



October 24, 2024

To: Amy Reid, Acting Forest Supervisor
Eldorado National Forest
100 Forni Road
Placerville, CA 95667

RE: Comments on EIS for the Mokelumne Amador Calaveras (MAC) Forest Resilience Project

Dear Ms. Reid:

I am writing on behalf of Phoenix Biomass Energy, Inc. (Phoenix) and its subsidiary company Blue Mountain Electric Company (BMEC) in support of the MAC project. BMEC is a 3MW bioenergy, carbon capture and sequestration (BECCS) facility under development in Wilseyville, California. BMEC is strategically located in one of the most fire-threatened regions of the Central Sierra (which is also the location of the MAC project). The concept for BMEC began over fourteen years ago with a series of local community meetings spearheaded by then County Supervisor Steve Wilensky. BMEC is now shovel-ready and is expected to be operational before the end of 2026, *aligning well with the expected start of MAC project field operations.*

BMEC and Phoenix are indebted to the USFS generally and to both the Stanislaus and Eldorado National Forest Supervisors specifically for their continued support over its long development and financing phase. We appreciate this opportunity to provide comments which we hope will be of use to the Forest Service as it seeks to optimize and implement the MAC project.

We fully support the MAC project, and share many of the same goals, including reducing the risk of catastrophic wildfire and its impact on climate change and air quality, as well as economic development in the local communities. We believe that Blue Mountain Electric Company can provide a robust solution for the treatment and utilization of the biomass that will be removed from the MAC project area. Co-located with a Calaveras County Water District (CCWD) water treatment facility, BMEC is within 40 miles of most points in the MAC project footprint. BMEC will provide a cost effective, local outlet for over 22 thousand bone

dry tons of woody biomass per year, using it as feedstock to produce clean, carbon-negative electricity and biochar. As you well understand, biochar has multiple potentially beneficial applications that could be used in the project area to sequester carbon and improve soil health, for forest road maintenance and repair, or in local mine and other remediation projects. We are collaborating with CCWD on new biochar applications, including filtering wastewater. We are delighted to see that “hauling biomass offsite to a biomass facility for energy production and/or for other uses” is included in your Scoping Notice (Table 3), and we hope that BMEC will become a value-added destination for that biomass.

BMEC also has the potential for supporting off-grid community electrical demand on a 24/7 basis, which could include supporting forest and tree trimming crews as they transition their fleets and equipment from fossil fuels to electric. We hope that MAC will consider BMEC as a renewable energy partner in sustainable forest treatment.

BMEC will also bring new jobs to the region; aside from construction crews, our BECCS plants represent 12-14 permanent local jobs within the project footprint, strengthening the local economic base.

Phoenix Energy, BMEC’s developer, is advancing a portfolio strategy to deploy our biomass gasification plants – a cleaner, carbon-negative alternative to traditional biomass combustion facilities - across the Sierra Nevada and surrounding forests, from its initial forest location in North Fork, CA (Sierra NF) through Wilseyville, CA (Stanislaus and Eldorado NFs) and further north through the Tahoe and Plumas National Forests. This strategic initiative aims to support the pace and scale of forest treatment efforts in the region, aligning with the MAC project’s long-term goals of wildfire prevention, forest health restoration, and local forest-based job creation.

Phoenix Energy’s broader infrastructure of BECCS plants in the Sierra would ensure sustainable and scalable forest management. We propose Phoenix Energy as a key partner in facilitating this wood utilization infrastructure beyond BMEC, offering replicable solutions for converting biomass into useful energy and carbon sequestration across other forested regions in California.

Beneficial Disposition of Biomass

The MAC project will produce large quantities of biomass from its treatment of over 75,000 acres, which will include reducing ladder fuels, removing unhealthy or dead trees, hand cutting of shrubs and trees in sensitive areas, and limbing of large trees. Much of this material is likely to be destined for burn piles. Pile burning releases not only significant greenhouse gases, but also particulate matter and volatile organic compounds, leading to

poor air quality and health risks for nearby communities. The table below illustrates a 3MW BECCS plant and avoided / sequestered CO₂, as compared to open burns and fossil-fuel generated grid electricity.

While pile burning can be a management tool for reducing fire hazards and clearing land, it does have a notable impact on GHG, particulate matter, and black carbon emissions, which contribute to climate change and has other negative impacts. Wet biomass also burns less efficiently, leading to higher emissions. BMEC's gasification technology is more efficient and coupled with the carbon sequestration value of the biochar we produce, results in a carbon-negative process, as shown here for the Blue Mountain plant.

Electricity	MegaWatts	3
	Hours/Year Uptime	7,500
	MWh/Year	22,500
Wood	Raw Wood Input (wet tons/year)	28,678
	Bone Dry Wood (tons/year)	22,943
	Biochar Produced (metric tons/year)	3,062
Emissions	Avoided open burning emissions (MTCO ₂ e/year)	-42,846
	Avoided grid electricity emissions	-9,287
	Biochar Sequestration (MTCO ₂ e/year)	-6,679
	Total Emissions Impact (MTCO₂e/year)	-58,812ⁱ

ⁱ SOURCES:

CALIFORNIA AIR POLLUTION CONTROL OFFICERS ASSOCIATION (CAPCOA)

CAPCOA, "Biochar Production Project Reporting Protocol, GHG Emissions Reduction Accounting, Version 3.4". Approved September 28, 2015.

<http://www.capcoa.org/ghg-rx/>

SOIL CONTROL LAB - SAMPLE OF PHOENIX ENERGY BIOCHAR – TEST RESULTS

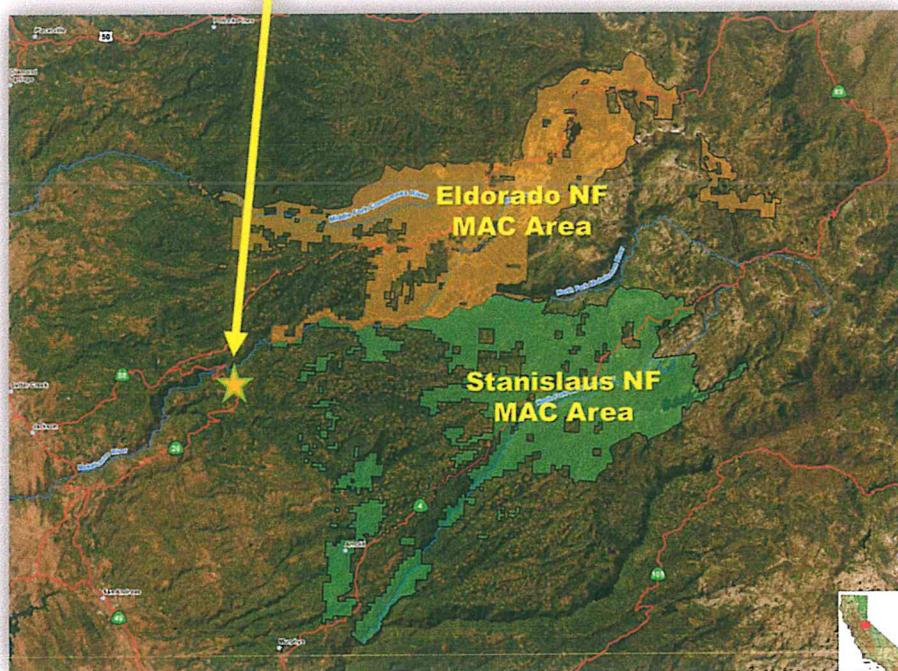
Soil Control Labs, Proximate Analysis, BioChar. Sample ID 2010304. Received January 13, 2012.

Transporting Biomass vs. On-site Burning

Electing to transport the biomass to BMEC instead of burning it would be a significant contribution to Federal and State climate goals and would greatly benefit local communities that would otherwise be subject to the related releases of particulate matter (PM₁₀, PM_{2.5}), black carbon, carbon monoxide, and volatile organic compounds, which degrade air quality and pose health risks.

Although burning slash piles may have lower immediate operational costs compared to transportation of biomass to BMEC, the long-term costs are likely lower, especially when the additional benefits of sustainable energy production and improved forest health are taken into account.

The BMEC plant, located in Wilseyville, is located 50 miles from Kirkwood (Eldorado NF) and 30 miles from Highway 4 (Stanislaus NF), reasonably close to the MAC project area.



Returning Biochar to the Forest

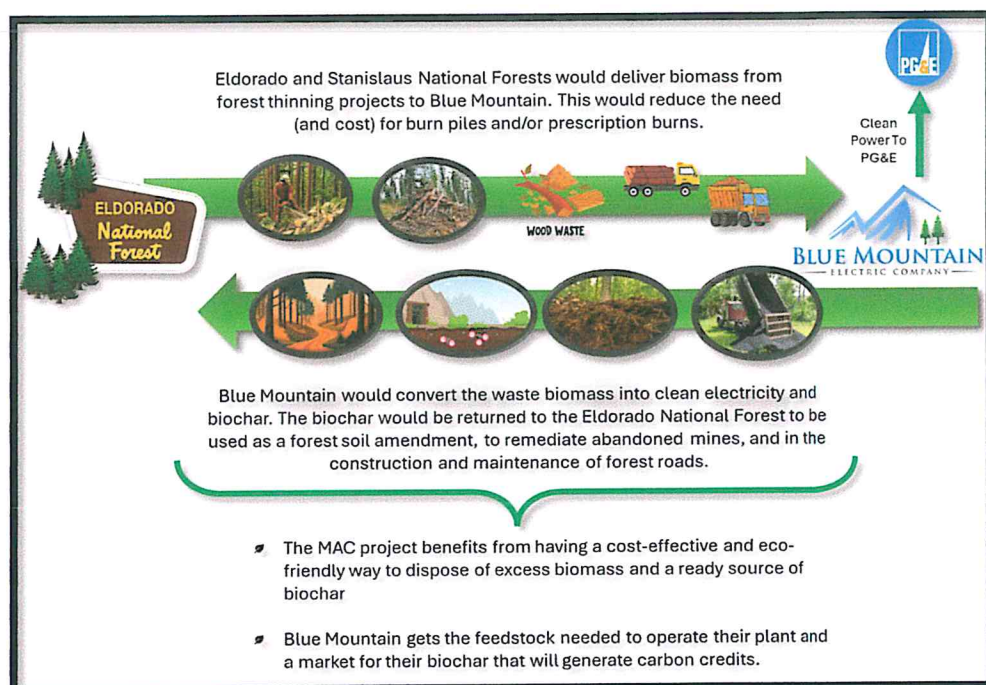
According to several USDA reports and studies, biochar is increasingly being considered as a valuable tool in forest management practices due to its ability to sequester carbon by converting excess forest slash into a stable carbon-rich material, improving soil health on degraded lands, and reducing wildfire risk by minimizing forest fuel loads. The USFS, particularly the Rocky Mountain Research Station, is actively researching and promoting biochar applications in forests¹. This research is delivering evidence of improved vegetation growth on degraded soils, restored soil health, and air quality impacts. Biochar is persistent in the soil for potentially a thousand years, providing long-lived benefits in forest

¹ In fact, there is a current study located in Arnold, CA, which is in the MAC footprint (results not yet published)

and range soils. There is also research showing promising results for using biochar to remediate abandoned mines and improve forest roads, of which there are many in the MAC project footprint.

We suggest that the use or evaluation of biochar be incorporated into the treatment plans for the MAC project. This would contribute to MAC’s objectives to “Significantly increase forest health and resilience by reducing the likelihood of high-severity wildfire, reducing stand densities, and increasing forest heterogeneity, restoring healthier, more resilient and fire-resistant forests, reducing uncontrolled emissions and public health impacts from wild, improving growth, life span, and carbon storage of residual trees.”²

USDA’s own research states that, “Biochar applications to forest soils are a rapid method to increase soil C and mitigate atmospheric GHGs, particularly CO₂. This, combined with sustainable harvesting, is a path to climate-smart forest operations. In addition to biochar increasing C sequestration when



combined with sustainable biomass production, this can be a C-negative opportunity and therefore used to ***actively remove CO₂ from the atmosphere, with potentially major implications to mitigate climate change.***

The USFS has generously contributed to BMEC’s development through grants and other funding mechanisms, indicating that USFS backs the concepts upon which BMEC has been built. ***Critical to BMEC’s success are a reliable supply of biomass and a market for the biochar we produce.*** Incorporating the use/application of biochar into the treatment plans developed for MAC operations would provide mutual benefit to the MAC

² Mokelumne Amador Calaveras Forest Health and Resilience Project – Scoping Notice; page 27

project and to BMEC, a relationship that would generate benefits greater than the sum of its parts.

California's Climate Goals

California has set ambitious climate goals aimed at reducing greenhouse gas (GHG) emissions, increasing renewable energy use, and improving air quality. These goals are defined in various legislative acts, executive orders, and strategic plans. Included at the end of this letter is a list of key climate goals and the documents that establish them.

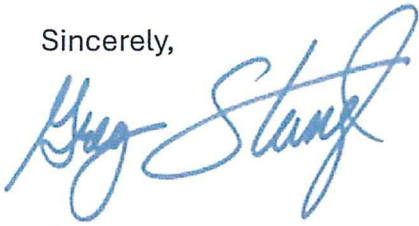
We believe that the MAC project would be greatly enhanced by aligning with California's climate goals, specifically by incorporating the intent to convert biomass into clean energy and biochar (or other carbon-sequestering wood products) within the "Purpose and Need" section of the EIS.

In conclusion, we strongly support the MAC project and urge USFS to actively promote the biomass-biochar exchange described above, incorporating the findings and recommendations of USDA's own research and supporting BMEC's success along with so many other organizations, as illustrated here:



BMEC is grateful for USDA's long-standing and ongoing support of this project.

Sincerely,

A handwritten signature in blue ink, appearing to read "Greg Stangl". The signature is fluid and cursive, with the first name "Greg" and last name "Stangl" clearly distinguishable.

Greg Stangl

Managing Member, Blue Mountain Electric Company, LLC
and CEO, Phoenix Biomass Energy, Inc.

Links to relevant USDA studies:

[Incorporating biochar into forest management practices to deliver carbon benefits](#)

[NRCS Practice Standard 336: Soil C amendment building, soil C, and improving soil health with biochar](#)

[Biochar production, benefits, and barriers in forested lands](#)

[Biochar utilization as a forestry climate-smart tool](#)

[The Benefits of Biochar: Mine land restoration in western Colorado](#)

[Using Biochar to Improve Soil Quality on Decommissioned Roads](#)

LIST OF CALIFORNIA'S KEY CLIMATE GOALS THAT WOULD BE SUPPORTED BY THE MAC PROJECT AND THE DOCUMENTS THAT ESTABLISH THEM:

1. Carbon Neutrality by 2045**

- Goal: Achieve net-zero carbon emissions across the state's economy by 2045.

Defining Documents:

- Executive Order B-55-18 (2018): Issued by then-Governor Jerry Brown, this order commits the state to carbon neutrality by 2045 and directs state agencies to work toward this goal.
- Senate Bill (SB) 100 (2018): Requires 100% of retail electricity sales to come from renewable or zero-carbon energy sources by 2045.

2. 40% GHG Reduction by 2030 (Below 1990 Levels)

- Goal: Reduce statewide GHG emissions to 40% below 1990 levels by 2030.

Defining Documents:

- Senate Bill (SB) 32 (2016)**: Codified this target into law, building on the goals set by AB 32.
- Assembly Bill (AB) 32 (2006)**: The **Global Warming Solutions Act of 2006**, which established the initial target of reducing emissions to 1990 levels by 2020.
- California Air Resources Board (CARB) Scoping Plan**: Updated periodically, this document outlines the strategies to meet GHG reduction targets.

3. 100% Clean Energy by 2045

- Goal: Transition to 100% clean, renewable energy by 2045.

Defining Document:

- Senate Bill (SB) 100 (2018): Establishes the 2045 target for all retail electricity to come from renewable or zero-carbon sources. It also accelerates interim targets like 60% renewable energy by 2030.

4. Short-Lived Climate Pollutants (SLCPs) Reduction**

- Goal: Reduce methane, hydrofluorocarbons (HFCs), and black carbon by 40-50% by 2030.

Defining Documents:

- Senate Bill (SB) 1383 (2016): Mandates the reduction of SLCPs, which have a greater impact on global warming over short periods than CO₂.
- CARB's SLCP Strategy: Provides the detailed roadmap to achieve these reductions.

5. Sustainable Groundwater and Drought Resilience**

- Goal: Improve water conservation and drought resilience while reducing emissions.

Defining Documents**:

- Sustainable Groundwater Management Act (SGMA, 2014): Requires the sustainable management of groundwater resources in California.
- California Water Resilience Portfolio (2020): A strategy to make the state's water system more resilient, with a focus on sustainability and emissions reductions.

6. Forest Resilience and Wildfire Reduction**

- Goal: Increase forest resilience and reduce the risk of catastrophic wildfires, which contribute to emissions.

Defining Documents**:

- California Forest Carbon Plan (2018): Focuses on forest health and carbon storage.
- Executive Order N-82-20 (2020): Aims to conserve 30% of California's land and coastal waters by 2030 to protect biodiversity and fight climate change.

7. Environmental and Climate Justice**

- Goal: Address climate justice by reducing pollution in disadvantaged communities.

Defining Documents**:

- Assembly Bill (AB) 617 (2017): Requires community-focused air quality monitoring and emissions reduction in disadvantaged areas.
- CalEnviroScreen: A tool developed to identify communities most affected by pollution and vulnerable to climate impacts.

These goals and documents represent California's broad commitment to mitigating climate change, increasing resilience, and transitioning to a sustainable, low-carbon economy.



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