Making the Sierra National Forest more Resilient to Fire while protecting Nature's Benefits and Population Centers

The Southern Sierra Nevada Mountains have been subject to widespread tree mortality related to increased ozone and nitrogen (air pollution), increased fluctuations in precipitation, changes in seasonal variation and associated temperatures, changes in historic fire regimes and increased tree density which has led to epidemic levels of insect activity. The tree mortality task force (TMTF) of California identified 10 counties suffering severe tree mortality and the U.S Forest Service identified 6 National Forests with severe tree mortality, to include the Sierra National Forest which is the site of the Sierra Resilient Landscape Collaborative and covers Fresno and Madera Counties; two of ten priority counties most in need of assistance to address tree mortality issues.

The Sierra National Forest is implementing three projects under the California Climate Investments – Forest Health Grant Program to aid in greenhouse gas reduction through restoration planting and site preparation within a previous wildfire and in areas with high tree mortality, and through fuels reduction, and public hazard mitigation. The overarching goal of the projects is to improve forest and watershed resiliency through the multiple complimentary actions across the Forest.

Partners: The combination of California Climate Change Investment grant funds of $5M, U.S. Forest Service matching funds of approximately $820,000, along with the Sierra Nevada Conservancy Proposition 1 grant matching funds of $370,000 allows for the reforestation of 2,500 acres with a total of 467,000 seedlings which will begin the process of carbon sequestration. Other cooperating and supporting organizations include the:

- Sierra Resource Conservation District which will operate a mobile bioenergy/biochar production system for processing excess biomass;
- UC Davis students will conduct project monitoring and Forest Service ecologists will utilize the data to determine treatment effectiveness.
- Yosemite/Sequoia Resource Conservation & Development Council (YSRCDC) Council is in support of the project.

Maintaining or Enhancing Nature's Benefits through Restoration:

Restoration activities and Site preparation-- will have the effect of:

- Assisting in sequestering carbon through planting in an effort to mitigate the impacts of a warming climate
- Reducing vegetation competition, limiting invasive species and shrubs so desired remaining vegetation has enough resources to flourish, and
- Reducing soil erosion to maintain or improve site productivity

Fuels reduction and public hazard mitigation will aid in:

- Human health and safety by falling hazard trees along roads and near infrastructures;
- Providing forest carbon stabilization (will assist in long-term carbon storage)
- Restoring key ecological processes that make Forest function better and able to provide Nature's Benefits (such as restoring and protecting crucial watersheds to provide water storage and water filtration)
- Reducing greenhouse gases.

Carbon Sequestration will: sequester 1,100,890 MTCO2e on the forest which is the equivalent of:

- 2,698,259,804 miles driven by an average passenger vehicle in 1 year, or

- 1,204,474,836 pounds of coal burned.

Sustainable Energy will be: supported by the re-purposing of woody biomass pulled from overly dense forests to be utilized as a sustainable energy source.

Partnerships will assist in:

- Increasing the amount of work that can be accomplished on the landscape to make our Forests healthy and resilient to damaging fire and to ensure that Nature's Benefits that people have come to expect in their daily lives are available now and into the future. (Future partners are likely to include: Tribes, the Dinkey Collaborative group, Cal Fire (work is already underway under the Good Neighbor Authority), Mariposa County, Fresno County, Madera County, Yosemite National Park, Mariposa Resource Conservation District, University of Washington, and Yosemite / Sequoia RC&D)
- Strengthening social license to allow acceleration of restoration work on the landscape to mitigate catastrophic wildfire.

Job Creation will occur:

- Insofar as labor is required to do the necessary work to make our National Forests healthy. Natural resources jobs for under-served youth in rural communities are available on the Sierra National Forest. Organizations such as the Central California Consortium (CCC), interns through the Water Resources Experimental Learning for USDA Careers Internships hire students who receive on the job training while helping implement projects across the Forest.

The three key projects that will ensure Nature's Benefits on the Sierra National Forest are available for generations to come:

1. **French Restoration Project**
    - The reforestation activities will occur in deforested areas following the 2014 French Fire.
    - The proposed treatments will protect the health and safety of the public, workers, and private citizens; benefit wildlife habitat, maintain the existing habitat and develop future wildlife habitat; reduce potential soil erosion and loss of soil productivity by loss of organic matter, eradicate noxious weeds, maintain roads, and manage fuels in defensive fuel profile zones.
2. **Blue Rush**
    - Hazardous fuels reduction on the Blue Rush project area (4,837 acres) is in response to high levels of insect-related tree mortality, will reduce the number of hazardous trees, and improve forest health in Blue Canyon by increasing carbon storage through reforestation.
    - The Blue Rush Project is located primarily in the Wildland Urban Intermix (WUI) where human habitation is mixed with areas of flammable wildland vegetation that extends out from private developed land into land under private, State, and Federal jurisdictions.
    - The proposed treatments will maintain or establish fuel breaks for fire avoidance and will benefit Shaver Lake, Ockenden, Pineridge, Cressmans, and Dinkey Creek communities.
    - The Blue Rush Project is designed to address fuels reduction, fuel breaks and reforestation needs within Blue Canyon area following extensive tree mortality and will reduce greenhouse gases, and support the safety of inhabitants and fire personnel through reforestation, woody biomass utilization (a sustainable energy source), fuel reduction, and prescribed burning.

- Treated land will serve as a buffer that will protect communities within the forest from wildfire, provide for carbon stabilization, restore key ecological processes, restore and protect crucial watersheds, and reduce greenhouse gases.

3. **Huntington Greenhouse Gas Reduction Project**
    - With the project (3,825 acres with treatments on 1,872 acres) located in the Huntington Lake Recreation Area on the High Sierra Ranger District, the project focus is to maintain a visually appealing and natural looking landscape from key public landscape viewing areas, and to minimize the risk of uncontrolled fire through reduction of tree density, fuel accumulation and elimination of hazard trees, to improve tree vigor and forest health in the Huntington Basin.
    - Like the Blue Rush project area, the focus will be to reduce the risk to life, property, and resource values from wildland fire events and to improve fire suppression success and firefighter safety in the area.
    - The project will seek to:
        - Restore ecological process and reduce probabilities of a wildland fire event;
        - Increase forest health and resilience and reduce tree mortality;
        - Restore and maintain the watershed which provides hydrologic stability;
        - Protect or enhance habitat for all wildlife, including stream, lake, meadow and riparian habitats;
        - Reduce and prevent noxious weed infestations; and the spread of annosum root rot in the Project area.

Nature's Benefits and Future Generations:

Projects to improve forest and watershed resiliency through multiple complimentary actions across large landscapes have the potential for large positive impacts to Nature's Benefits. Effective communication of the Nature's Benefits the public receives from these efforts, can increase community interest and awareness, fostering partnerships and the sharing of resources. Only through such cooperation and shared ownership can we ensure future generations have the opportunity to enjoy Nature's Benefits as well.