 31, 2012.

III. Solicit Bids for Work
   a. The bid package, or notice, is sent to perspective bidders well in advance of the specified due date. It contains maps and project specifications including the bid due date and the contract expiration/project completion date. It also contains a schedule for a site visit with interested perspective bidders to visit the project site and ask pertinent questions prior to bid submission.
   b. The tentative date for the bid solicitation, mailing the bid package to perspective bidders, is October 31, 2012.

IV. Flag/Sample Mark Project Areas
   a. A sample mark has been prepared for the Fuelbreak along McMullen Mountain Road. Additional sample marks will be done in each of the treatment areas.
   b. Snags to be retained for wildlife purposes will be marked in the Table Top biomass treatment area prior to operations.
   c. Sample marking and flagging will be completed by the end of October, 2012.

V. Open/Award Bid
   a. Due to the projects elevation and lack of winter access the tentative bid due date is December 3, 2012 to allow perspective bidders to visit the project site prior to submitting bids.

VI. Project Work Commencement/Completion
   a. Upon awarding the bid, and approval of the contractor by CAL FIRE Contracting, the contractor may commence work.
   b. Tentative commencement date June 1, 2013, depending upon the successful bidders schedule and production rates. However, the contract will contain an expiration final completion date of October 31, 2013.
   c. Assuming a production rate of five acres per day, the project could conceivably be completed by the first of October, 2013. However, given the uncertainties with regard to the contract approval process as well as weather conditions and access, and to avoid the need to extend the contract, the contract will specify a completion date of October 31, 2013.

- **Schedule**

PROJECT DELIVERABLES	TIMELINE
Prepare CAL FIRE Contract & Bid Package	July 30, 2012
Prepare & Submit Harvest Exemption	October 31, 2012
Solicit Bids for Work	October 31, 2012
Flag/Sample Mark Project Areas	Summer- Fall , 2012
Open/Award Bid	December 3, 2012
Project Work Commencement/Completion	June 1, 2013 – October 31, 2013

c. ***Restrictions, Technical / Environmental Documents and Agreements***

- **Restrictions**

Purchase of the property by the California Division of Forestry was made possible with the enactment of Chapter 1465 Statutes, dated July 17, 1945. Therein the legislature encumbered the sum of $100,000 from the State Treasury for the purchase of the Cow Creek Unit by the Division of Forestry from the State Lands Commission. The patent deed to the property known as "LaTour State Forest" was executed on January 8, 1946. LDSF was the first sizable state forest acquired.

LDSF has no property restrictions, leases and/or encumbrances that could adversely impact the proposed Fuelbreak/Table Top Biomass project completion. (See Checklist – Restrictions/Agreements N/A)

- **Agreements**

As describe above under the "Workplan", as a State Agency, CAL FIRE is required to prepare a contract, subject to review through the Department of General Services (DGS) for services in excess of $5,000, and solicit competitive bids through the CAL FIRE Business Services Office. The contract approval process typically requires several months to complete the internal review and must be approved prior to disseminating the bid package to potential bidders. As per the Forest Practice Rules (FPRs), only Licensed Timber Operators (LTO) may conduct timber operations in the State of California. Upon awarding the project to the successful bidder both parties (CAL FIRE and contractor) will sign and receive a copy of the signed contract agreement and bid package. As this project is dependent upon the availability of grant funds, the contract will be prepared and submitted to CAL FIRE for review once SNC grant funding is approved in July, 2012. A copy of the contract agreement will be provided to SNC as a deliverable once it has been approved by CAL FIRE. (See Checklist – Restrictions/Agreements N/A)

- **Regulatory Requirements/Permits**

  The Forest Practice Rules require that an environmental impact assessment be prepared as a part of and prior to harvesting timber in California. Portions of the proposed project area are covered under existing Timber Harvest Plans (THPs), a permitting process guided by statutes and implemented through policies established by the Board of Forestry as the functional equivalent of an EIR. Specifically, the entire 104 acre Table Top Biomass project area is covered under approved THP #2-09-084-SHA. A portion of the 42 acre Fuelbreak along the Rim Road is covered under approved THP #2-09-054-SHA. A portion of the McMullen Mountain Fuelbreak is also covered under an approved THP, #2-10-049-SHA. Portions of these documents are attached (See Supplemental and Supporting Documents and RegPermit.pdf)

  For the balance of the Fuelbreak project areas, a timber harvest exemption will be required in order for timber operations to occur, and will be submitted to CAL FIRE, the lead review agency, prior to operations. Unlike a timber harvest plan (THP), which is a permitting process typically required prior to commercially harvesting timber in California, an exemption is a notification. Exemptions are allowed for timber operations that meet certain conditions and criteria, including the harvesting of dead, dying, or diseased trees and fuelwood products in amounts of less than 10% of the average volume per acre and operations that are limited to those trees that eliminate the vertical continuity of vegetative fuels and the horizontal continuity of tree crowns, for the purpose of reducing the rate of fire spread, duration and intensity, fuel ignitability, or ignition of tree crowns, as per Forest Practice Rules, 14 CCR §1038 (b) and (i) and the Forest Practice Act, Public Resource Code 4582. The exemption must be submitted at least five days prior to commencement of operations. As this project is dependent upon the availability of grant funds, the attached exemption notice (See Supplemental and Supporting Documents and RegPermit.pdf) will not be submitted to CAL FIRE for review until after grant funding is approved in July, 2012. Also, as an exemption is only valid for one year after submission, and as actual work is planned to commence in 2013, the exemption will be submitted to CAL FIRE in October of 2012. The SNC will receive a final copy of the Exemption, as a deliverable, once it has been submitted and accepted for filing by CAL FIRE.

  In addition to existing, approved THPs and an Exemption to be prepared for this project, the LDSF staff operates under a Board of Forestry approved Management Plan. This plan provides general objectives and goals, and lays out the planned on-the-ground management on LDSF for the next five to ten years with an emphasis on forest demonstration, research, recreation, maintenance of wildlife habitat, and water quality protection. It serves as a guide to Forest managers as well as a public

disclosure of the management direction at LDSF. The plan is required pursuant to Public Resources Code (PRC) §4645 and Article 8 of the California Board of Forestry and Fire Protection (Board) policy.

- **California Environmental Quality Act (CEQA)**

  While projects conducted on Latour Demonstration State Forest are not subject to review under the provisions of NEPA (See Checklist - NEPA N/A), as required on federal lands, they do require CEQA analysis and documentation. In general, the California Environmental Quality Act (CEQA) requires that an analysis of the potential environmental impacts be conducted, submitted, and approved prior to undertaking projects that are subject to a permitting process. The LDSF Management Plan, discussed above, is subject to review and approval by the California Board of Forestry, and therefore requires an environmental assessment. This requirement is fulfilled by a Negative Declaration CEQA document that has been approved for the LDSF Management Plan. That is, this project is covered by and in compliance with LaTour Demonstration State Forests' (LDSF) Management Plan and accompanying Mitigated Negative Declaration (State Clearinghouse #2008062009), both revised and approved by the California State Board of Forestry in August, 2008. This approved CEQA document, Notice of Determination attached to the application (See Supplemental and Supporting Documents and CEQA.pdf) contains the analysis necessary to conclude that projects such as the proposed Fuelbreak/ Biomass operation, combined with the past, present, and reasonably foreseeable probable future projects will not have a reasonable potential to cause or add to significant adverse cumulative impacts to the watershed, soil productivity, biological, recreation, visual, traffic, or other resources.

d. Organizational Capacity

Latour Demonstration State Forest has a full-time staff of three and a seasonal staff of two to six Forestry Aides. Full-time staff includes the following:

Dave Loveless, Forest Manager, RPF #2220 (Registered Professional Forester). Dave has a BS Degree in Forestry from Humboldt State University (HSU), has been working in the forest industry for 37 years and has been an RPF since 1984. He was an Associate with W.M Beaty & Associates, Inc., a land and timber Management Company located in Redding, for 24 years, and has been with CAL FIRE for seven years. Prior to becoming Forest Manager at LDSF, he held the position of Review Team Chair with CAL FIRE, heading an inter-agency interdisciplinary team tasked with reviewing all timber harvest plans (THPs) in inland northern California.

Ben Rowe, Assistant Forest Manager RPF #2686. Ben has a BS Degree in Wildlife Management from HSU, and has been working in the forest industry since 1993 and has been an RPF since 2000. He was a forester for Louisiana Pacific, a private consultant for wildlife and forestry, and also worked for W. M. Beaty and Associates until 2005. Ben started with CAL FIRE in 2005 and has been at LDSF since 2006.

Shannon Johnson – Forestry Assistant II. Shannon has a BS Degree in Conservation Biology from California State University Sacramento (CSUS). She has been working with CAL FIRE since 2004, starting as a Student Assistant at Sacramento Headquarters and also worked on LDSF for three seasons as a Forestry Aide while completing her degree. Prior to returning to LDSF in 2011 she was a Forestry Assistant II in the San Diego Unit and also at Jackson Demonstration State Forest (JDSF). She has recently taken the RPF examination.

Forestry Aides are hired each summer for two to nine months to assist staff with timber inventory, timber sale preparation, and other projects and tasks on LDSF. LDSF intends to hire four Forestry Aides for the 2012 and 2013 field seasons.

Also, as described above under “Agreements”, this project will be contracted to and executed by a licensed timber operator (LTO), as required under the Forest Practice Rules. There are several LTOs in the area who specialize in and have the appropriate equipment to conduct a biomass thinning operation. The contract will be administered and the operation supervised by LDSF Staff to ensure that the work is completed in compliance with the contract specifications.

In addition to the experienced and well rounded workforce, LDSF has a track record of undertaking and completing numerous projects on an annual basis. Staff prepares THPs and administers timber sales, typically harvesting 2-4 million board feet of timber annually. Approximately 900 acres are re-inventoried annually to maintain a database for timber and wildlife management. Sixty acres of brush was cleared, under contract, and an additional twenty acres broadcast burned last year in preparation for planting. Road contracts were prepared both last year and this year and the projects were completed on-time. The road projects are intended to improve and disconnect the road drainage system to reduce run-off and discharge into watercourses in order to enhance the watershed. As part of this year’s timber sale, fifty-five acres of brush was cleared under a variable retention silvicultural prescription in preparation for planting. Many of these projects are similar in nature and objective to this fuelbreak/biomass project; reduce fuel loading, improve stand vigor, forest health, improve wildlife habitat and diversity, and watershed enhancement.

Other fuelbreaks have also being established along high use roads such as the Bateman and Huckleberry Roads. These projects were completed, under contract, by LDSF Staff and have been maintained through the use of inmate fire crews or by means of contracts to control vegetation.

e. Cooperation and Community Support

The Cow Creek Watershed Management Group (CCWMG) is an organization comprised of local ranchers, timber companies, small landowners and other involved citizens interested in protecting and managing the Cow Creek drainage and other surrounding watersheds. As a major landowner/manager in this watershed, CAL FIRE is involved in this organization, and the LDSF Manager is a member of the Board. In general, the CCWMG is supportive of any activities that serve to protect or enhance these watersheds and their resources from which many derive their livelihood as well as recreational enjoyment. (See attached letter of support from the CCWMG).

In addition, the LDSF Management Plan, discussed above, is revised and presented to the Board of Forestry every five years. As described, this plan provides general objectives and goals, lists past projects, and lays out the planned on-the-ground management on LDSF. This process is transparent, open and available to the public for comment. The LDSF staff also has the opportunity to interact on a regular basis with recreational users where we have the opportunity to solicit feedback as to their general perception of LDSF. While anecdotal, comments received through these cursory contacts and conversations with the general public indicate overwhelmingly positive support for the management practices conducted on LDSF. Work to be conducted under this grant will not only serve to protect and further enhance the resources, but will also demonstrate to the public the commitment to obtain these goals through intensive forest management on LDSF.

f. Long-Term Management and Sustainability

A critical factor in establishing fuelbreaks includes a commitment to maintain them in order to preserve and capitalize on the original investment so that, should the need arise, they serve their intended purpose. CAL FIRE is committed to managing the LDSF for the long-term by investing in forest management as well as infrastructure, and by maintaining those assets and investments. As described under “Organizational Capacity”, other fuelbreaks have been established along high use roads such as the Bateman and Huckleberry Roads and have been maintained through the use of inmate fire crews and contract work to control brush and manage ingrowth. This year inmate crews cleared brush and trees along approximately three miles of roads on LDSF, including portions of existing Bateman fuelbreak. The work was

accomplished this fall and winter by hand clearing, piling, and burning. These crews, stationed at the Sugar Pine Camp near Ingot and Hwy 299, work on LDSF on an annual basis as available, typically after fire season.

The maintenance frequency and intensity for fuelbreaks are dependent upon how rapidly undesirable vegetation may begin to re-occupy the site and how much of this vegetation, ladder fuels, litter, and down material, is acceptable before the fuelbreak begins to lose functionality. Concentrations of heavy fuels created from falling limbs and snags, and removed during the original treatment are much slower to build up to the point where they create a fire hazard. However, ladder fuels, often a key contributor in stand replacing fires, must be removed before they provide that component and opportunity. Established fuelbreaks on LDSF are treated on an as-needed basis with follow-up thinning and brush removal occurring roughly every ten years. For the long-term management of this project, fuelbreaks established under this grant project will be inspected annually and maintained on a similar ten-year or as-needed schedule utilizing inmate crews. Guided by these essential management and maintenance standards, no additional supplemental and supporting documents are requisite for the management of these fuelbreaks (See Checklist – Long-Term Management Plan N/A).

g. Performance Measures

The following is a list and discussion of potential performance measures that may apply to this fuelbreak/biomass project. The first four quantitative performance measures listed are required, if applicable, to all projects, as per SNC Grant Guidelines. The subsequent three are proposed project-specific performance measures selected from the pre-approved list developed by the SNC:

- **Number of People Reached**

As described above under “Cooperation and Community Support”, those members of the Cow Creek Watershed Management Group and other interested parties who attend the meetings are familiar with management activities that take place on LDSF. In addition, LDSF accommodates over 6,000 recreational visitors and campers annually. Uses include camping, fishing, hunting, picnicking, sightseeing, hiking, horseback riding, nature walks, ATV, winter recreation, firewood and Christmas tree cutting. Each of these visitors are exposed to management activities that have and are occurring on the Forest. We have also been working with Shasta College, a local community college, to develop a MOU which would allow the college to use facilities and to conduct summer classes for those interested or majoring in natural resource fields. This program will provide further outreach and opportunities to expose and educate the community about management activities on LDSF.

- **Dollar Value of the Resources Leveraged for the Sierra Nevada**

  Grant funds provided for this project through the Sierra Nevada Conservancy will be leveraged in two fundamental ways:

  - The biomass material produced from this operation will be sold by the contractor to substantially offset the cost of operations. The remaining cost of the operation in excess of revenue, primarily attributable to the haul distance and resulting cost, will be supplemented by grant funds to subsidize the extended haul cost. Based on a projected yield of 4,500 tons of biomass from the operation, an estimated cost of $64 per bone-dry ton delivered to market, and a current quoted spot price of $44 per bone-dry ton delivered, the operation will yield revenues, approximately $198,000, that will offset nearly 69% of the cost, approximately $288,000. Actual costs and revenues will not be known until the contract bid is awarded, the exact amount of biomass material is known, and the harvested material is sold. These figures will be provided at the conclusion of the operation.

  - LDSF staff In-kind contribution. Those costs associated with preparing the application, permits, environmental documents, contracts, field preparation and layout, flagging, marking, contract administration, and subsequent reports. See “Budget” for all projected cost estimates and the estimated dollar value of in-kind contributions from the grantee that extend, or leverage, SNC grant funds.

- **Number and Type of Jobs Created**

  The LaTour Fuelbreak/Flat Top Biomass project is a significant undertaking that will take several months to complete. During this time, it will employ numerous personnel not only to accomplish the specific project, but indirectly as a result of the trickle down effect as well. While it is uncertain whether this project may result in creating new jobs in the community as a whole, it will contribute to maintaining and perpetuating existing jobs in the timber industry, co-generation energy production industry, and the community as well.

- **Number of New, Improved or Preserved Economic Activities**

  This performance measure pertains to the fuelbreak/biomass project in that significant revenues will be generated through the sale of the biomass material to a co-generation plant by the contractor, which will be used to cover much, but not all, of the cost of the operation. The balance of the operating costs are intended to be subsidized under this SNC grant program (See “Budget”). The influx of wages spent by individuals directly and indirectly involved in this project into the community will contribute to and can only serve to stimulate economic activity both locally and beyond.

- **Kilowatts of Renewable Energy Production Capacity Maintained or Created**

  The raw materials, all renewable by-products, harvested from the fuelbreak/biomass operation will be used to generate energy. Based on conversion tables available at http://rsbiomass.com/woodfuels.html, softwood chips at 30% moisture content can produce approximately 3.5 kWh of electricity per Kg of fuel. Also, based on an estimated total production of 4,500 tons of biomass material, predominantly composed of softwood chips, the estimated amount of renewable energy production capacity maintained by this project is calculated to be 14.288 million kilowatt-hours (4,500 tons = 4,082,331 Kg * 3.5 kWh/Kg = 14.288 megawatt-hours. This translates into enough energy to supply 2,381 homes with electricity for a year, based on an average household consumption of 6,000 kWh per year (http://www.physics.uci.edu/~silverma/actions/HouseholdEnergy.html).

- **Tons of Carbon Sequestered or Emissions Avoided**

  In 2007 the State of California passed the Global Warming Solutions Act (AB 32), which set targets to reduce greenhouse gas emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. The California Air Resources Board was tasked with obtaining compliance with the cap through regulatory and market approaches. Planning is currently underway and definitive decisions by the Board have not yet been taken, however, it appears that forests will play a significant role in non-regulated strategies to meet targets. This is anticipated to occur both as offsets within a cap and trade system and through voluntary measures.

  Recognized strategies to mitigate GHG emissions and enhance terrestrial sequestration include reforestation, forest management and fuels treatments to avoid catastrophic losses. LDSF will contribute to the targets of AB32 by increasing the resiliency of the Forest to catastrophic mortality by improving the general health of stands, pre-fire implementation of shaded fuel breaks and maintenance of firefighting infrastructure such as roads, signage and water sources. The long-term carbon stocks of the Forest are anticipated to increase over time. For example, the LDSF Long-Term Management Plan (Option A Plan) indicates that the timber inventory on the Forest will increase from about 22.7 MBF per acre in 2005 to 34.4 MBF per acre in 2105.

  Forest products produced from LDSF will sequester carbon during their life cycle. Biomass fuels produced on the Forest also provide an opportunity to replace fossil fuels with an alternative energy source that is close to carbon neutral.

  LDSF, in cooperation with WESTCARB, is currently conducting a Carbon Sequestration Project designed to demonstrate various methods to

improve carbon sequestration in forested environments and the protocols in carbon registration. A total of seven units encompassing 281 acres were established between 2007 and 2009 and treated by various means including clearing brush using tractor & brush rake or masticator, controlling brush with spray treatments to release existing conifers, and planting tree seedlings.

Annually across the country, millions of tons of carbon are emitted into the atmosphere as a result of the environment and typical nature of the fuels consumed under wildland fire conditions. By implementing this fuelbreak/biomass project on LDSF, potentially thousands of tons of emissions may be avoided in the event of a fire. The material harvested during this operation will be dried and burned at one of several surrounding co-generation plants under environmentally controlled conditions. While there are alternative opinions, current Federal EPA regulations have accepted the premise that facilities fueled by woody waste are "carbon-neutral". That is, it is considered a process that simply speeds up the carbon cycle that would otherwise naturally occur as plants decompose. Therefore, emissions produced by converting the material from this project to energy in licensed wood-burning co-generation plants are considered to be “carbon neutral” according to the EPA.

Alternatively, based on extrapolation of information contained in Forest Carbon Emissions Model (FCEM) Report No. 2 for four California Fires, prepared by Thomas M. Bonnicksen, Ph.D., March 12, 2008, a catastrophic fire on LDSF may conservatively have the potential of emitting 50 tons of CO2 per acre produced from combustion, and 185 tons of CO2 per acre produced from combustion and decay over a 100-year period. Expanded forest wide, these estimates amount to approximately 452 thousand tons and 1.671 million tons, respectively, of potential CO2 emissions that may be avoided from a catastrophic fire on LDSF.

In this report, the author states: “The immensity of greenhouse gas emissions illustrated in Table 7 from just these four wildfires is a warning. Clearly, we must make every effort to reduce the amount of excess biomass in forests to prevent catastrophic wildfires. That means thinning trees to restore the natural health and diversity of forests and to make them more resistant to crown fires. Reducing wildfires may be the single most important action we can take in the short-term to reduce greenhouse gas emissions and fight global warming.”

- **Acres of Land Improved or Restored**

  The Fuelbreak/Flat Top Biomass project will improve the productivity of the forest land by removing dense brush and the overstocked smaller conifer trees (ladder fuels) that are currently competing with crop trees for

limited resources, moisture, nutrients and sunlight, as well as creating hazardous and potentially catastrophic fire conditions. This project proposes treatment of 303 acres of timberland. Actual acres treated will be reported upon completion of the project.