



The Hudson Palisade as seen from the Lamont Preserve, February 28, 2015, photo by Bill Menke

Open Letter

The Solar-Electric Generation Facility Proposed for Lamont-Doherty Earth Observatory Will Cause Unnecessary Habitat Destruction

by

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We at the Lamont-Doherty Earth Observatory of Columbia University are considering a proposal to lease a currently-wooded portion of our Palisades NY campus to an electric utility. They would clear-cut a six-acre tract of trees and build and operate in its place a solar-electric generation facility (solar panel farm). We would buy the “alternative power” it produces and use it to partially replace traditional sources, thus lowering our “carbon footprint”, meaning the amount of CO₂ that we emit into the atmosphere.

I’ve not yet heard a detailed exposition of the goal that would be achieved by having a solar-electric facility at Lamont. It would reduce our carbon footprint, but not by as much as one might guess, because NY State already has comparatively low-carbon-footprint power generation, at least compared to a state like West Virginia (which is almost entirely reliant on high-carbon-footprint coal). About 62% of NY State electrical production is from nuclear, hydro and alternative sources, which emit no CO₂, and almost all the rest is from natural gas, which emits only about half as much as coal¹. Thus, NY States’ emission rate per unit of energy produced is only about 20% that of a West Virginia’s. Adding the proposed solar-electric facility decreases that – but only a little - to 18%.

The proposal has been represented as “green” or “sustainable”, but I do not believe that any activity that increases the geographic footprint of our industrial

society can be either. This idea of sustainability through footprint enlargement is a self-deception, though one that is widely practiced around the world. It has led, for instance, to the destruction of tropical forests and their replacement with biodiesel-producing palm oil² plantations and ethanol-producing sugar cane fields³, to the clear-cutting of temperate US forests for wood pellets⁴ used in space heating, to the inundation of large tracts of tropical and boreal forests^{5,6,7} by hydroelectric dams worldwide and to many other types of habitat destruction. Currently, human beings heavily utilize somewhere between half and two thirds of the earth's land⁸ (excluding Antarctica) and that fraction is steadily increasing. Should Lamont carry forward its solar-electric proposal, another instance of habitat destruction would occur.

Ours shares some similarity with the proposal to exploit the steam fields of Yellowstone volcano for geothermal power⁹. In that case, several gigawatts could be generated, but at the expense of clear-cutting woodlands to make room for well-heads, roads, powerhouses and transmission lines and of diminishing the vigor of the geysers. Notwithstanding the differences in scale, my comparison of Lamont's woodlands to those of a famous National Park is not meant as hyperbole. Familiarity can easily distract us from the uniqueness of our surroundings. The strip of forested land along the Hudson River and including the Hudson Palisades (pictured above), on whose rock the foundations of our campus rest, is an environmental treasure on a par with Yellowstone or any of the other great American national parks. Its physiography and biota inspired the great painters of the Hudson River School¹⁰ and generations of writers including Cooper¹¹, Irving¹² and Anderson¹³. Its proximity to a major metropolitan area gives it a role in habitat preservation more important than some of our remoter parks. Lamont's woodlands lack bison and elk, but I have personally observed in them a great diversity of plants and animals, including some infrequently encountered species: plants such as Black Walnut, Lady's Slipper and Dutchman's Breeches, amphibians such as Fowler's Toad and Spotted Salamander, reptiles such as Box Turtle and Blue-tailed Skink (a lizard), birds such as Scarlet Tanager, Pileated Woodpecker, Northern Goshawk, Great Horned Owl and Bald Eagle, and mammals such as Red Fox.

We, as earth and environmental scientists, have an ethical responsibility to try to preserve habitat. Furthermore, if we do not work to preserve the habitat under our own control, we cannot credibly urge people around the world, who are often living in conditions much tougher than our own, to preserve theirs. We should commit ourselves to living within our current geographical footprint.

I do not deny that our civilization in general and Lamont in particular has an energy problem that is contributing to anthropogenic CO₂ rise. However, the futility of our seeking a solution that relies on habitat destruction is exposed by considering the particulars of Lamont's case. The proposed solar-electric facility will replace 14% of Lamont's current power needs, but those needs are growing at 4% per year¹⁴. The terrible economics are apparent: the facility lowers Lamont's emissions for three and a half years; the loss of habitat is permanent.

A few weeks ago, I noticed for the first time a solar-electric facility on the southern flank of the Clarkstown landfill, which is located a few miles from Lamont. Its location struck me as ideal, for the landfill is now closed and the land cannot easily be used for other human purposes or returned to Nature. Over the last year, I've driven by many large buildings whose roofs were covered with solar panels. These installations seemed sensible to me, too, but an installation like the one proposed that destroys habitat does not.

Solar-electric generation should be one component among many of a strategy to reach zero emissions¹⁵. However, the very fact that other components are available gives us the ability to pick and choose the most advantageous for any situation. Solar-electric facilities and other alternative energy methods that require large tracts of land should be used within the confines of the existing human geographical footprint so that they do not cause habitat destruction.

This letter, at URL

<http://www.ideo.columbia.edu/users/menke/talks/solar/MenkeOnSolarProposal.pdf>
may be freely circulated.

- ¹<http://www.eia.gov/state/?sid=NY#tabs-4>
- ²http://wwf.panda.org/what_we_do/footprint/agriculture/palm_oil/environmental_impacts/forest_conversion/
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- ⁸<http://www.geosociety.org/gsatoday/archive/22/12/article/i1052-5173-22-12-4.htm>
- ⁹http://serc.carleton.edu/research_education/yellowstone/geothermal.html
- ¹⁰http://en.wikipedia.org/wiki/Hudson_River_School#Founder
- ¹¹http://en.wikipedia.org/wiki/James_Fenimore_Cooper
- ¹²http://en.wikipedia.org/wiki/Washington_Irving
- ¹³http://en.wikipedia.org/wiki/High_Tor_%28play%29
- ¹⁴Nettles, M., Email entitled "Update from ExCom, 2015/02/27 - including alternative energy on campus".
- ¹⁵ http://www.udel.edu/igert/pbl_course/Socolow%20and%20Pacala%20Problem.pdf