

From The Desk Of

Michael J. Fournier



April 19, 2018

Via Email

Hon. Kathleen H Burgess, Secretary to the NYS PSC Siting Board

Re. Case No. 17-F-0602: Application of Franklin Solar, LLC for a Certificate of Environmental Compatibility and Public Need Pursuant to Article 10 of the Public Service Law for Construction of a Solar Electric Generating Facility Located in the Town of Malone, Franklin County.

On behalf of Friends Against Rural Mismanagement (FARM), I would like to submit this comment as a filed document to the DMM, responding to the PIP filed by Franklin Solar (Geronimo Energy) for case no. 17-F-0602, hereafter referred to as Geronimo.

As mentioned in previous correspondence, I head Friends Against Rural Mismanagement (FARM), being a group of individuals who live either within the boundaries of the project or within 5 miles of the Town of Malone.

We might call the theme of this document "glare." PV panel glare. Geronimo pretends it doesn't exist:



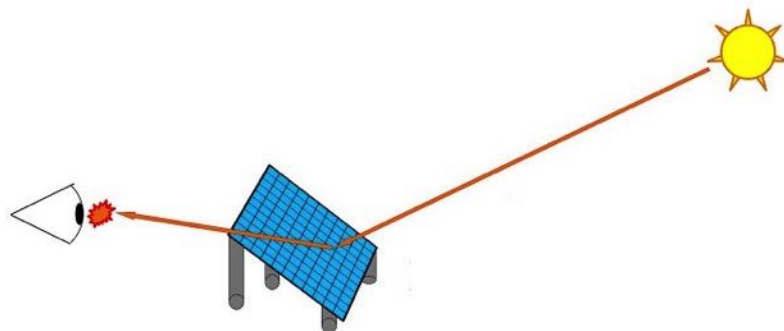
The glass surface of modern solar panels can include an anti-reflective coating, similar to that used on optical equipment (camera lenses), as well as texturing to minimize any loss of incoming light. Studies have shown that PV solar panels reflect as little as 2% of incoming light, which means that PV solar panels are less reflective than water or window glass.¹

¹ Geronimo Energy, "Solar Energy: Frequently Asked Questions," www.geronimoenergy.com, p. 5. Hereafter cited as Geronimo FAQ's.

So far, all we're getting from Geronimo is platitudes; we still don't know if Geronimo's fixed-tilt PV panels are going to create glare. Two paragraphs later, we get to Geronimo's (vague) position on the subject:

By working with expert construction and technology partners, Geronimo Energy is able to model facility locations and solar panel arrays with no reflective glare issues or safety concerns. Geronimo Energy develops each solar site with the approved Federal Aviation Administration (FAA) and Sandia Labs solar glare hazard analysis tool, which identifies and mitigates solar glint and glare.²

Bingo! "Geronimo Energy is able to model facility locations and solar panel arrays with no reflective glare issues or safety concerns." (We'll get to the less-than-honest part about the FAA and Sandia Labs "solar glare hazard analysis tool," shortly. First, let's establish that the assurances of "no reflective glare issues" are nothing more than "onion-grass," to quote Mole in Kenneth Grahame's "Wind in the Willows." Onion-grass: Old-fashioned word for "baloney.")



²Geronimo FAQ'S, p. 5.

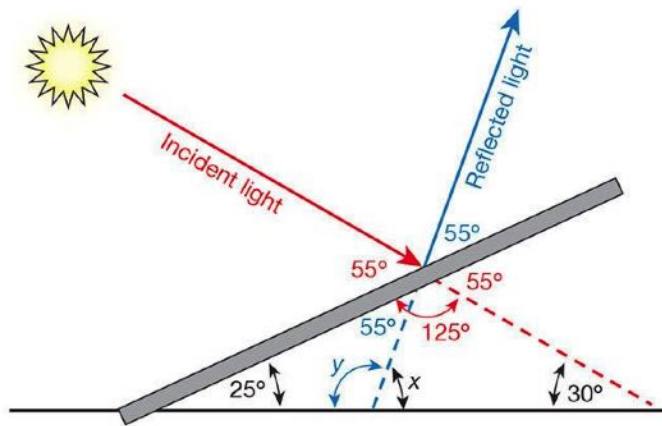


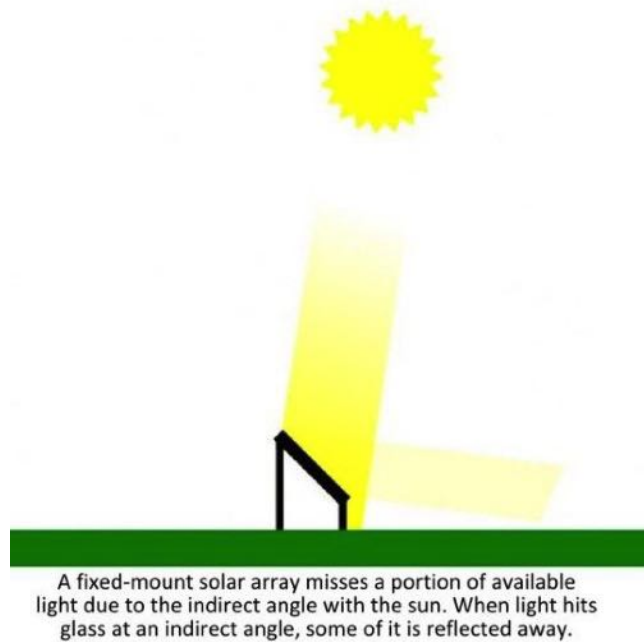
Figure 4 Using the law of reflectance and basic trigonometry, you can solve for angles x and y . For the purposes of glare analysis, you are primarily interested in angle x , which describes the angle of reflectance from the perspective of an observer.

The photos, above, were sent to me this past December by Vermonters for a Clean Environment’s Executive Director, Annette Smith. She added the following:

One issue that has been a surprise is glare. Solar developers have claimed in their applications that glare is not an issue. After the fact, we have learned that it is a serious problem.

- In one case, a neighbor to the west must keep his blinds closed and cardboard in his windows from 7 to 9 in the morning to block out the blinding glare. He cannot use his front yard due to the blinding glare.*

- *In another case, a neighbor to the east must keep his blinds drawn from 1 to 4 in the afternoon, requiring the use of lights in the home due to having to keep the blinds closed to block out the glare from the solar panels.*
- *Neighbors a mile to the southeast of a 2 MW solar array experience blinding glare from the panels in the afternoon such that they can no longer enjoy being in their backyards, and an elderly woman experiences glare from the panels in her upstairs bedroom.*
- *At least two solar arrays put out blinding glare that drivers on the roadways experience. I have personally experienced one of these project's glare, and after glancing at it for less than a minute while driving by, my eyes hurt for more than 10 minutes.³*



I will be one of those neighbors. So will the scores of people living in the homes on the rolling hills overlooking these 950 acres. So will motorists traveling State Rte 30, which bisects the project. (State Rte 30 being part of the Adirondack Trail, remember.⁴) So will the snow and Canada geese that have been foraging in these fields, spring and fall, for the past century and a half. Geese, tourists, neighbors, motorists, fly-fishermen, and polarotactic insects breeding in the Salmon River—are all stakeholders in Geronimo's proposed project.⁵

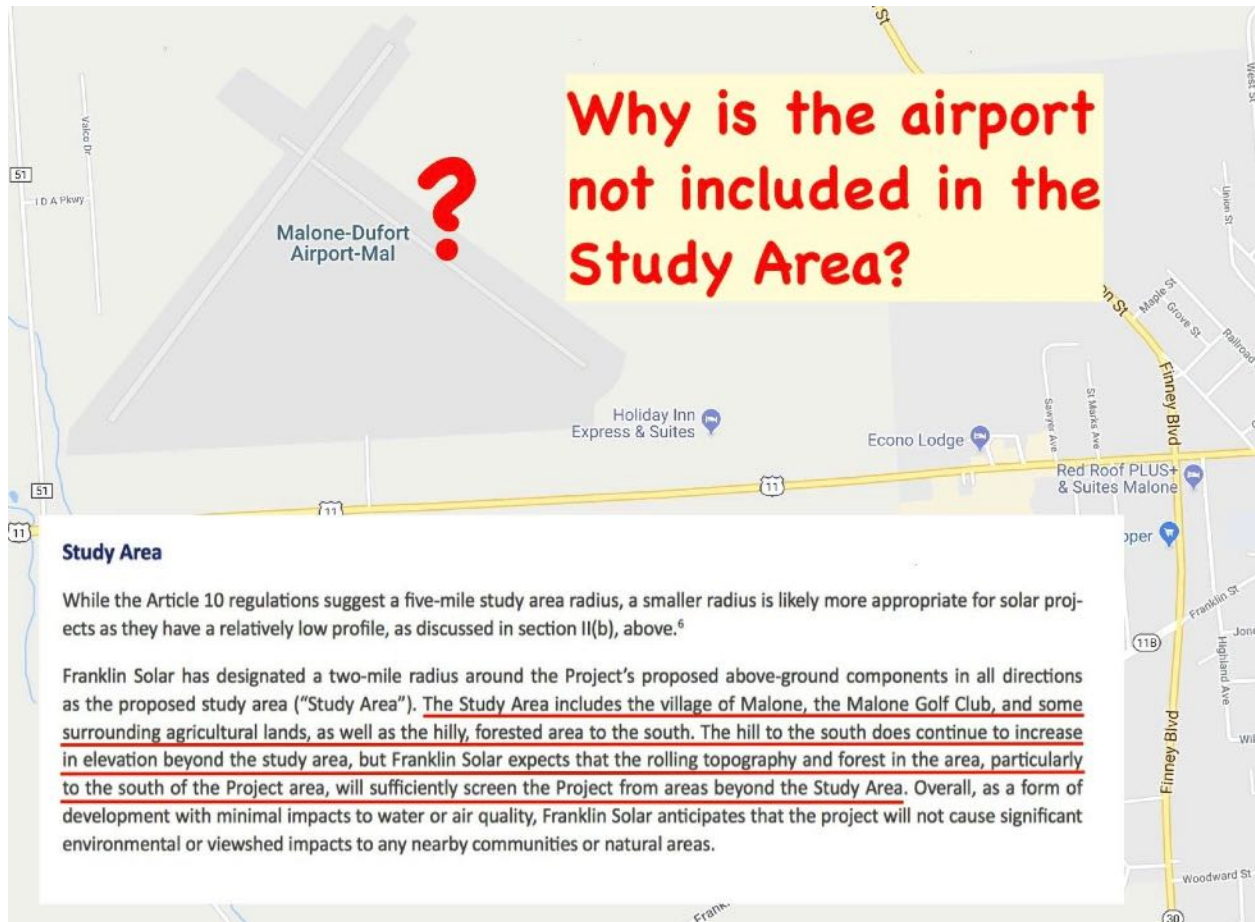
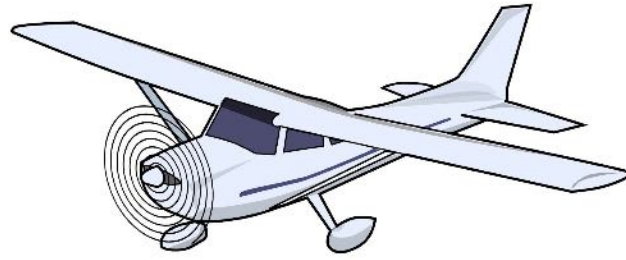


There is another stakeholder who has been airbrushed out of the picture by Geronimo: Airplane pilots. The Malone-Dufort Public Airport.

³ Annette Smith to FARM, Dec 20, 2017.

⁴ See Fournier to Burgess 1-12-18, filed to DMM 17-F-0602 on 1-16-18.

⁵ See Fournier to Burgess 3-31-18, filed to DMM 17-F-0602 on 4-2-18.



Why is the airport not included in Geronimo's study area? Good question! The answer is found in Geronimo's "Frequently Asked Questions" brochure:

In the past, solar panel glare had primarily been a concern only for the aviation industry. However, recent studies have proved that solar panels pose minimal concern to pilots. In fact, there are numerous solar panel installations near U.S. airports, and there has never been a documented case of an accident due to solar panel glare. Hindawi Publishing Corporation, in conjunction with international Scholarly Research Notices, recently conducted an experiment that measured the potential glare that an aircraft pilot could

experience as a result of ground-mount solar panels. Their findings concluded that "the potential for hazardous glare from flat-plate PV systems is similar to that of smooth water and not expected to be a hazard to air navigation."⁶

First of all, do a Google search for Hindawi Publishing Corp. You will get an earful. It's an outfit started by a husband & wife team in 1997 and headquartered in Cairo, Egypt. It's variously described as "bogus," "predatory," "dodgy," "overzealous," and "brigandish," with "fake review, fake editorial boards and aggressive spam."⁷ Its business model appears to be a kind of "pay to play" arrangement:

An example of a "gold open-access" journal is The Scientific World Journal, currently published by Cairo-based Hindawi Publishing Corporation. This megajournal covers virtually all scientific fields and imposes an article processing charge of \$1,000 for each accepted article.⁸

This doesn't inspire confidence. With this in mind, take a look at this photograph: 2,200 fixed-tilt PV



panels on the roof of the parking garage at the Manchester/Boston Regional Airport — a federally-obligated airport, like the Malone-Dufort Airport. (Both are federally-obligated since they receive federal funding. I will elaborate on the significance of this, below.)

Figure 12. Glare viewed from Air Traffic Control Tower at Manchester/Boston Regional Airport (8:15 AM EDT, 4/27/12).

⁶ Geronimo FAQ'S, p. 5.

⁷ See, for instance, <http://fakeconferences.blogspot.com/2015/03/the-egyptian-publisher-hindawi.html>; <https://aardvarchaeology.wordpress.com/2013/01/09/hindawi-another-dodgy-oa-publisher/>; <https://www.the-scientist.com/?articles.view/articleNo/32426/title/Predatory-Publishing/>.

⁸ Jeffrey Beall, "Predatory Publishing," *The Scientist*, August 1, 2012.

<https://www.the-scientist.com/?articles.view/articleNo/32426/title/Predatory-Publishing/>

Here's an article on the glare problem at the Manchester/Boston Airport, published in the NH Union Leader, August 6, 2013:⁹

MANCHESTER — Engineers have recommended that solar panels on top of a Manchester airport parking garage be repositioned toward the east — rather than the sun-drenched south — to prevent glare that has bothered air-traffic controllers, an airport official said.

The recommendation comes as the Manchester-Boston Regional Airport continues to drape tarps over some of the 2,200 solar panels on top of an airport parking garage. The drapes went up last August when controllers started complaining about early morning glare.

Since then, the airport, Federal Aviation Administration, controllers and others have been working with consultants to fix the problem, said J. Brian O'Neill, deputy airport director.

The \$3.5 million solar panel installation, the largest in New Hampshire, was paid for with a federal grant and is designed to power the parking garage and sky bridge that lead to the airport terminal. In the summer, the airport sells excess electricity to Public Service of New Hampshire.

Before the project was built, airport officials hired a consultant — Harris, Miller, Miller & Hanson of Burlington, Mass. — to apply for the FAA grant and study glare issues. The firm earned \$41,570.

Ever since the glare emerged, the firm has been working with the airport, O'Neill said.

"They've been very thorough with their due diligence," O'Neill said. "There hasn't been any 'No, no, no. We're not responsible, this is your problem, not our problem.' They've been very cooperative to work with."

An email sent to the firm Tuesday was not returned.

The next step is for the firm and its insurance company to present the ideas on how to solve the glare issue, O'Neill said. The firm could either agree with repositioning the panels or suggest another solution.

Another team of consultants, which involves engineers from the Massachusetts Institute of Technology, the Volpe Center and Sandia National Laboratories, has recommended repositioning the panels to the east.

O'Neill acknowledged that the repositioning will reduce the energy output of the panels; sun from the east is not as strong as sun from the south.

But the plan calls for adding another 180 panels, so the energy output — 560,000 to 575,000 kilowatt-hours of electricity a year — will remain the same, he said.

⁹ Mark Hayward, "Manchester Airport Remains in Dark over Solar-Panel Glare Solution," New Hampshire Union Leader, Aug 6, 2013.

The airport still expects to reach its target of \$100,000 in energy savings a year, he said.

O'Neill said the consultants and working group are moving into the second phase of discussions, which involve who has to pay to correct the problem. The price tag would also include \$34,800 for work done by the MIT/Volpe group.

"We're going to get back together and discuss responsibility and discuss the path for correcting the problem," he said.

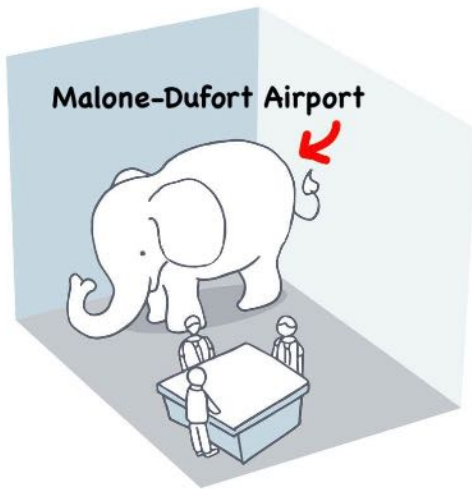
Here are the airport PV panels—covered with tarps.



"Before the project was built, [Manchester/Boston] airport officials hired a consultant — Harris, Miller, Miller & Hanson of Burlington, Mass. — to apply for the FAA grant and study glare issues. The firm earned \$41,570." Sounds like Harris, Miller, Miller & Hanson of Burlington MA screwed up—to the tune of \$41,570, for starters.

The message is obvious: Ground-mounted PV solar panels can indeed pose a glare problem for airports. In the Manchester/Boston case, it was air traffic controllers who noted the problem. Malone-Dufort Airport has no air traffic controllers; pilots navigate take-off and landing by visual flight rules (VFR) or on-board instrument flight rules (IFR). This is where 950 acres of ground-mounted, fixed-tilt PV panels in the flight path of air traffic at Malone-Dufort are going to pose a substantial glare problem. (Let me clarify that there are a dozen or so PV panels currently

mounted on the roof of the town office at Malone-Dufort — a trivial number compared to the tens of thousands Geronimo is proposing.)



Malone-Dufort Airport is the elephant in the room for Geronimo — the elephant Geronimo would rather not acknowledge. They first tried to airbrush it out of the Article 10 by referring to a dodgy study done by a dubious journal published by Hindawi Publishing. Their next strategy was to bury it in a paragraph on p. 18 of the revised PIP (Nov 2017) under Identified Stakeholders, "Airports and Heliports":¹⁰

Article 10 regs. do indeed say this — but it's irrelevant and hence a red herring to this case.

Really?!

Airports and Heliports

The Article 10 regulations require an applicant to consult with airport or heliport operators if the Project triggers requires a Notice of Proposed Construction to be submitted to the Federal Aviation Administration.¹⁵ The Project will not have any facilities that extend more than 200 feet above ground level, nor does the Project meet any of the other requirements triggering notice in the FAA's regulations.¹⁶ Franklin Solar will include the privately owned and operated Malone-Dufort Airport as an interested party; the airport lies north of the Project area.

Airport Ownership

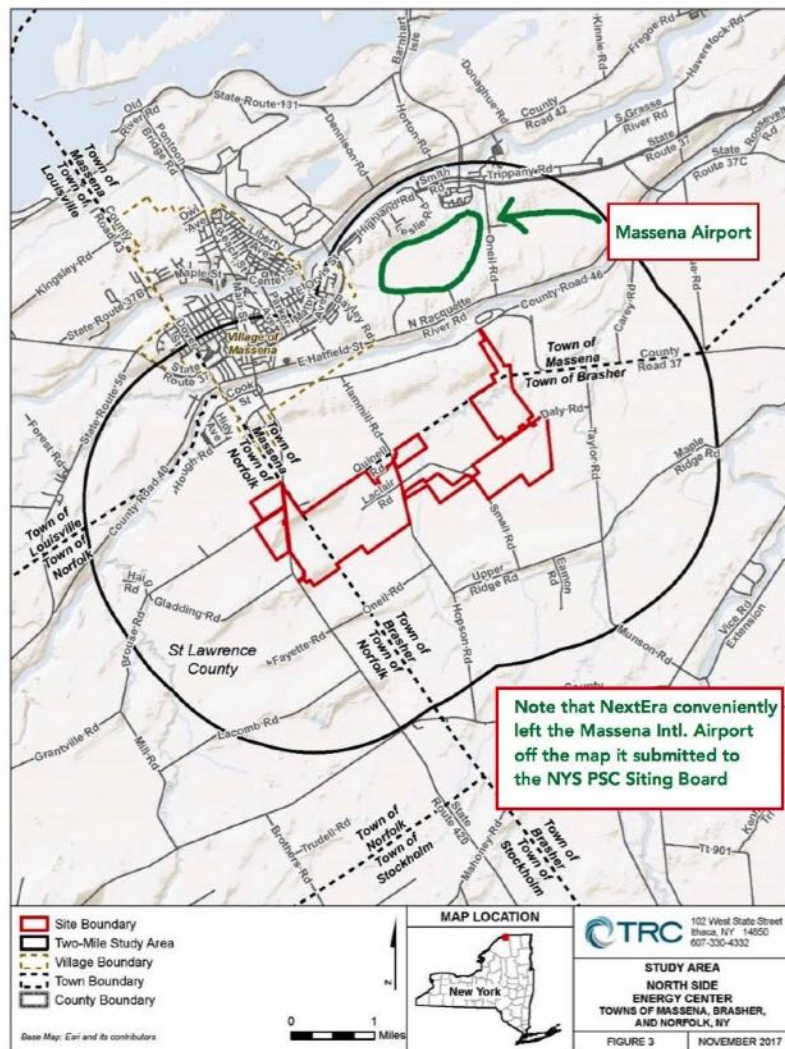
Ownership: Publicly Owned

Owner: Town Of Malone
27 Airport Road
Malone, NY 12953
(518) 483-4740

¹⁰ Geronimo Energy, "Public Involvement Program Plan: Franklin Solar Project," Case 17-F-0602, November 2017, p. 18.

Geronimo says Malone-Dufort is privately owned and operated. The reason they say this is — presto! — to remove it from FAA regs. Alas, Malone-Dufort is publicly owned and operated by the Town of Malone. Not only this, but Malone-Dufort is what's called a federally-obligated airport, since it receives federal funding for upgrades.¹¹ (The same holds true for the Massena International Airport, incidentally, in case no. F-17-0598 where NextEra has applied to build an even larger PV solar plant in the aeronautical flight path. See p. 22 from the NextEra PIP, below. More on this another time.)

Case F-17-0598
 North Side Energy Center
 Public Involvement Program Plan

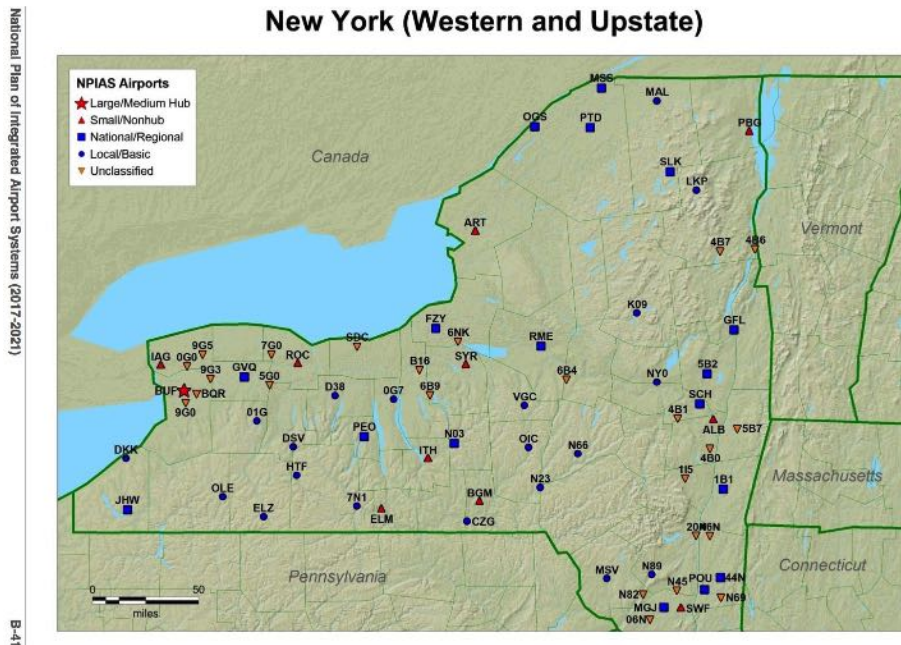


¹¹ See FAA Advisory Circular No. 150/5190-6, Jan 4, 2007, re. Exclusive Rights at Federally-Obligated Airports.

In fact, Malone-Dufort is part of the National Plan of Integrated Airport Systems (NPIAS), as is the Massena International Airport.¹² This means that both airports are considered vital to the nation's airport system for national security purposes (e.g., Dept. of Homeland Security and Dept. of Defense) and for civilian pilots traveling cross-country or internationally (Canada/USA) who need a place to land.

Appendix A: All Existing NPIAS Airports (2017-2021)

State	City	Airport	Locid	Ownership	Hub	Role	Category		Current Aircraft		2017-2021 Dev Estimate
							Current	Year 5	Enplaned	Based	
NY	East Moriches	Spadaro	1N2	PR		Unclassified	R	R	0	16	\$0
NY	Ellenville	Joseph Y Resnick	N89	PU		Local	GA	GA	0	28	\$2,876,147
NY	Elmira/Corning	Elmira/Corning Regional	ELM	PU	N		P	P	159,136	48	\$24,285,380
NY	Endicott	Tri-Cities	CZG	PU		Local	GA	GA	0	42	\$2,050,556
NY	Farmingdale	Republic	FRG	PU	N		P	P	12,559	507	\$33,205,656
NY	Fishers Island	Elizabeth Field	0B8	PU		Basic	GA	GA	60	2	\$1,468,000
NY	Freehold	Freehold	115	PR		Unclassified	GA	GA	0	0	\$0
NY	Fulton	Oswego County	FZY	PU		Regional	GA	GA	2	72	\$7,491,386
NY	Gasport	Royalton	9G5	PR		Unclassified	GA	GA	0	39	\$0
NY	Glens Falls	Floyd Bennett Memorial	GFL	PU		Regional	GA	GA	19	52	\$20,811,141
NY	Hamilton	Hamilton Municipal	VGC	PU		Local	GA	GA	26	35	\$4,923,334
NY	Homell	Homell Municipal	HTF	PU		Basic	GA	GA	0	9	\$1,011,800
NY	Hudson	Columbia County	1B1	PU		Regional	GA	GA	6	26	\$6,064,165
NY	Ithaca	Ithaca Tompkins Regional	ITH	PU	N		P	P	89,501	60	\$6,103,800
NY	Jamestown	Chautauqua County/Jamestown	JHW	PU		Regional	CS	CS	3,222	29	\$8,657,748
NY	Johnstown	Fulton County	NY0	PU		Local	GA	GA	0	33	\$9,646,825
NY	Kingston	Kingston-Ulster	20N	PR		Unclassified	R	R	4	34	\$0
NY	Lake Placid	Lake Placid	LKP	PU		Local	GA	GA	4	20	\$3,136,357
NY	Lancaster	Buffalo-Lancaster Regional	BQR	PR		Unclassified	R	R	0	65	\$0
NY	Le Roy	Le Roy	5G0	PR		Unclassified	R	R	0	27	\$0
NY	Lockport	North Buffalo Suburban	0G0	PR		Unclassified	GA	GA	0	0	\$0
NY	Malone	Malone-Dufort	MAL	PU		Basic	GA	GA	0	13	\$2,003,193
NY	Massena	Massena International-Richards Field	MSS	PU		Regional	CS	CS	4,553	9	\$7,541,654
NY	Middletown	Randall	06N	PR		Unclassified	R	R	0	15	\$0



¹² Report to Congress: National Plan of Integrated Airport Systems (NPIAS), 2017-2021, Federal Aviation Administration, US Department Of Transportation, Appendix A.

October 23, 2013 in a Notice with the prosaic title, "Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports." To the best of my knowledge, this is, believe it or not, the most recent FAA statement on solar panels and airports. Notice the date, 2013. At that time there were few industrial-scale PV solar plants located close to airports; hence there didn't appear to be much if any need for the FAA to make a pronouncement on the subject. There were, however, PV panels being installed at airports, as we witnessed with the Manchester/Boston Airport.

I have given a bird's eye view, above, of pp. 63276 - 63279. Notice my numbered, yellow highlighting. These are the passages which have a bearing on the Malone-Dufort Airport and, by the way, the Massena International Airport. I will quote each highlighted passage in turn:

1

The policy applies to any proposed on-airport solar energy system that has not received from the FAA either an unconditional airport layout plan approval or a "no objection" finding on a Notice of Proposed Construction or Alteration Form 7460-1.¹³

This suggests the FAA has zero interest in the Geronimo project since the FAA policies apply exclusively to a proposed "on-airport solar energy system": Geronimo is a mile or so away from the airport. (Geronimo mis-read the part about "Notice of Proposed Construction," thinking this applies to off-site projects. It doesn't; it applies only to on-airport solar projects.)

As we read further, we come to this paragraph:

2

Solar energy systems located on an airport that is not federally-obligated or located outside the property of a federally-obligated airport are not subject to this policy. Proponents of solar energy systems located off-airport property or on non-federally-obligated airports are strongly encouraged to consider the requirements of this policy when siting such systems" (emphasis added).¹⁴

In other words, the FAA is not insisting that Geronimo (or NextEra in Massena) comply with these regulations (which we will get to in a moment); it is "strongly" encouraging them "to consider the requirements of this policy when siting such systems" off the grounds of a federally-obligated airport. (This perhaps explains why Geronimo fudged the identity of Malone-Dufort, calling it "privately owned and operated." As I noted above, Geronimo is wrong: Malone-Dufort is publicly owned and operated and is federally-obligated. Hence, Geronimo is "strongly encouraged to consider the requirements of this policy when siting" its project.)

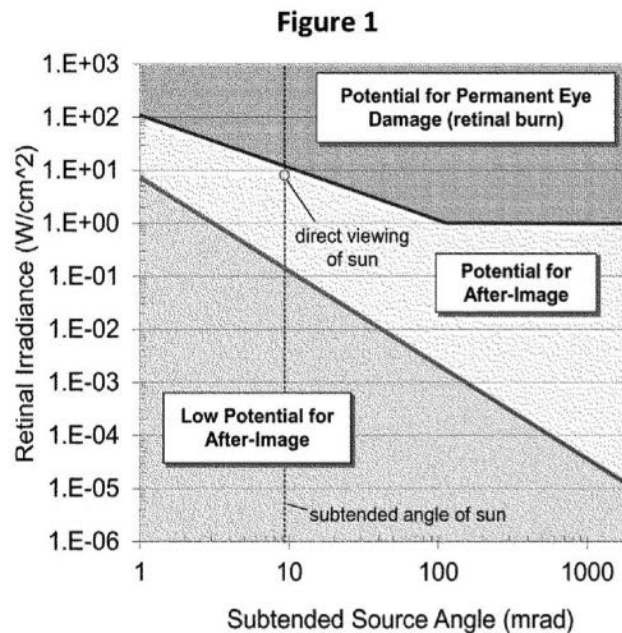
¹³ FAA, "Interim Policy: FAA Review Of Solar Energy System Projects On Federally Obligated Airports," Federal Register, vol. 78, no. 205, Wed., October 23, 2013, p. 63276.

¹⁴ Ibid., p. 63277.

This brings us to (a) the FAA's requirements for on-site PV panels at federally-obligated airports and (b) the FAA's strongly encouraged requirements for off-site PV projects near a federally-obligated airport. Under the heading, **Standard for Measuring Ocular Impact**, we're told the following. Notice the passages underlined by me:

- 3** FAA adopts the *Solar Glare Hazard Analysis Plot* shown in Figure 1 below as the standard for measuring the ocular impact of any proposed solar energy system on a federally-obligated airport. To obtain FAA approval to revise an airport layout plan to depict a solar installation and/or a "no objection" to a Notice of Proposed Construction Form 7460-1, the airport sponsor will be required to demonstrate that the proposed solar energy system meets the following standards:
1. No potential for glint or glare in the existing or planned Airport Traffic Control Tower (ATCT) cab, and
 2. No potential for glare or "low potential for after-image" (shown in green in Figure 1) along the final approach path for any existing landing threshold or future landing thresholds (including any planned interim phases of the landing thresholds) as shown on the current FAA-approved Airport Layout Plan (ALP). The final approach path is defined as two (2) miles from fifty (50) feet above the landing threshold using a standard three (3) degree glidepath.
- Ocular impact must be analyzed over the entire calendar year in one (1) minute intervals from when the sun rises above the horizon until the sun sets below the horizon.¹⁵

Here is the Solar Glare Hazard Analysis Plot, referred to above:



¹⁵ Ibid.

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 for use online from the US gov't's Sandia Labs. Readers and developers and airport officials are directed to www.sandia.gov/glare.¹⁶

Tool To Assess Ocular Impact

In cooperation with the DOE, the FAA is making available free-of-charge the *Solar Glare Hazard Analysis Tool* (SGHAT). The SGHAT was designed to determine whether a proposed solar energy project would result in the potential for ocular impact as depicted on the *Solar Glare Hazard Analysis Plot* shown above.

The SGHAT employs an interactive Google map where the user can quickly locate a site, draw an outline of the proposed solar energy system, and specify observer locations (Airport Traffic Control Tower cab) and final approach paths. Latitude, longitude, and elevation are automatically recorded through the Google interface, providing necessary information for sun position and vector calculations. Additional information regarding the orientation and tilt of the solar energy panels, reflectance, environment, and ocular factors are entered by the user.

If glare is found, the tool calculates the retinal irradiance and subtended source angle (size/distance) of the glare source to predict potential ocular hazards ranging from temporary after-image to retinal burn. The results are presented in a simple, easy-to-interpret plot that specifies when glare will occur

throughout the year, with color codes indicating the potential ocular hazard. The tool can also predict relative energy production while evaluating alternative designs, layouts, and locations to identify configurations that maximize energy production while mitigating the impacts of glare.

Users must first register for the use of the tool at this web address: www.sandia.gov/glare.

Required Use of the SGHAT

As of the date of publication of this interim policy, the FAA requires the use of the SGHAT to demonstrate compliance with the standards for measuring ocular impact stated above for any proposed solar energy system located on a federally-obligated airport. The SGHAT is a validated tool specifically designed to measure glare according to the *Solar Glare Hazard Analysis Plot*. All sponsors of federally-obligated airports who propose to install or to permit others to install solar energy systems on the airport must attach the SGHAT report, outlining solar panel glare and ocular impact, for each point of measurement to the Notice of Proposed Construction Form 7460-1. The FAA will consider the use of alternative tools or methods on a case-

by-case basis. However, the FAA must approve the use of an alternative tool or method prior to an airport sponsor seeking approval for any proposed on-airport solar energy system. The alternative tool or method must evaluate ocular impact in accordance with the *Solar Glare Hazard Analysis Plot*.

Please contact the Office of Airport Planning and Programming, Airport Planning and Environmental Division, APP-400, for more information on the validation process for alternative tools or methods.

Airport sponsor obligations have been discussed above under Background. We caution airport sponsors that under preexisting airport grant compliance policy, failure to seek FAA review of a solar installation prior to construction could trigger possible compliance action under 14 CFR Part 16, "Rules of Practice for Federally-Assisted Airport Enforcement Proceedings." Moreover, if a solar installation creates glare that interferes with aviation safety, the FAA could require the airport to pay for the elimination of solar glare by removing or relocating the solar facility.

We went to www.sandia.gov/glare and discovered it is directing all users to ForgeSolar:

2017 SGHAT Transition

The Solar Glare Hazard Analysis Tool (SGHAT) analysis functionality is now restricted to military, state, and federal government users only. Maintenance and monitoring of the SGHAT application ends Dec. 31, 2017. The technology behind SGHAT (source code and algorithms) is available for licensing from Sandia Laboratories. Interested parties can contact [the licensing department](#).

Users seeking to use SGHAT for glare analyses can visit the following licensed SGHAT applications. These sites are available for online usage and include recent SGHAT enhancements and features:

- [ForgeSolar glare analysis tools at www.forgesolar.com](http://www.forgesolar.com) hosted by Sims Industries, LLC.

If you have licensed SGHAT and would like to be listed, please [contact us](#). All other tools on this site will remain available. Thank you for your continued support and interest in SGHAT.

¹⁶ Ibid., p. 63278.

We therefore went to ForgeSolar (www.forgesolar.com) and registered to use their software.



ForgeSolar is the Premier Toolset for evaluating photovoltaic glare

ForgeSolar tools are used throughout the world by industry, academia, and military to evaluate PV glare. Based on the R&D 100 Award-winning SGHAT technology, ForgeSolar accommodates FAA, zoning, and other regulatory requirements.

By working with expert construction and technology partners, Geronimo Energy is able to model facility locations and solar panel arrays with no reflective glare issues or safety concerns. Geronimo Energy develops each solar site with the approved Federal Aviation Administration (FAA) and Sandia Labs solar glare hazard analysis tool, which identifies and mitigates solar glint and glare.

Next, we did what Geronimo didn't do: We ran a glare analysis for the Malone-Dufort Airport vis-a-vis the Geronimo project.

It failed. Spectacularly. There is a significant risk of "yellow" glare (potential for after-image) in the flight path from the airport (referred to as "threshold") to 2 miles out.



FORGESOLAR GLARE ANALYSIS

Project: Malone Airport

Proposed PV sites near Malone Airport, New York

Site configuration: **Malone-Dufort Airport**

Analysis conducted by Calvin Martin (19clay@gmail.com) at 00:25 on 15 Apr, 2018.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.



COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
Flight path(s)	FAIL	Flight path receptor(s) receive yellow glare
ATCT(s)	N/A	No ATCT receptors designated

Default glare analysis and observer eye characteristics are as follows:


- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at <https://www.federalregister.gov/d/2013-24729>



Malone-Dufort Airport

Project site configuration details and results.



Created April 14, 2018 8:23 p.m.
 Updated April 14, 2018 8:26 p.m.
 DNI varies and peaks at 1,000.0 W/m²
 Analyze every 1 minute(s)
 0.5 ocular transmission coefficient
 0.002 m pupil diameter
 0.017 m eye focal length
 9.3 mrad sun subtended angle
 Site Configuration ID: 17268.2315

Glare Analysis Summary **PV Array Results**

PV array 1 potential temporary after-image ✓

Component	Green glare (min)	Yellow glare (min)
FP: FP 1 ✓	0	7102 ✓
FP: FP 2 ✓	0	3662 ✓
FP: FP 3 ✓	0	4107 ✓

PV array 1 - Flight Path Receptor (FP 1) ✓

PV array is expected to produce the following glare for observers on this flight path:

- 0 minutes of "green" glare with low potential to cause temporary after-image. ✓
- 7,102 minutes of "yellow" glare with potential to cause temporary after-image. ✓

CSV

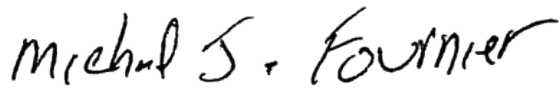
I have attached the full report herewith. The policy notice closes with this warning.¹⁷ ↘

In Geronimo's case, the solution is to relocate the solar facility before it gets built. The present site is clearly unacceptable.

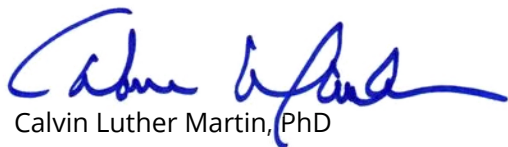
Moreover, if
 a solar installation creates glare that
 interferes with aviation safety, the FAA
 could require the airport to pay for the
 elimination of solar glare by removing
 or relocating the solar facility.

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Sincerely,



Michael J. Fournier
 President of FARM and party to case no. 17-F-0602



Calvin Luther Martin, PhD
 Member of FARM and party to case no. 17-F-0602

¹⁷ Ibid.