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February 18, 2019 Solar Energy: Yes or No?

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February 18, 2019 Solar Energy: Yes or No? I'm Dr. Calvin Luther Martin, retired Rutgers University professor of history (with, incidentally, graduate training in molecular biology/immunology and B.A. degree in biology). I am part of FARM, a bunch of crusty NYS old-timers who sized up the industrial solar proposition — and decided “no.”

Photovoltaic (PV) panels on rooftops, brownfield sites, abandoned parking lots, abandoned shopping malls are a great idea. In other words, relatively small arrays for local power. When you “inflate” solar power into a massive, utility-scale proposition, you've got an industrial monster on your hands: Hundreds of thousands or millions of PV panels hard-wired to inverters (DC to AC), transformers, switch-gears, “electrical balance of plant systems,” and large lithium-ion battery energy storage systems (ESS). Biologically-speaking, these zillions of panels are smothering hundreds or thousands of acres of oftentimes USDA Grade A farmland. The supreme irony is when the installation “requires” clear-cutting of forest. Ironic because Mother Nature's trees and other green plants are carbon sequesters and energy producers of unmatched efficiency, ingenuity, and output. Once operational, this 3.4-square-mile sheet of glass (see, e.g., the Wisconsin Invenergy project, below) is billed as delivering electrons to the grid in response to split-second fluctuations in regional demand (if the sun is shining). Whereas if PV panels are churning out electricity when the grid has no use for it, the electricity is superfluous and dumped, presumably into the ground. Onsite energy storage systems (ESS), hyped as “smoothing” PV panel output and “stabilizing” the grid, are in fact ineffectual and unrealistic (<https://cloudup.com/cARbU6ZioJq>), despite Elon Musk's fantasies otherwise (click [here](https://cloudup.com/csDbCJkmKph) (<https://cloudup.com/csDbCJkmKph>)). You're beginning to get the picture. The problem with industrial solar is scale (size) and credibility (lack of honesty).

(Let me interject, it's okay to have strong convictions about global warming and fossil fuels; it's not okay to jettison your faculties of reasoning along the way. Hucksterism, lampooned in Herman Melville's The Confidence Man (<https://www.shmoop.com/confidence-man/>), is ingrained in the American psyche. Watch out for the smilin' young man with a name like Chad and a suit that's cheap who turns up one day as Solar Man. The devil just came to town.)

Solar Man Here's a graphic of the scaling-up process from little to big. Sort of like blowing up a balloon.

Notice the individual inflating the balloon. He's not a kid. It's Solar Man, the sales rep for Big Solar: The slick, heavily-lawyered, generally foreign energy company making piles of money from (1) upfront state cash grants, state renewable energy mandates and feed-in tariffs, (2) federal & state tax credits, (3) 5-year accelerated depreciation on the whole shebang, (4) deduction of loan interest from taxable revenues, and (5) the lucrative sale of carbon credits (renewable energy credits) to corporations and industries who now advertise themselves as 100% carbon-free.

Notice panel #3, above. What Solar Man is blowing into that "clean, green, renewable energy" bag is rhetoric that's soon to be transformed — presto! — into dollar bills. Hundreds of millions of your tax dollars. The perfect scam. (Melville subtitled his con-man book, "His Masquerade." What better masquerade than "clean, green, renewable" — to save Planet Earth?)

Solar Man is prepared to offer a few hundred thousand of those scammed tax dollars to your town government and municipal fire department (new fire engine) in what he calls a Host Community Agreement. He's also prepared to spread several hundred thousand among the lease-holders who have naively surrendered their land to his LLC (Limited Liability Corporation).

Surrendered? Read one of the leases (click [here](https://cloudup.com/cLYGedw2CNDd) (<https://cloudup.com/cLYGedw2CNDd>)). People blithely sign away nearly all their property rights, virtually forever. Solar Man will insist, however, on a PILOT (Payment in Lieu of Taxes) from all taxing entities in the county.

I've been dealing with these "clean energy" hucksters since 2004. In my 71 years I have never encountered a more loathsome sneaky lying bullying aggressive deceitful cynical callous collection of people. (Did I leave anything out?) Whatever intrinsic merit wind and solar may have is immediately pulverized by the jaw-dropping sleaze (<https://cloudup.com/cOzvYIpZUEq>) of wind & solar companies. I guarantee they will enrage you. I also guarantee they will tear your community to shreds. (Don't look to the state or feds for relief. Washington and your state house are in collusion with Solar Man.)

My town in NYS recently turned down a 950-acre project for reasons I will explain in a moment. Before I do, lest you think FARM is a bunch of Luddites (<https://en.wikipedia.org/wiki/Luddite>), my town has a functioning brownfield of PV panels and more and more homeowners hereabout are mounting them on rooftops. All well and good. In 2018 FARM submitted a series of 10 reports to the Siting Board of the NYS Dept. of Public Service, opposing 2 giant solar projects nearby: (1) the 950-acre Malone NY project just referred to, and (2) a 1600-acre project in Massena NY. Here are highlights of the 10 reports, arranged by category and in no particular order. To read the full report (PDF) in each case, click where indicated. Help yourself; these reports are yours to use as you wish.

Prime farmland sterilized and otherwise damaged, and taken out of production. (Click [here](https://app.box.com/s/6le2rnmmeq0szxzwbxe4pjk8khy2v2wq) (<https://app.box.com/s/6le2rnmmeq0szxzwbxe4pjk8khy2v2wq>) & [here](https://app.box.com/s/nn812pZR7igy5ivic7d485i8qekvuwqtq) (<https://app.box.com/s/nn812pZR7igy5ivic7d485i8qekvuwqtq>) for FARM's 2 reports.) Virtually all states either forbid or recommend against taking prime farmland out of production and smothering it with solar panels and their associated equipment. The developers of the proposed Malone & Massena projects callously ignored this common sense. Solar developers will assure you that soil sterilization, toxic mineral contamination and water/soil runoff are non-issues. Speak to [Dr. Ron Heiniger](https://cals.ncsu.edu/crop-and-soil-sciences/people/ron-heiniger/) (<https://cals.ncsu.edu/crop-and-soil-sciences/people/ron-heiniger/>), Professor of Crop & Soil Sciences at North Carolina State University, to get a different story. (I did. And I read his publications on the matter. He will give you an earful.)

PVHI (Photo-Voltaic Heat Island) effect, Ecological Traps, and soil microbes. (Click [here](https://app.box.com/s/s1y4ys3u0v3etbfjpb09wlvxsxsufe1nr) (<https://app.box.com/s/s1y4ys3u0v3etbfjpb09wlvxsxsufe1nr>) & [here](https://app.box.com/s/6g97ek45bs1mxg7whnwgh5lg298x95rr) (<https://app.box.com/s/6g97ek45bs1mxg7whnwgh5lg298x95rr>) for FARM's 2 reports.)

Soil is a living, breathing organism. Fragile. Sensitive. Precious. Millions of years in the making. Loaded with marvelous, vital microbes working to create a substance — soil — unique in our solar system. Without it, there are no green plants. Without it, nothing lives.

One mustn't cook this "womb," hallowed by God in the biblical creation story, with solar panels and their PVHI effect. It's called a No Brainer. Solar Man is oblivious to this.

Then there is the problem of **Ecological Traps**: (1) the **Polarization Captivity Effect (PCE)** where arthropods (insects), especially those requiring water for breeding, lay their eggs on PV panels — mistaking them for water. I refer to insects that are vital to fish, bats, birds, and pollination — as in "food chain." (2) **Polarized Light Pollution (PLP)** and the **Lake Effect**, whereby aquatic birds (e.g., geese) that navigate by "polarized light" confuse industrial PV panels for bodies of water and attempt to land thereon — with disastrous results. (PV panels polarize light.)

Consider Invenergy's proposed 2,200 acre (3.4-square mile) Badger Hollow Solar farm (<https://app.box.com/s/nehb795383s7o2w2y4gosxwimhl6i0bu>) (Wisconsin), consisting of 1.2 million light-polarizing PV panels. This is going to look like a mighty big (fake) lake for migrating water birds that navigate by "polarized light = water!" What's Invenergy's plan — besides denial? They'd better speak to Professor Bruce Robertson (<https://brucerobertson.weebly.com/ecological-and-evolutionary-traps.html>) at Bard College before they put their foot in their mouth. (I spoke to him and I read all his relevant publications.)

PV panel glare: Airports and, once again, the Lake Effect. (Click [here](https://app.box.com/s/h3k80tjayfgs3fxz4qvg42ngw7z2zulh) (<https://app.box.com/s/h3k80tjayfgs3fxz4qvg42ngw7z2zulh>) & [here](https://app.box.com/s/f95zei9gl4o1sn9omh1gdo23x8ypoy) (<https://app.box.com/s/f95zei9gl4o1sn9omh1gdo23x8ypoy>) for FARM's 2 reports.)

Then there's the problem of nearby airports, virtually all of which are federally-obligated. The FAA recommends strongly against PV panels in the "approach" and "take-off" air-space of airports. Not just large commercial airports, but all airports. You will discover that the solar companies like to minimize the airport glare issue.

Besides claiming that glare has never been a problem at airports (this is a lie), they likewise claim the FAA has no interest in the matter (another lie). Here, below, is what the FAA has to say about the matter. (The text in yellow boxes is quoted from the FAA, "Interim Policy: FAA Review of Solar Energy System Projects on Federally Obligated Airports," Federal Register, vol. 78, no. 205, Wed., October 23, 2013, p. 63276 (<https://www.govinfo.gov/content/pkg/FR-2013-10-23/pdf/2013-24729.pdf>). The text below that is mine.)

The policy notice goes on to direct all federally-obligated airports to use the **Solar Glare Hazard Analysis Tool (SGHAT)** to assess ocular impact, noting the SGHAT software is available online from the US govt.'s Sandia Labs. Readers and developers and airport officials are directed to www.sandia.gov/glare (<http://www.sandia.gov/glare>). When you go to the Sandia site, you're directed to [ForgeSolar](https://www.forgesolar.com/) (<https://www.forgesolar.com/>). I followed these directions and did an ocular impact analysis for the Malone and Massena NY airports, using ForgeSolar's SGHAT software. Both projects failed. See results, below, for Geronimo Energy's Malone NY project. I have yet to encounter a solar company that has done a FAA-advised Solar Glare Hazard Analysis. Solar farm noise. (Click [here](https://app.box.com/s/66p9udyofxhhfflilovixyys9avwcfzt) (<https://app.box.com/s/66p9udyofxhhfflilovixyys9avwcfzt>) for FARM's report.)

Wait a minute! Aren't solar "farms" supposed to be silent? Yes and no. The PV panels are silent; the equipment they are tethered to is not. Especially the inverters (DC to AC). They hum.

The inverters hum and the HVAC (heating, ventilation, and air conditioning) units attached to the ESS (energy storage systems) produce ILFN (infrasound and low frequency noise). (See photo toward the top of this page for an illustration of an ESS.)

If you live within a mile or so of one of these mammoth solar plants and it's a calm, hot July night, you're gonna go nuts. The statement, left, is from Frank Coyle, retired civil engineer and former general manager for Simcoe Hydro (Ontario, Canada), recalling his experience building electrical substations.

[Infrasound](https://www.windturbinesyndrome.com/wind-turbine-syndrome/what-is-wind-turbine-syndrome/) (<https://www.windturbinesyndrome.com/wind-turbine-syndrome/what-is-wind-turbine-syndrome/>) is a whole other topic. Suffice it to say that infrasound from wind turbines (which Big Wind and its hireling scientists denied for years, till they could do so no longer) is what is killing wind energy projects around the globe.

Bottom line: Big Solar is industrializing your neighborhood, your community, perhaps even the field across the road from your home. Solar Man calls it a "farm" in his folksy presentation to your gullible town board. It's not a farm. This is a farm. Adding insult to injury, the piker who leased that 1000 acres across the road from you doesn't even live there any more. You're toast. So is your property value. (Remember I warned you: the devil just came to town.)

Decommissioning. (Click [here](https://app.box.com/s/yqgdowxl4aeweuvi78j5zp6qpzm8z2wux) (<https://app.box.com/s/yqgdowxl4aeweuvi78j5zp6qpzm8z2wux>) for FARM's report.) This one takes the prize! When Solar Man does his dog and pony show at a town meeting, pin him down on PV panel disposal (decommissioning). Here's an excerpt from our document on the subject as it pertains to Geronimo Energy's so-called [Franklin Solar](http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=54568&MNO=17-F-0602) (<http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=54568&MNO=17-F-0602>) project in Malone NY. (Geronimo being an aggressive and ludicrously named Minnesota energy company.)

Dead PV panels are considered toxic waste by the federal EPA and state conservation and health depts. Hence, they can't be simply tossed in the county landfill. They must be trucked to a federally-approved toxic waste site and buried with suitable precautions & protocols. The cost of this is huge. This is NYSERDA's estimate of decommissioning costs for a 2 MW project. ([NYSERDA](https://en.wikipedia.org/wiki/New_York_State_Energy_Research_and_Development_Authority) (https://en.wikipedia.org/wiki/New_York_State_Energy_Research_and_Development_Authority): NYS Energy Research and Development Authority. A so-called public benefit corporation used by Gov. Cuomo to fund his pet energy projects — with wind and solar topping the list.)

In Wisconsin, I'll wager Invenergy (see above) doesn't have a plan for 1.2 million "dead" solar panels — except, maybe, to "give" them to the leaseholding farmers! (Don't laugh! Solar companies in North Carolina have proposed this — with a straight face.)

Storage Batteries (ESS: Energy Storage Systems)

Here are several examples: (a) The white "blocky" structures, below, filled with lithium-ion batteries. (b) The gray panels of lithium-ion batteries shown in the cutaway view, left.

Take a closer look at one of the storage units, with racks of lithium-ion batteries.

Here's what the Tesla Hornsedale Power Reserve (<https://hornsedalepowerreserve.com.au/>) looks like in Australia. How well does the Hornsdale battery array perform? Answer: Not well (click [here](https://stopthesethings.com/2019/02/09/insane-storage-cost-mean-batteries-no-solution-to-chaotic-wind-power-delivery/) (<https://stopthesethings.com/2019/02/09/insane-storage-cost-mean-batteries-no-solution-to-chaotic-wind-power-delivery/>) & [here](https://stopthesethings.com/2017/03/19/south-australias-risible-ret-rescue-giant-150m-tesla-battery-to-power-sa-for-4-minutes/) (<https://stopthesethings.com/2017/03/19/south-australias-risible-ret-rescue-giant-150m-tesla-battery-to-power-sa-for-4-minutes/>)). Storing the electricity in batteries seems like a good idea. Except: It doesn't work in real life (click [here](https://stopthesethings.com/2019/02/11/renewable-storage-myth-busted-elon-musks-great-battery-conjob-exposed/) (<https://stopthesethings.com/2019/02/11/renewable-storage-myth-busted-elon-musks-great-battery-conjob-exposed/>) & [here](https://cloudup.com/cv8A74aN7IU) (<https://cloudup.com/cv8A74aN7IU>)). To make it work would be astronomically expensive (click [here](https://cloudup.com/csDbCJkmKph) (<https://cloudup.com/csDbCJkmKph>) & [here](https://cloudup.com/cYzCEJPFjyO) (<https://cloudup.com/cYzCEJPFjyO>)). Lithium-ion batteries are notoriously volatile and combustible (click [here](https://cloudup.com/cebLfY0zTsv) (<https://cloudup.com/cebLfY0zTsv>)). (https://videos.files.wordpress.com/vueGF533/bill-gates_dvd.mp4). Then there's this nightmare (click [here](https://cloudup.com/cNem3YdzC-r) (<https://cloudup.com/cNem3YdzC-r>)): Is your fire dept. going to put out this fire? And what about the hydrogen fluoride (HF) gas released into the air? How close will you be living to this inferno and its toxic gas? Do a Web search for "[hydrogen fluoride gas toxicity](https://emergency.cdc.gov/agent/hydrofluoricacid/basics/facts.asp)" (<https://emergency.cdc.gov/agent/hydrofluoricacid/basics/facts.asp>). You will quickly find a list like this one, below. (Keep this list on your refrigerator door, so you know what's happening to you when those lithium-ion battery containers ignite and go KABOOM!)

Smilin' Chad, the solar salesman — remember him? He won't want to talk about this stuff. If you perversely bring it up, he'll doubtless laugh and tell you it's all hysteria — all bunk! (But he won't be anywhere near the site when it happens.) Just keep repeating to yourself: it's all "clean, green, renewable," so it's gotta be okay. Besides, the government wouldn't expose you to this risk — would it?

Does the project align with your county or town plan? (Click [here](https://app.box.com/s/d7e1zpw92vvq2bb119rc3oydqw5dwoq) (<https://app.box.com/s/d7e1zpw92vvq2bb119rc3oydqw5dwoq>) for FARM's report.) In the case of Malone NY, the Geronimo solar project directly violated the Adirondack Trail Scenic Byway Corridor Management Plan (<https://www.dot.ny.gov/display/programs/scenic-byways/adirondack-trail>), going back to 1992 when NYS created the Scenic Byways Program administered by the Dept. of Transportation and implemented by the Scenic Advisory Board. The program's express purpose was to celebrate and capitalize on the "extensive system of over 2,000 miles of roadways that offer exceptional driving experiences throughout the state" (Plan, p. 5). How much sun does your community get, annually? (Click [here](https://app.box.com/s/2u12e2iojxukxdam75g63mjrbp0ku2nm) (<https://app.box.com/s/2u12e2iojxukxdam75g63mjrbp0ku2nm>) for FARM's report.)

Latitude is the #1 issue when considering solar energy potential. Is your degree of latitude a good location for what's called "solar energy gain"?

Consider Malone NY, where I live. According to Tom Whittaker's applet (click [here](http://profhorn.meteor.wisc.edu/wxwise/radiation/sunangle.html) (<http://profhorn.meteor.wisc.edu/wxwise/radiation/sunangle.html>)), the angle of the sun at 45° (Malone being at 44.842°) is optimal in June and at its worst in December. Malone has the potential to produce, for 1.5 to 2 months at peak for its latitude, 1183 W/m². This does not take into account other environmental factors, such as cloud cover and precipitation, nor factors affecting the panels directly (cleanliness of panels, angle relative to the path of the sun, shading, etc.). At Malone's latitude, there is a fall-off of 761 W/m² from peak (June) to low (December). (Interestingly, the fall-off of solar gain is not uniform.) I repeat, the peak time for solar gain at the 45th parallel is pitifully short (click [here](https://earthobservatory.nasa.gov/features/EnergyBalance/page3.php) (<https://earthobservatory.nasa.gov/features/EnergyBalance/page3.php>)).

All this by way of saying that Malone NY is a poor choice for an industrial-scale solar plant. What about your community? By the way, this doesn't deter the solar salesmen, since they're chiefly interesting in harvesting tax subsidies, cash grants, etc. — not electrons.

I close with a statement from Ron [Dr. Ron Heiniger](https://cals.ncsu.edu/crop-and-soil-sciences/people/ron-heiniger/) (<https://cals.ncsu.edu/crop-and-soil-sciences/people/ron-heiniger/>), Professor of Crop & Soil Sciences at North Carolina State University. Prof. Heiniger sent this to me in an email. I quote with his permission. (Yes, he is referring to the solar energy industry.)

If you want to access all 10 reports with a single click . . . [Click here](https://app.box.com/s/6llu0lj4jcpfbvola9m9f06eia3kmo6v) (<https://app.box.com/s/6llu0lj4jcpfbvola9m9f06eia3kmo6v>).

[Click here](https://cloudup.com/cVP2QvTTeO1) (<https://cloudup.com/cVP2QvTTeO1>) . . . for a copy of Malone's "solar energy law." (Beware of boiler-plate, "recommended" solar laws provided by your state government. They're basically written by Solar Man.)

Malone's solar law was written by NYS attorney, [Gary Abraham, Esq](http://www.garyabraham.com/) (<http://www.garyabraham.com/>). Smart man. Former college professor. I recommend contacting him. He has lots of experience with wind and, now, solar projects before the NYS Dept. of Public Service. (All industrial wind and solar projects in NYS must go through a DPS [Article 10](http://www3.dps.ny.gov/W/PSCWeb.nsf/All/D12E078BF7A746FF85257A70004EF402?OpenDocument) (<http://www3.dps.ny.gov/W/PSCWeb.nsf/All/D12E078BF7A746FF85257A70004EF402?OpenDocument>) certification process.)

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Best wishes,

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