STATEMENT OF PROJECT OBJECTIVES Placer County Placer County Biomass Utilization Pilot Project

A. PROJECT OBJECTIVES

The proposed project, to continue the evaluation of the feasibility of developing a woody biomass combined heat and power system in Placer County has the following objectives:

- Reduce the risk of catastrophic wildfires in Placer County
- Protect Placer County citizens and visitors from the consequences of catastrophic wildfires
- Improve air quality in Placer County
- Reduce greenhouse gas emissions in Placer County

Forest fuels reduction activities necessary in Placer County for mitigating the potential for catastrophic wildfires necessitate that the woody biomass removed from the forest be utilized in some form. A locally available biomass power facility would be able to utilize such fuels and assist Placer County in the above stated goals.

B. PROJECT SCOPE

The County of Placer, California plans to utilize the Congressionally Directed Project via the U.S. Department of Energy (DOE) pending award No. DE-FG36-08GO88026 to facilitate a comprehensive project that integrates all facets of feasibility for the successful deployment of a woody biomass to energy project located within Placer County, specifically the Lake Tahoe Basin. Such a facility is critical to serving the hazardous forest fuels reduction programs in the Basin in future years. In order to accomplish this, a series of analytical and investigatory studies are to be undertaken that will provide either a public agency or private entity with due diligence grade information to assess the feasibility to develop, construct and operate a small (1 to 3 Mega Watts) biomass facility.

Through separate federal and county funding, Placer County has already begun a biomass utilization technology assessment to serve as a basis for this DOE. That on-going project is scheduled to be completed in June 2008.

This biomass project will meet many of the objectives spelled out in the DOE biomass program, particularly in providing environmental benefits in reducing air emissions (by diverting biomass from being open burned) and greenhouse gases (replacing fossil fuel use with carbon neutral biomass). In addition, this biomass project could serve as a model to other communities in forested areas for both economic development and as a significant aid in efforts to reduce catastrophic wildfires.

C. TASKS TO BE PERFORMED

Task 1.0 Air/Water Emissions and Carbon Credits/Emission Offsets Study: This study will determine how projected air and water emissions from the biomass to energy project will be offset to conform to local, state, and federal regulations. Both criteria air pollutants and greenhouse gas (GHG) emissions will be quantified. Emissions from open in-forest pile burning of biomass will be compared against those from the biomass-to-energy project. The anticipated reduction in emissions due to processing for biomass-to-energy conversion will yield offset credits which are critical to the permitting process of a biomass-to-energy project in Placer County.

<u>Subtask 1.1</u> – Determine criteria air pollutant and greenhouse gas emissions from the Placer County Government Center in the Lake Tahoe Basin (LTB) at Tahoe Basin (Tahoe Basin) biomass-to-energy project, using process operations selected from the biomass-to-energy conversion technology assessment. Emissions will include those from the biomass removal, processing (chipping/grinding), and transport. Also, the impact of processing biomass fuel at the Cabin Creek Transfer Station and other potential processing facilities will be assessed. This task will be conducted in coordination with the "New Source Review Permit Analysis" study discussed below (Task 6).

<u>Subtask 1.2</u> – In coordination with the "Woody Biomass Fuel Source Analysis" study described below (Task 7), estimate the amount of biomass, location and distance from Tahoe Basin that could be used for the Tahoe Basin project:

- Current available and planned, wood biomass slash piles within the LTB.
- Future available biomass fuels generated from the wild land-urban interface (WUI) in the LTB.
- Biomass fuels currently being transported to conversion projects outside the LTB.

<u>Subtask 1.3</u> – Quantify air emissions that are avoided as the result of the Tahoe Basin biomass-to-energy project, based on the biomass results of Subtask 1.2:

- Open, in-forest, pile burning of wood biomass slash piles.
- Power generation from fossil fuels plants that is displaced by Tahoe Basin biomass heat and power generation.
- Reduction in the occurrence and/or intensity of forest fires as a result of forest biomass thinning operations that are supported by the Tahoe Basin project. This will be assessed to the extent possible, based on the progress of currently on-going research efforts being sponsored by the United States Forest Service (USFS).
- Transporting biomass fuels to conversion facility(s) outside of the LTB.

<u>Subtask 1.4</u> – Quantify the increased rate of carbon sequestration in the LTB treated forest as the result of the Tahoe Basin sponsored forest biomass fuel thinning activities -- to the extent possible relying on the USFS research efforts mentioned above.

- <u>Subtask 1.5</u> Determine projected criteria air and GHG emissions offset credits from the Tahoe Basin project, from the results of the previous tasks. Develop procedures to validate the offset credits, which will involve working closely with the Placer County Air Pollution Control District (PCAPCD), California Air Resources Board (CARB), and U.S. Environmental Protection Agency (EPA) to insure that the offsets are quantifiable, real, permanent, enforceable and surplus. This task will be conducted in coordination with the "New Source Review Permit Analysis" study discussed below (Task 6).
- <u>Subtask 1.6</u> Assess the feasibility of establishing a local Placer County Carbon Offset Credit Trading market, with emphasis on activities including forest fuel thinning for improved forest health, and diversion of biomass to energy conversion that would have otherwise been consumed in the field.
- <u>Subtask 1.7</u> Assess Tahoe Basin project water requirements, water availability, and wastewater discharge, refining findings from the technology assessment.
- <u>Subtask 1.8</u> Assess the impacts and incorporate the relevant findings of the Placer County Human Health Impact of Air Pollution (HHIOAP) study results (performed as a separate project). This project (the HHIOAP) will support community education, empowerment, and policy development efforts directed at understanding the prevalence, underlying causes, and promising mitigation measures that reduce asthma in children throughout Placer County. Goals include: 1) Developing a health forecasting tool around asthma, 2) Increasing community understanding of causes and impacts of asthma on youth age 0-18, 3) Establishing Roseville and Kings Beach (Tahoe Basin area) community air quality task forces, 4) Increasing community involvement in asthma and air quality public policy development. The project team will evaluate the findings and incorporate the results into design of the project facility and can be utilized to assist in the New Source review permitting process (Task 6).
- Task 2.0 Business Plan: This plan will include the process flow, operations and maintenance activities, and the contractual obligations of each business interest (i.e. project partners). Financial performance and payback period will be modeled.
- <u>Subtask 2.1</u> Determine process flow, operations, and maintenance activities based on specific project parameters.
- <u>Subtask 2.2</u> Develop financial pro-forma using data generated from other sections (i.e. Fuel Source Analysis, Emission Offsets/Credits, etc). Includes off-take contracts, Renewable Energy Credits (RECs), GHG, power, and thermal/cooling determined energy economics analysis.
- <u>Subtask 2.3</u> Based on Tasks 1 and 2, frame the business requirements for the Tahoe Basin facility.
- <u>Subtask 2.4</u> Investigate/develop contractual relationships with equity partners and other potential project funding entities.
- Task 3.0 Logistics Study: This study will validate the harvest, product processing strategy, transportation methodology, and onsite/offsite storage requirements of the material to support a biomass energy facility at the Tahoe Basin location.

- <u>Subtask 3.1</u> Validate the current harvest methods to understand the woody biomass composition. Determine if changes in the initial harvest practices can reduce additional steps required to prepare the woody biomass material.
- <u>Subtask 3.2</u> Define the material processing requirement (i.e. chipping/grinding) to achieve the correct material composition required to support the selected facility. Document the potential emissions created by the different processing methods and processing cost associated with each.
- <u>Subtask 3.3</u> Document the current transportation logistics network and define opportunities to improve transportation efficiencies to reduce potential air pollutants and GHG emissions through reduced transportation miles. Also, define the impact the winter months may have on the transportation model.
- <u>Subtask 3.4</u> Assess the year round onsite/offsite storage requirement for the program. Determine the minimum/maximum requirements for material needed to support the project during potential logistics or material interruptions.
- <u>Subtask 3.5</u> Determine the strategy to process excess product or material that cannot be used at the Tahoe Basin facility. Develop an alternate solution to allow for direct processing to existing biomass facilities or material contractors.
- Task 4.0 Energy Economics Analysis: This financial analysis will review the economic feasibility for development, construction, operations and maintenance of the proposed facility. Key factors considered will include; net cost of the energy (electricity and thermal), renewable energy credits that may be available, the interconnection costs and revenue generated from the sale of energy.
- <u>Subtask 4.1</u> Review economic feasibility for development, construction, operations and maintenance of a biomass facility at the Tahoe Basin site.
- <u>Subtask 4.2</u> Determine following key factor for economic analysis: Net cost of energy (electricity and thermal); RECs; carbon credits; interconnection costs, and; Revenue generated from sale of energy and thermal heat.
- <u>Subtask 4.3</u> Determine benefits to participants and stakeholders assessment. This will include both pure economic benefits, potential economic benefits (i.e. lowered insurance rates) and benefits to society (less health issues, cleaner air and water, and other non-economic values).
- <u>Subtask 4.4</u> Investigate/develop contractual relationships with energy and REC purchasers.
- Task 5.0 Biomass to Energy Technical Requirements Statement of Work and Request For Proposal Process Development Plan: This plan will determine the technical specifications for the most promising woody biomass conversion system and provide a defined plan set of tasks for procurement of such a system.
- <u>Subtask 5.1</u> Refine technical specifications for biomass combined heating and power (CHP) system at Tahoe Basin. Prepare set of tasks for procurement of CHP system.

- <u>Subtask 5.2</u> Prepare Request for Proposals (RFP) and solicit candidate vendors/developers for proposal to design and construct CHP system at Tahoe Basin.
- <u>Subtask 5.3</u> Review proposals received and recommend selected candidate firm (or team of firms) to design and construct facility.
- Task 6.0 New Source Review Permit Analysis: This analysis will be the basis of the necessary permitting for a woody biomass to energy facility in the Lake Tahoe Basin. The Basin has extremely stringent air permitting requirements Best Available Control Technology analysis and air dispersion modeling will be necessary to satisfy local, state, and federal regulations and statutes.
- <u>Subtask 6.1</u> PCAPCD (agency responsible under federal law) will perform an engineering analysis which will include a compliance review of both the equipment (the facility and the fuel handling equipment) and emissions to any applicable federal, state, or local air pollution rules, regulations, or laws. The review will include a Best Available Control Technology (BACT) analysis, the determination of required offsets, and the review of air dispersion and risk assessment modeling.
- <u>Subtask 6.2</u> If the offset of emission increases of the facility are required, then emission reductions credits must be identified in sufficient quantity. The source of emission reductions must meet the criteria of being real, quantifiable, enforceable, permanent and surplus. Task 1.0 "Air/Water Emissions and Carbon Credits/Emission Offsets Study" will provide information regarding avoided emissions as well as information to demonstrate that the criteria are met. PCAPCD will assist in the quantification of emission reductions to be garnered from avoided emissions based on the study information and adopted protocols and methods, and seek EPA and CARB approval.
- Task 7.0 Woody Biomass Fuel Source Analysis: This analysis is intended to assess long-term, sustainable woody biomass fuel sources to validate the optimum capacity of a local supply (30 mile radius). Additional investigation of long-term sustainable supply (10-plus years) obtainable via forest stewardship contracts and other viable contracting opportunities will be conducted.
- <u>Subtask 7.1</u> Literature search for existing biomass availability studies specific to northern portion of the LTB and region. Includes interviews with appropriate public and private entities involved in forest activities.
- <u>Subtask 7.2</u> Conduct a woody biomass fuel market survey to determine potential fuel costs and availability trends within target study area large enough to sustainably supply the Tahoe Basin biomass conversion system.
- <u>Subtask 7.3</u> Develop a competition analysis, noting where available fuel is currently dedicated to competing plants and/or competing uses, and estimated current delivered prices (\$/bone dry ton). Characterize the origin, quality, and current disposition of identified available fuel supply.
- <u>Subtask 7.4</u> Identify future fuel supply sources and risks.
- <u>Subtask 7.5</u> Utilizing key findings and results from the wood fuel supply availability report generated in above tasks, develop a fuel procurement plan. The procurement plan will provide strategies and task list for development of long term and sustainable supplies of wood fuel contracts.

- <u>Subtask 7.6</u> Investigate/develop stewardship and/or contractual relationships with major wood fuel suppliers.
- Task 8.0 Communications Plan/Guidebook Preparation: A Communications Plan, with the preparation of a project development guidebook as its centerpiece will be prepared. The guidebook will be prepared not only to document the development of the project, but also to serve as a guidebook for other communities considering similar biomass utilization projects.
- <u>Subtask 8.1</u> To effectively interface with the community and articulate the environmental and community acceptance plan, a Communications Plan (CP) will be developed that facilitates proactive interaction with the community. The CP should include information on: background; objectives; key themes and messages; collaborative partners, stakeholders, and audiences; and, activity schedule. The CP should coordinate with the Placer County Strategic Plan for Wildfire Protection and Biomass Utilization Program approved by the Placer County Board of Supervisors in October 2007.
- Subtask 8.2 Develop outline for Guidebook based on biomass conversion project parameters.
- <u>Subtask 8.3</u> Prepare Guidebook. The results of all of the analytical studies performed during this project will comprise the majority of what is necessary to research, develop and build a small woody biomass-to-energy facility. We intend to document that process for future business and demonstration projects as it would be invaluable to future teams pursuing this type of endeavor.
- Task 9.0 Project Management and Reporting: Overall management of projects and tasks hereunder. Ensure that all project tasks are performed on-time and within budget. Coordinate all Placer County and contractor efforts to produce quality work and documentation to the satisfaction of the DOE. Reports and other deliverables will be provided in accordance with the Federal Assistance Reporting Checklist following the instructions included therein.
- <u>Subtask 9.1</u> Management of projects and tasks provided by Placer County personnel and contractors. Ensure that all projects are coordinated, information documented and results are verified as accurate and relevant. Provide oversight to all Placer County personnel and contractors that are working these projects and tasks associated with this U.S. DOE Project Scope.
- <u>Subtask 9.2</u> Budget and cost share management. Develop and track all aspects of budgeting for reimbursement and provide verification of all in-kind support to these projects and tasks. Ensure that all costs are tracked and verified according to Placer County auditing rules and Federal auditing requirements.
- <u>Subtask 9.3</u> Preparation and submittal of required Quarterly Reports to DOE. Meet all deadlines of reporting to the DOE. Ensure all Placer County personnel and contractors have provided adequate documentation of activities and expenses. File reports electronically, or on planned occasions present findings to DOE and DOE-related groups at DOE designated locations.