

Comments on Terra-Gen’s Humboldt Wind Energy Project Draft EIR

Respected Humboldt wind project planner, Humboldt Board of Supervisors, and public:

1. What do we know and believe that makes the TerraGen wind energy harvesting plan for Bear River Ridge and Monument Ridge worth considering?

2. Scientific evidence strongly indicates that our planetary climate has been shifting between ice ages and no ice ages for eons.

Recorded weather history shows a warming trend that is changing our climate faster than our biosphere and our economy can evolve to continue to support the human community in sustainable comfort.

3. This warming trend is paralleled by an increase in atmospheric carbon (carbon dioxide, methane, etc.).

There are behavioral changes available to us to eliminate our use of fossil fuels to feed, clothe, house, and transport the members and the wherewithal of the human community.

4. That makes wind, wave, water flow, solar, and nuclear energy sources attractive. All include problematic side effects. None is a panacea. We need a cornucopia of energy sources to replace fossil fuels.

5. And comm0n to all non-fossil energy sources, none of them removes from our atmosphere the carbon overload that our scientific community’s work indicates is the prime force in our planetary warming trend.

The sugar production by the photo-synthesizing members of our biosphere’s floral community is the principal force reducing the CO2 in our atmosphere. And except for a few beings around our thermal vents, this photosynthesizing provides all the energy for all the metabolizing that keeps our bio community alive.

This process releases to our atmosphere exactly the amount of oxygen needed to oxidize the carbon and hydrogen the reduction process combined into sugars. It does not increase atmosphere carbon.

Furthermore, it holds carbon in the body structures of the plants and animals that build themselves using these sugars for the energy to do so. And as the beings in our bio community shed leaves, bits of bark, dead limbs, bits of hair, bits of skin, and eventually our bodies, our detrivors and our rainfall store this carbon In our soil and our waters.

To reduce the overload of atmospheric carbon we must foster, care for, stimulate, enhance the capacity of our biosphere and our geosphere (the two elements of our ecosphere) to photosynthesize sugars and store their carbon in the bodies of every living thing in our biosphere, and in our waters and our soil.

To consider permitting any non-fossil energy harvesting we must weigh the energy produced against the reduction of our ecosystems capacity to store carbon, and to continue to hold the carbon already stored.

Using simply the calculus of financial return on financial investment to decide whether or not to pursue a project is how we got ourselves into this frightening environmental situation. It is not the way to get out.

6. TerraGen identifies as an objective for this project to “displace emissions of 372,000 metric tons per year of carbon dioxide (a greenhouse gas) that would otherwise be required to generate the same

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amount of energy as this 155 megawatt(MW) project". (Draft EIR page 2 -3.)

At their presentation at The Old Steeple in Ferndale, TerraGen's representatives suggested that about 15 permanent jobs would need to be filled to run this project after construction, and that tax revenue to the county would be enhanced. Lost Coast outpost reports their representatives predicted the project would provide Humboldt County \$76 million in property taxes in \$8 million in sales taxes over the life of the project.

These calculations need to be checked carefully. The presentation also predicted that increased technical efficiency would likely reduce the number of windmills needed to produce the 155 megawatts. This reduction would likely reduce the jobs needed to run to the project. Also note, when weighing against the loss of carbon sequestered in the soil and biosphere during project construction and the sequestering capacity displaced by the constructed project during it's life that the 372,000 metric tons of CO2 is only 101,454.5 metric tons of carbon.

7. Many potential environmental and financial effects of the project must be weighed before we approve this project.

8. The soil impacts from this project have not been fully presented for discussion. TerraGen draft EIR diagram indicates each tower needs a cleared area of 250' x 350' for its foundation and the permanent crane pad needed for maintenance of the windmill. This area needs to be cut and filled to maximum slopes of 1% and 2%.

(250 feet times 350 feet per tower times 60 towers) divided by 43,560 ft.² square per acre equals 120 acres.

17 miles of new roads are also predicted. These roads will have a 24 foot wide graveled center, the 50 foot wide for the crane access, indeed 200 feet of graded clearance shoulders to move the propeller units over them.

17 miles times 5280 feet per mile times 224 feet equals 20,106,240 ft.² plowed earth.

20,106,240 ft.² divided by 43,560 ft.² per acre equals 461.75 acres plowed.

17 miles times 5280 feet per mile times 24 feet gravel surface divided by foot squared per acre equals 57.70 acres of permanent bare compacted roadway.

Not detailed in the DEIR the total amount of land to be plowed to accommodate moving the cranes in the windmill pieces over the existing project access road.

The six permanent meteorological towers need 1.5 acres of clearing this as 9 acres plowed.

Total equals 120 acres +461.5 acres +9 acres equals 590.5 acres to be plowed.

The soil maps I found indicate a Dobson profile with a 2 foot topsoil with 8% carbon content in the next .5 foot subsoil of 6% carbon content. The A horizon of this 590.5 acres of soil contains 194 tons of carbon per acre.

194 tons carbon per acre times 590.5 acres equals 114,557 tons of soil carbon exposed to atmospheric oxidation. Fully oxidized this would introduce about 420,042.3 tons of CO2 into the atmosphere.

Exposed soil can lose 90% of its carbon in 10 years. We need to see a plan to prevent this loss in this disturbed soil. We also need a calculation of how much carbon extraction of atmospheric CO2 will be lost while the vegetation of these acres has been removed during construction, permanently by the road, tower founding , and crane platforms, during the revegetation process after construction, during the decommissioning at the end of the projects life, and during the revegetation process after the decommissioning is complete.

This plan's calculus and any procedural or mitigation design must include the soil impacts caused by the projects necessary alterations to the existing access road to the two ridges' project areas.

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9. This proposed project will also affect the downslope aquifers on both sides of these ridges, and the summer water flow in the streams draining the valleys between these ridges and their immediate neighbors.

The scientific information collected by D. M. Rempe, W. E. Dietrich, and J. Hamm at UC Berkeley's Angelo Reserve indicate that rainwater absorbed in the tops of the ridges in Humboldt and Mendocino counties' coastal belt of our coastal mountain range is the main contributor to the summer water flows in the streams in the canyons and valleys between these ridges.

The permanently impermeable concrete surfaces will decrease soil absorption of rainwater until deconstruction. The permanently hardened new road and permanent crane surfaces will also significantly reduce rainwater absorption.

The first carbon to oxidize when soil is devegetated and exposed to atmospheric oxygen is the cell walls of the mycelial life in the soil. This is the primary source of the proteins that form soil particles, both mineral and organic, into the ped structures that create soil tilth. This tilth allows both air and water to flow into the soil filling aquifers and permitting most of the metabolic processes that create soil fertility.

If the suggested plan to protect raptors from injury or death due to collisions with spinning windmill blades by using small mammal control to diminish the raptors terrestrial food source is employed, the ability of the ridge topsoil to absorb water will be further diminished. The majority of the small mammals are burrowers. Their burrows are important conduits of water delivery to the aquifers that feed our surface water streams, provide successful anadromous fisheries, and clean water for humans and other terrestrial life.

I do not know how to calculate the total effect of this diminished capacity for soil percolation, but I know it will increase rain water surface runoff and erosion during wet seasons and decrease dry season flows. Experts who can should be consulted before project approval is granted.

10. This DEIR does not reflect the severity of our local seismic situation. Monument Ridge surely has the most extreme exposure to landslide hazards of any wind project in the United States. The ridge itself is a narrow band bounded by steep incising watersheds. The ridgeline is likely subject to ridgetop seismic amplification from the numerous potential seismic sources in the immediate vicinity. The watersheds on either side are aggressively eroding. There are headscarps of historical debris flows within a few hundred feet of the proposed towers. These headscarps are part of an historical incision wave that is not likely to have worked its way out of the system. There is no analysis in the DEIR of whether the vibration of the windmills themselves will weaken the underlying geologic structures during episodes of co-seismic ground motion, or during extreme weather events such as atmospheric rivers. Introducing new hazards to these watersheds is unacceptable. After going through the extended legal and social conflict about what are acceptable geotechnical risks to facilitate timber harvests in the 1970s, 1980s, and 1990s, it is truly disheartening to see the applicant claim that there are no significant impacts. The applicant does not have the right to destroy natural resource lands. It is not acceptable to limit consideration to human lives and structures. Clearly natural resource land owners have the obligation to consider induced geotechnical hazards impacts on water courses and fisheries.

10. This project will also affect downwind air quality. Numerous studies have confirmed that "Wind farms" are associated with significant downwind increases in temperature. TerraGen has participated in some, and should be required to address the downwind impacts on those local climates.

I am particularly concerned with scrambling the temperature gradients in the onshore wind air columns. The cooler, heavier, moister air is at the bottom of the column. This includes the fog layer. Numerous plants in the forests covering the downwind terrain are dependent on maintaining dry season vitality through foliar absorption of the airborne moisture in the bottom of this wind column, redwood trees, bay laurels, huckleberries, and sword ferns among them.

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The forest in Humboldt Redwoods State Park and on private land along the Avenue of the Giants will be affected. The south eastern terminus of the project is less than a mile from Humboldt Redwoods State Park's border.

The affected includes stands in Rockefeller Forest and Founders Grove. These stands include 80% of the known trees over 107 m tall (equals 350 feet). They also contain the worlds third highest above ground biomass measurement. Among coastal redwood stands with extremely high carbon density they are unique as they are technically located outside the technically defined temperate rainforest.

Anyone who has spent a hot summer in these parks, as I have during the six years I spent as part of the local volunteer group, Team Standish, that kept Standish Hickey State Recreation Area open during the recent California Department of Parks and Recreation's financial crisis, will recognize that the draw of fog through the canyons and valleys of the South Fork Eel watershed is an extraordinarily powerful force. This cool foggy air exerts a major influence on forest composition and health all the way to Southfork Mountain. It also affects fire behavior. The humidity drop associated with this wall of fog can be the difference between a well-behaved ground fire and the terrifying blazes we witnessed locally during the Noble Fire, the Lightning Complex Fires, and the Wilderness Lodge Fire.

These downwind parks are also critical to our local economy. They have produced hundreds of millions of dollars in local economic activity, and are the source of the most attractive images of our region to the rest of the human world. They draw tourists from all the other states, Europe, Japan, China, Israel, Australia, New Zealand,..... everywhere.

The state of California, Save the Redwoods League, The Rockefeller Foundation, numerous individual donors and citizen groups have invested substantially to protect these outstanding examples of the remaining redwood forests.

Furthermore the north coast redwoods district of DPR has over 70 permanent employees. 17 are fully employed in the parks down wind from this proposed wind energy harvesting project. Another 21 seasonal employees work in these parks, and 90 volunteers donate hours of activity to keep these parks attractive and comfortable. Most of the other 53 permanent employees' work includes service to these parks.

Protecting and expanding this employment pool feels like a wiser use of our energy than gambling on adding 15 permanent jobs predicted with caveat by TerraGen's representatives.

Before approving this project, these economic issues not addressed by the DEIR must be considered very carefully.

12. The 25 mile energy transportation corridor between the project site and Bridgeville will also diminish our region's exceptional biospheric capacity to capture and sequester atmospheric carbon. The DEIR states that if H frame structures with overhead wires are used, guy wires will be used on both sides of the frame and would be built within a 100 foot wide transmission corridor. The DEIR also declares that construction will be "in accordance with the current suggested practices of the Avian Power Line Interaction Committee"

As described in the DEIR, this corridor of about 25 miles times 5280 feet per mile times 100 feet wide equals about 13,200,000 ft.², approximately 303 acres. Can a conversion of this size be done without a formal zoning change with the Department of Fire and Forestry?

To evaluate the impact of this 303 acres of conversion of forest lands to a utility corridor, we need Terra-Gen and the ownership of the affected forest lands to provide an analysis of the resulting changes in the vegetation densities and species. We also need to know how the developers will comply with Judge Alsop's order that PG&E power line vegetation management must prevent any tree from falling onto or being wind thrown onto a power line.

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Compliance to this ruling could increase the loss of photosynthesizing vegetation in this utility corridor.

It is also possible that a well-designed corridor could provide positive environmental qualities through increasing mosaic diversity, increasing edge effects, increasing berry and seed and forage production, etc.

Hopefully California Department of Fish and Wildlife will balance these possible positive contributions against the possible negative effects like fragmentation and introduction of non native species.

13. Terra-Gen's representatives also admitted that the blades of these windmills cannot be recycled using our current technological capacity. Can the project be designed with smaller but more numerous units using blades made of recyclable material?

We should not use any material that cannot be recycled in any new project. We must avoid anything that must be buried or stored until it deteriorates or is crushed into tiny particles that will not enhance and may threaten our biospheric vitality as it is inevitably dispersed throughout our ecosystem.

These are strange appearing machines, as if intended to win an urban design contest. To my eyes they clash with our landscape and seem to be some sort of mechanical storm troopers from a Star Wars episode marching along our ridges. Appearances are part of the environment. At the Old Steeple in Ferndale the Terra-Gen team said these towers are too dangerous to be put in urban settings. Maybe they are too dangerous to be placed here.

14. Finally, what is the cost difference between harvesting and delivering 155 MW of wind energy here versus that cost in the windy areas to the east of here in parts of the planet where the local biospheric community's capacity to sequester atmospheric carbon is far lower than the biosphere immediately affected by this project?

This commentary period is too short to allow me to research this cost analysis. I love being part of earth's bio community and have long advocated for developing energy sources without burning fossil fuels. If we decide that this proposal is not appropriate for here because it would create more environmental problems than solutions, and if building facilities to harvest wind energy is more costly elsewhere, perhaps we should petition our state and national governments to subsidize the difference. It feels unfair to make investors bear that cost difference alone when contributing to our effort to stop burning fossil fuels.

Let's decide carefully. Let's heed our grandmothers' warning that haste makes waste. And as we decide let's continue to incentivize small solar and other fossil free power generation projects, and to do whatever we can to enhance our local vegetation's capacity to sequester atmospheric carbon. These are two ways we know we can slow our planetary drift to a no ice age without risking further environmental collapse.

Thanks to those who help me write this.

Those who wish to may sign onto this petition, or copy any part to sign as yours.

Love to all,
Enjoy your dance,

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