Ancram Solar PV, LLC
Ancram Solar Planning Board Application
Walden Environmental Engineering Comments
3333 State Route 82
Ancramdale, NY 12503

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1.0 ABSTRACT

Based on the August 7, 2025 Ancram Planning Board meeting and my submitted August 2025 report, which was presented during that meeting, the SEQR review is deficient. In my opinion, based on approximately 38 years of engineering experience and a Professional Engineer since 1994, which includes over 11 years overseeing the NYSDEC Region 2 (New York City) RCRA (hazardous materials) program (see attached resume), the proposed project will cause long-term significant impacts on the visual resources within the community and long-term significant impacts to the community character. During my professional career, I have review hundreds of applications including the SEQRA applications and EAF forms. Even though most of my time was involved with all aspects of solid waste, including multi-decade oversight for the closure of the DSNY Fresh Kills Landfill, I was directly involved in several hazardous waste projects such as the Radiac Part 373 permit application. Additionally, I attended several training sessions concerning solar panel arrays at solid waste landfills, like the Madison County Solid Waste Landfill, which I directly applied during the meetings and in review of the plans of the proposed solar panel arrays at the DSNY Fresh Kills Landfill. This experience informs my statement that the issue regarding hazardous waste generation lacking sufficient information to justify the applicant's response in EAF Part 1 Section D.2.t. More information regarding hazardous waste and glare impacts are necessary for the Planning Board to adequately evaluate the impacts of the proposed project.

2.0 INTRODUCTION

Revision of August 2025 based on August 7, 2025 Ancram Planning Board meeting and

1) Presentation of my August 2025 Ancram Solar PV report.
2) My reading into the record Section 3.0 item (1)(a) from my August 2025 Ancram Solar PV report
3) My statements are based on Section 5.0 from my August 2025 Ancram Solar PV report.
4) The response by the consultants for project owners and Planning Board members:
    a. Consistency with the Town of Ancram Local Law No. 1 of 2021, dated April 15, 2021, was previously presented to the Planning Board point-by-point, and the Chairman stated that the issue did not need to be revisited.
    b. While the visual impact, especially for specific streets designated as scenic, was discussed, no conclusion was reached except that more information is necessary to determine what can be seen from the proposed solar array.
    c. While the SEQR EAF review was started, final decisions on Part 3 of the EAF were pending. Several issues were identified as requiring further analysis from Part 2 of the EA, including visual impacts and community character.
    d. The hazardous waste issue associated with solar panels was deemed speculative.

3.0 BACKGROUND

1) The Town of Ancram Local Law No. 1 of 2021 dated April 15, 2021, known as the "A Local Law Amending the Town of Ancram Zoning Law with Regard to the Regulation of Solar Energy Generating Systems, listed several requirements, including:
    a. Part 5(a) stated that "This Section is intended to... (e) ensure that such systems will not have a significant adverse impact on the environment, including on aesthetic qualities and rural character of the Town."

   b. Part 5(c) stated that the General Design and Siting Requirements for all Solar Energy Systems... shall be consistent with the adopted Town of Ancram Comprehensive Plan."
   c. Part 5(g) Community-Scale Solar Energy Systems, Section 4 General Provisions for Community-Scale Solar Energy Systems Item c stated "c. The character and appearance of the proposed project shall be in general harmony with the character and appearance of the surrounding neighborhood and shall not detract from the scenic qualities, rural character, and visual qualities of Ancram's landscape and historic character."
2) Updated Town of Ancram Comprehensive Plan dated April 18, 2019, states as the vision "Ancram in 2030 will look and feel much like it does in 2019, maintaining its predominantly rural character. Ancram has successfully met many of the challenges facing the community and continues to address issues that impact us. Ancram focuses on implementing policies and programs that preserve the important elements defining its rural character, which include working agricultural landscapes; open space; well-maintained hamlets; small businesses; low density housing in the countryside, telecommunications and other infrastructure appropriate for a small, rural town—all founded upon a strong sense of community and extensive volunteerism, encouraged by a well-run town government."
3) Visual Impact
   a. Appendix F Full Environmental Assessment Form Part I: Supplemental Information Item #9 stated "Impact on Aesthetic Resources: The Project site is not visible from any officially designated Federal, State, or local scenic or aesthetic resource or other public vantage points. Existing vegetation and undulating topography will naturally screen the project from nearly all viewsheds. Supplemental vegetative screening will be implemented to ensure that the site is of little or no visual concern." This is supplemented by Appendix O, the Visual Impact Assessment.
   b. Personal observations from community members, presented during the public hearing and in submissions to the Town, detail the visual impacts of the proposed development from public roadways.
4) Community Character
   a. Appendix F Full Environmental Assessment Form Part I: Supplemental Information Item #17 stated, "Consistency with Community Plans: The Project is consistent with adopted land use plans. The project is be permitted by the Town through a Special Use Permit. The 2010 Town of Ancram Comprehensive Plan Update places important emphasis on balancing rural character and supporting local agriculture. As such, development should be sensitive to this. The proposed solar facility, as discussed above, is not in sharp contrast to current land uses and will leave the site in a better state than it currently is in by allowing for it to rest in a long fallow period that provides the soils time to rest and replenish important nutrients, allowing for continued farming or another productive use when decommissioned."
   b. Appendix F Full Environmental Assessment Form Part I: Supplemental Information Item #18 stated, "Consistency with Community Character: The proposed Project is consistent with the existing community character. Solar

farms, though not common on the landscape, are not in conflict with a rural setting. In this case, the project is also sited far from the road and will be screened from view. The project will not eliminate or replace any existing facilities, structures, or areas of historic or cultural importance to the community. It will not create a demand for additional community services, nor will it displace any affordable or other housing. The project will not interfere with the enjoyment of any designated public resource."

5) SEQR Form Appendix F- SEQR FEAF Part 1 and FEAF Part 1 Supplement
   a. Part 1 Section D.2. Project Operations Item t, will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste, is checked no.

4.0 RECOMMENDATIONS

The current State Environmental Quality Review (SEQR) for the Ancram Solar PV Site Plan and Special Use Permit Application ("Application") located at 3333 State Route 82, Ancramdale, NY 12503 is deficient. The following items need to be addressed:

I) Visual Impact
   a. The visual impact presented in Appendix O was insufficient, as acknowledged by the Planning Board. The photos simulations provided by the developer do not include modeling of the solar panel arrays as required in the Ancram Solar Law. Such modeling must be completed. Also, the proposed computer generated viewshed analysis, in my opinion, is insufficient; direct visual evidence is necessary, using detailed balloons or drones with cameras to observe the area of the solar panel. This visual survey should be conducted to determine if and how public roads and residences/structures are visible during all seasons; at a minimum, it should be done during the winter season with no vegetation or trees. The report should be shared with all parties for their review and comment.
   b. The Ancram Local Law No. 1 of 2021 dated April 15, 2021 states, "ensure that such systems will not have a significant adverse impact on the environment, including on aesthetic qualities and rural character of the Town." I disagree. This wording is not only for the protection of scenic resources. Also, given the obvious rural nature of the area, changing the visual impact on both scenic resources and private houses is a significant adverse impact. Therefore, I also disagree that further legal analysis is unnecessary.
   c. In my view, the proposed action is not in compliance with this Local Law. Additionally, until the Planning Board has determined whether the visual impact is a long term significant adverse impact, the determination of this proposed action complying with the Ancram Local Law No. 1 of 2021 dated April 15, 2021 is premature.

II) Community Character
   a. Both the Ancram Local Law No. 1 of 2021 dated April 15, 2021 and Ancram Comprehensive Plan dated April 18, 2019 make it clear that proposed actions cannot have a significant adverse impact on the rural character of the Town and "shall not detract from the scenic qualities, rural character, and visual qualities of Ancram's landscape and historic character."

b. The Town's welcoming signs, its own website, emphasize that the Town of Ancram is a rural community, with is confirmed by personal observations and the testimony of residents at the August 2025 public hearing. The Comprehensive Plan expresses therein to maintain this predominantly rural character into 2030.

c. In my view, the change of the agricultural land to an industrial solar farm would be a terrible blight to the land, being the first change of the rural land to developed land. Therefore, the proposed project would cause a long term significant adverse impact to the community character. Approval of this project will also allow for additional future solar panel projects.

III) Hazardous Waste

a. The application does not detail any specifics of the proposed solar panel to demonstrate that the solar panel at the end of its life will be a solid waste. Since many solar panels at the end of their lives are hazardous waste, either the EAF should be changed and the cost estimate should be revised to include the cost of hazardous waste disposal, or the details of the solar panel should be included, proving that these solar panels are solid waste at the end of their life.

b. The application does not include thee MSDS sheets for the oil for the motor of the NX Horizon Smart Tracking System motor and the MV Skid Compost transformer.

c. The application does not provide whether the SG350HX-US power inverter, NX Horizon Smart Solar Tracking System, and MV Skid Compact transformer are air-cooled or that they would require coolant.

d. The TCLP results from the Q.TRON XL-G2 SERIES solar panel will demonstrate whether the solar panels at the end of their life will be hazardous waste. Hazardous waste testing on solar panels in the marketplace has indicated that different varieties of solar panels have different metals present in the semiconductor and solder. Some of these metals, such as lead and cadmium, are toxic to human health and the environment at high levels. However, the USEPA [https://www.epa.gov/hw/end-life-solar-panels-regulations-and-management#Are%20Solar%20Panels%20Hazardous%20Waste?] and NYSDEC [https://dec.ny.gov/regulatory/regulations/rulemaking-adding-solar-panels-to-the-universal-waste-regulations] state that some solar panels are considered hazardous waste, and some are not, even within the same model and manufacturer. The NYSDEC proposed regulations to make end-of-life solar panels a universal waste have not been adopted.

e. During the June 5, 2025 Planning Board Meeting, Rob Quiero, on behalf of RIC Energy, stated "*Toxicity of materials should not be a concern, as the technology being proposed is made of glass, food-grade plastic, and silicone. The thin cell modules (lead and cadmium) phased out 10 years ago.*" However, the attached USEPA[1], attached NYSDEC[2], and several industry websites disagree.

f. The TCLP chemical test results and hazardous waste determination on the solar panel, as per the NYSDEC 6 NYCRR Part 371, for the Q.TRON XL-G2 SERIES solar panel, which is proposed to be used in this projec will provide the Planning Board with the necessary information to evaluate potential toxicity of the materials used for the panels.

IV) Decommissioning Plan cost estimate

a. This information is critical in determining whether the Ancram Solar Decommissioning Plan cost estimate, Appendix N in the application, is sufficient, as the estimate assumes the end-of-life solar panels are non-hazardous. However, without the necessary information to determine that the Q.TRON XL-G2 SERIES solar panel is non-hazardous, the Ancram Solar Decommissioning Plan cost estimate must be revised for the worst case. The disposal of the solar panels as hazardous waste includes transportation and disposal costs should be included in the cost estimate until proven otherwise.
b. Even if the solar panels are demonstrated to be non-hazardous waste, the cost estimate needs to be corrected to include the disposal cost of 2,116 solar panels.
c. The cost estimate in Appendix N appears to be based on 2025 costs; the year of the cost basis must be explicitly stated. Since the expected life of the solar panels, as stated in Appendix N, is 35 years, the cost estimate must be for 2060 costs. The assumption of inflation and rise in labor costs must be clear stated and justified from national accepted sources. For example, an average 3% per year inflation rate would triple the costs from 2025.
d. Due to the wide discrepancy in the cost per panel, three written 2025 cost estimates per solar panel (hazardous or non-hazardous after the TCLP results are submitted and reviewed) should be submitted with inflation increases for all costs at the end of the project[3].
e. The surety should be for that amount plus an additional for 10% contingency cost, and an additional for 10% engineering cost. The surety, letter of credit or closure bond with Standby Trust Agreement, made out to the Town of Ancram should be supplied for the Planning Board review. Please see NYSDEC 6 NYCRR Part 360.22 for wording that could be used.

V) Hot Water Impact
a. According to the avasolar.com website, solar panels can reach temperatures as high as 185°F. With 63,480 square feet of solar panels (2116 solar panels – 23 modules/string and 92 strings and 96.9" by 44.6" = 30 square feet/panel), at that temperature, it will cause a significant amount of rainwater to increase in temperature. The heated rainwater and the site's topology, which will not allow time for the heated rainwater to cool, will cause the heated rain to flow to nearby Millerhurst Farm cornfields. Due to the large square footage of solar panels, the rain that runs off to the Millerhurst Farm could have an elevated temperature, thereby potentially harming the young corn crop.
b. No information has been submitted regarding the impacts the increased water temperatures has on nearby agricultural crops.

VI) Airborne dust using chemical dust suppressants
a. During the construction of the solar panel array, it is common to reduce airborne dust using chemical dust suppressants. No information has been provided regarding what chemical will be used. Commonly used suppressants, such as those containing magnesium chloride and calcium chloride, can leach into run-off water that enters nearby waterbodies, raising salinity levels and negatively affecting fish, plants, and livestock. Additionally, those chemical suppressants could negatively impact the future use of the land for agricultural purposes.

Additionally, if a pesticide is used, it could leach into the run-off water from the site. As stated above, the site run-off goes into the Millerhurst Farm.

b. More information is needed on the chemical suppressant and the measures to be taken to prevent negative on-site and off-site impacts.

VII) Solar Panel Glare

a. The glare from the solar panel needs a more detailed examination. While Appendix N of the Planning Board application -mechanical specifications of the solar panel states "anti-reflection technology", no technical details and calculations are included to justify the conclusion by the project proponents that the anti-reflection coating on the proposed solar panel will result in no glare impact.

b. Based on the attached statement from the Pagerpower website[4], there are five misconceptions regarding solar panel glare:

   i. *Misconception 1: "Solar panels do not produce glare due to their anti-reflective coating"*
   ii. *Misconception 2: "Having views of the panels means you will experience glint and glare"*
   iii. *Misconception 3: "'South-facing panels produce reflections towards the south"*
   iv. *Misconception 4: "Tracking solar panels eliminate glare"*
   v. *Misconception 5: "I don't need to do a glint and glare assessment for my development"*
   vi. In conclusion, the website state that "*it is true that a planning authority or stakeholder may not request a glint and glare assessment however, we are more and more often receiving last-minute inquiries for glint and glare assessment regarding projects that are already in planning and require quick turnaround times. It is therefore worthwhile investigating the requirement for a glint and glare assessment to avoid unnecessary time and financial pressures late on in the project timeline.*"

c. During the June 5, 2025 Planning Board Meeting, Rob Quiero, on behalf of RIC Energy, "*stated that the modern panels to be used for this array have anti-reflective coating, which results in less than 3% refraction of light. This is approx. 6-8% less than a residential house. It was noted that while RIC did not conduct a glare analysis for this site, if the Planning Board feels it would be beneficial they are open to exploring it.*" This information was not in the application to the Ancram Planning Board.

d. To resolve this issue and to prevent future problems and legal issues, the Planning Board needs to evaluate the potential glare impacts from the proposed solar panels on both private residences and public roadways. Such an evaluation was proposed by the RIC if requested.

5.0 CONCLUSION

The SEQR review continues to be deficient. **In my opinion, the proposed project will cause long-term significant impacts on visual impacts within the community and long-term significant impacts changes to the community character.** Also, the issue regarding hazardous waste generation has insufficient information to justify the EAF Part 1 Section D.2.t.

USEPA[1]

https://www.epa.gov/hw/end-life-solar-panels-regulations-and-management#Are%20Solar%20Panels%20Hazardous%20Waste?

Are Solar Panels Hazardous Waste?

Hazardous waste testing on solar panels in the marketplace has indicated that different varieties of solar panels have different metals present in the semiconductor and solder. Some of these metals, like lead and cadmium, are harmful to human health and the environment at high levels. If these metals are present in high enough quantities in the solar panels, solar panel waste could be a hazardous waste under RCRA. Some solar panels are considered hazardous waste, and some are not, even within the same model and manufacturer. **Homeowners with solar panels on their houses should contact their state/local recycling agencies for more information on disposal/recycling.**

Overview of Hazardous Waste Regulations

Federal solid and hazardous waste regulations (i.e., the RCRA requirements) apply to solar panels when they are discarded. When a solar panel reaches the end of its usable life or is otherwise discarded, it becomes solid waste. Solid waste is regulated federally under RCRA Subtitle D and through state and local government programs.

The discarded solar panel, which is now considered solid waste, may then also be regulated under RCRA Subtitle C as hazardous waste if it is determined to be hazardous. The most common reason that solar panels would be determined to be hazardous waste would be by meeting the characteristic of toxicity. Heavy metals like lead and cadmium may be leachable at such concentrations that waste panels would fail the toxicity characteristic leaching procedure (TCLP), a test required under RCRA to determine if materials are hazardous waste. If the generator of the solar panels knows from previous experience that the material would fail the TCLP test, they can determine that the waste is hazardous without the need for testing.

While heavy metals are present in most solar panels, there are a variety of manufacturers and models, with different materials used as semiconductors. Because of the variation in design and components, testing has shown that some solar panels may pass the TCLP while others fail.

Hazardous waste solar panels that are recycled may be able to use regulatory exclusions available under RCRA, including the transfer-based exclusion (Title 40 of the Code of Federal Regulations section 261.4(a)(24)) in states that have adopted the 2015 or 2018 Definition of Solid Waste Rule. The transfer-based exclusion is a regulatory exclusion for hazardous secondary material that is recycled, as long as certain criteria laid out in the regulations are followed. This conditional exclusion is designed to encourage recycling of materials by third parties while still providing a regulatory framework that prevents mismanagement.

Types of Solar Panels

The two most common types of solar panels are crystalline-silicon and thin film solar panels.

Silicon Solar (mono- and poly-crystalline)

Crystalline-silicon solar PV represents over 95 percent of solar panels sold today. This type of panel contains solar cells made from a crystal silicon structure. These solar panels typically contain small amounts of valuable metals embedded within the panel, including silver and copper. Crystalline-silicon solar panels are efficient, low cost, and have long lifetimes, with modules expected to last for 25 years or longer.

Thin-Film Solar

Thin-film solar cells contain thin layers of semiconductor material, such as cadmium telluride (CdTe) or copper indium gallium diselenide (CIGS), layered on a supporting material such as glass, plastic, or metal. CdTe is the second-most common PV material after silicon, and cells can be made using low-cost manufacturing processes, but their efficiencies aren't as high as silicon solar PV.

New York State Department of Environmental Conservation[2]

https://dec.ny.gov/regulatory/regulations/rulemaking-adding-solar-panels-to-the-universal-waste-regulations

Proposed regulations. They do not appear to be adopted yet.

As the growth in usage and installation of solar panels, also known as photovoltaic (PV) modules, continues so will the need to know how to manage these solar panels as they reach end of life. Because solar panels have a functional life of about 30 years, a sharp increase in the number of end of life solar panels is expected in the coming decades. The United States may generate up to 1 million metric tons of PV waste by 2030 and up to 10 million metric tons of PV waste by 2050

. The majority of this waste is expected to be generated by the utility sector. Most of this waste currently goes to landfills despite heavy metals present in some PV cells that could classify them as hazardous waste (e.g., arsenic, cadmium, lead, silver).

DEC is considering adding solar panels to the Universal Waste (UW) rule. The UW rule, established by EPA in 1995, is a set of reduced requirements for certain commonly generated hazardous wastes. It was created to streamline the collection and recycling of hazardous waste. Recycling helps to prevent hazardous wastes from ending up in landfills while also allowing finite resources to be recovered and avoid resource depletion. Although EPA has not added this waste stream to the federal UW rule, DEC believes that hazardous waste solar panels are misidentified and diverted to non-hazardous waste management streams, both intentionally and unintentionally, and require an improved set of regulations for end of life management. Many consumers believe that products sold to the general public are unlikely to be hazardous wastes when discarded, but that is often not the case.

Waste is generated from different stages of the PV life cycle:

- Scrap from the manufacturing process
- Panels damaged during manufacturing, shipment and handling
- Panels damaged by extreme weather
- Panels replaced due to technological upgrades
- Panels discarded after they reach end-of-life

Components that can be recycled from PV waste:

- Glass (represents 8% of the material value)
- Plastics in the insulating layer, backsheet, and junction box
- Aluminum (represents 26% of the material value)
- Silicon (represents 11% of the material value)
- Copper (represents 8% of the material value)
- Other metals (Zn, Ni, Sn, Pb, Cd, Ga, In, Se, Te)
- Semiconductors in the solar cells
- Sealants
- Silver (represents 47% of the material value)

The potential obstacles for recycling:

- There's no standard or widespread method of recycling
- There are many types of solar panels and they may need to be recycled differently depending on the construction and chemistry of each type of panel
- Recycling processes are still being developed
- Foreign countries are no longer accepting plastics from the United States
- The value of metals recovered from solar panels can fluctuate and some have been dropping in value
- Glass needs to be pure to be recycled

Solar Panel Disposal Cost[3]

The cost of solar panel disposal cost is extremely variable. It appears to be based on the perspective and therefore the only reliable numbers are actually quotes from disposal and recycling facilities in 2025.

The https://www.empirecenter.org/publications/renewable-solar-comes-with-recurring-waste-costs/ website (2023) states "The second option is to dispose of them in landfills. Because they contain toxic metals, they should be sent to hazardous waste landfills, where disposal costs are around $5 per panel. However, many are sent to municipal solid waste landfills, where disposal costs may be as little as $1 to $2 per panel." See https://e360.yale.edu/features/solar-energy-panels-recycling for more details.

The https://nenpower.com/blog/how-much-is-the-waste-solar-panel/ website (2025) states *"The cost of waste solar panels can vary significantly depending on several factors such as the type of panel, its condition, regional pricing, and specific recycling options available. 1. The price of waste solar panels can range between $10 and $50 per panel, 2. Disposal and recycling costs may add an additional $10 to $25 per panel, 3. Environmental regulations impact handling procedures, 4. Emerging technologies may influence future pricing trends."*

Solar Panel Glare[4]

[https://www.pagerpower.com/news/common-misconceptions-surrounding-glint-and-glare/]

- **Misconception 1: 'Solar panels do not produce glare due to their anti-reflective coating'**

  This is probably the most common misconception we come across when it comes to comments regarding solar reflections from solar panels. It is often said that 'solar panels are designed to absorb sunlight' and that 'solar panels have an anti-reflective coating which eliminates glint and glare effects'. From a physics perspective, no coating will ever eliminate reflections. If this were the case, you wouldn't be able to see the solar panels as the light would never reach your eyes.

  Of course, as stated in the website https://www.pagerpower.com/news/common-misconceptions-surrounding-glint-and-glare/, "the key issue is specular reflections when it comes to glare. Whilst many solar panels have anti-reflective coatings that will reduce the intensity of any specular reflection, it is shown in Figure 1 [1] below that the majority of coatings only make marginal differences of the percentage of sunlight reflected. This is because most solar panels have a shiny surface or glass panel to protect it, whilst still letting light through. Shiny surfaces, such as glass, are capable of producing specular solar reflections and this is the main cause of glint and glare effects.

  The graph also shows how the percentage of reflected light changes with the angle of incidence from the four common solar panel surface types. The graph shows a rather surprising result, in that the percentage of reflected light changes marginally depending on the surface type modelled. Only solar panels that are 'deeply textured' reflect relatively low levels of incoming light across all angles of incidence. It is understood however that solar panels with a deeply textured surface are often not viable for an actual PV development due to cost and the current availability of the technology. At most, manufacturers typically claim to produce solar panels with an 'anti-reflective coating'. Only in borderline circumstances may the percentage of reflected light be reduced through the implementation of 'rougher' panel surfaces such that the intensity of reflectance reaches acceptable levels. i.e. trying to eliminate 'yellow' glare towards aviation receptors. "

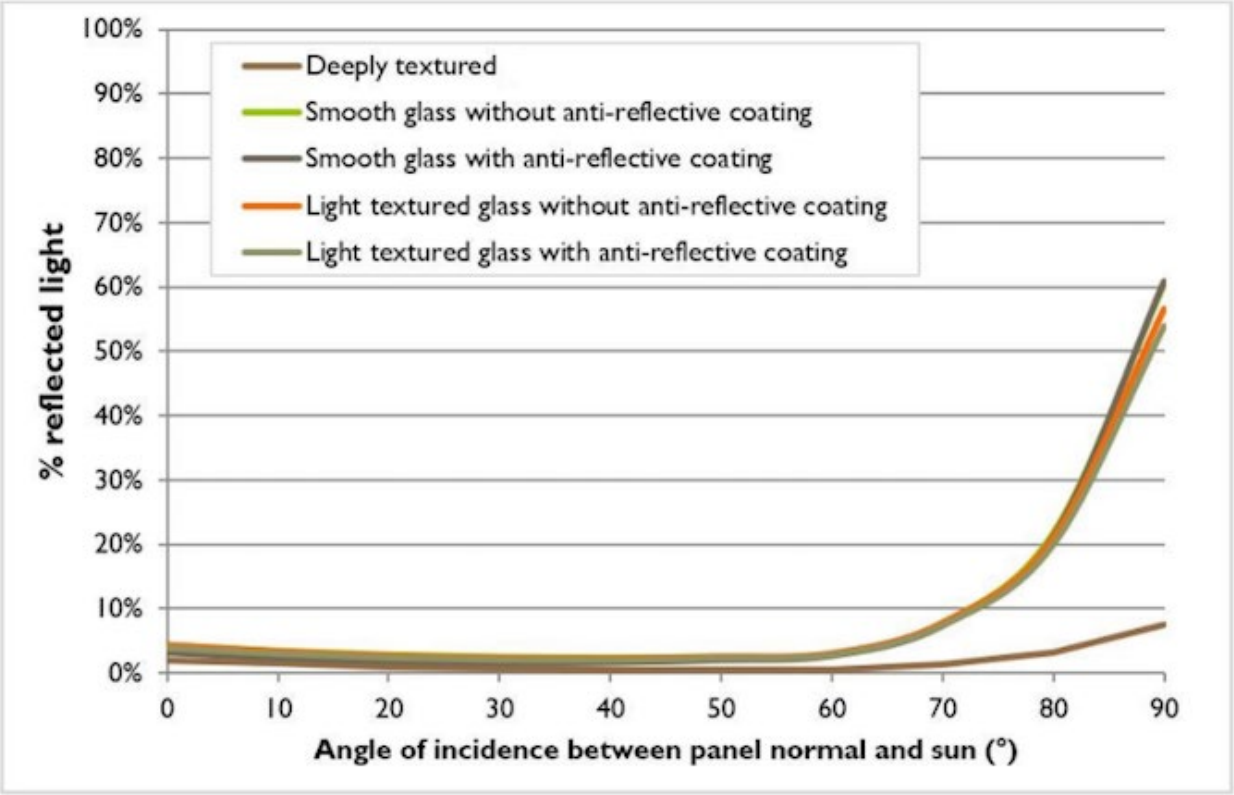

Figure 1: *Reflectance profiles of typical PV module materials.*

Misconception 2: 'Having views of the panels means you will experience glint and glare'

Just because you can see the solar panels, it doesn't mean you will necessarily experience glare from the solar panels. This is a common misconception mostly observed within objections to a development or from media articles surrounding a project. The 3D location relative to the solar panels, their specific layout (azimuth and elevation angle), as well as the pathway of the Sun across the sky at that location will determine where a solar reflection is possible. The size of the solar panel area as a whole will then influence the duration of any solar reflection at a location. Therefore, there are only specific locations where glint and glare effects can occur.

It is true however that if you cannot see the face of the solar panel, then no glint and glare effects are possible.

Misconception 3: 'South-facing panels produce reflections towards the south'

Generally speaking, south-facing panels in the northern hemisphere, and north-facing panels in the southern hemisphere do not produce solar reflections directly south towards ground-based receptors when positioned at typical elevation angles (10-35 degrees). In

most cases, solar reflections are cast between northeast and southeast, and southwest and northwest of the panel area.

Misconception 4: 'Tracking solar panels eliminate glare'

This all depends on the receptors and the tracking panel characteristic. It is possible to eliminate glare effects at ground level by changing the rest angle of the panels (assuming a typical single axis tracker system), however this requires detailed modelling (which is site specific) because it is dependent on the relative 3D location of the ground-based receptors to the solar panel area. For aviation receptors however, solar reflections may still be produced skyward during the tracking process. In summary, whilst in most cases tracking systems can be programmed to reduce glare, this isn't inherently the case.

Misconception 5: 'I don't need to do a glint and glare assessment for my development'

It is true that a planning authority or stakeholder may not request a glint and glare assessment however, we are more and more often receiving last-minute inquiries for glint and glare assessment regarding projects that are already in planning and require quick turnaround times. It is therefore worthwhile investigating the requirement for a glint and glare assessment to avoid unnecessary time and financial pressures late on in the project timeline.

About Pager Power

Pager Power has undertaken over 600 glint and glare assessments around the world including Europe, India, Australia, and South Africa. For more information about what we do, please get in touch.

References

[1]Yellowhair, J. and C.K. Ho. Assessment of Photovoltaic Surface Texturing on Transmittance Effects and Glint/Glare Impacts. ASME 2015 9th International Conference on Energy Sustainability collocated with the ASME 2015 Power Conference, the ASME 2015 13th International Conference on Fuel Cell Science, Engineering and Technology, and the ASME 2015 Nuclear Forum. 2015. American Society of Mechanical Engineers.

Thumbnail image accreditation: Michael Wilson (November 2019) from Unsplash.com. Last accessed on March 28 2022. Available at: https://unsplash.com/photos/jld4MmOc4Uk

Kenneth B. Brezner, P.E.

Project Manager III

Mr. Brezner is a Professional Engineer with extensive experience in all aspects of regulating materials management, including solid waste, active hazardous waste, and pesticides. Significant projects include project management ranging from the closure of the entire Fresh Kills Landfill, closure of several other major landfills, permitting of the four New York City (NYC) Marine Transfer Stations, project manager for the NYC Solid Waste Management Plan, and regulating all of the solid waste facilities in NYC.

EDUCATION

Post Graduate in Chemical Engineering, Clarkson University

Bachelors in Chemical Engineering, Rensselaer Polytechnic Institute

LICENSES/ CERTIFICATIONS

Professional Engineer (P.E.) licensed in NY, NJ, and CT

HAZWAPOR – 40 Hours Certification and 8 Hour Refresher

OSHA – 30 Hours Construction Safety and Health Certification

SELECTED RELEVANT EXPERIENCE

Regional Materials Management Engineer, New York State Department of Environmental Conservation

- Managed the NYC Region Materials Management Unit. Supervised three groups (Solid Waste, Active Hazardous Waste, Pesticides) with up to 20 professional staff. This included administrative responsibility (interviewing/hiring and discipline, oversight of the environmental monitor program, budget/purchasing, equipment inventory) and technical responsibility (oversight of an environmental soils laboratory, technical oversight).
- Project Manager for the Fresh Kills Landfill. Reviewed and approved all aspects of the landfill, including landfill closure design/modifications, landfill closure certification reports, slope stability, groundwater monitoring, stormwater management, landfill gas management, financial assurance, environmental analysis, World Trade Center issues, geotechnical issues, end-use projects, and legal issues.
- Project Manager for the DSNY Marine Transfer Stations. Reviewed all aspects of the 91st Street Marine Transfer Station, including compliance with the New York State solid waste, wetlands, and water regulations, good engineering practices, and sea-level rise. Oversaw technical staff in the permitting of the other three DSNY Marine Transfer Stations.
- Project Manager for all other Solid Waste Landfills in NYC. Reviewed and approved, as the professional engineer in charge, the design for the closure of the Midwood Construction, A&A, and Salem Fields Landfills.
- Project Manager for all fill material projects in NYC. Became a subject matter expert for fill material (historic fill) issues by conducting extensive research, readings, and interviews over 15 years to fully understand fill practices from the 1600s-1920s. Reviewed and approved/denied all fill materials reuse requests in NYC, coordinating extensively with the Natural Resource and Water division staff as well as various city agencies.
- Subject Matter Expert in solid waste especially for the management of fill material and historical fill. Accepted in court as an expert witness in solid waste facilities and management. Have a comprehensive technical expertise in solid waste landfills and other solid waste facilities including their permitting and management.
- Project Manager for the 380 Development/UTEX project. Reviewed and approved, as the professional engineer in charge, all aspects of the project, including landfill closure design, landfill closure certification reports, slope stability, groundwater monitoring, stormwater management, landfill gas investigation, financial assurance, Beneficial Use Determinations/Fill Approval Requests for dredged and fill materials, environmental analysis, geotechnical issues, end-use projects, and legal issues.
- Project Manager for the NYC Solid Waste Management Plan. Point person for the review of the plan of how NYC will manage all of its solid waste for the next 20 years.
- Recycling Coordinator for the agency's NYC Office. Responsible for all matters regarding recycling, including large and community yard/food composting sites, paper/metal/glass/plastic recycling, junk yards/scrap metal dealers, used oil and tire facilities, electronic waste, plastic bag ban issues, public inquiries, construction and demolition recycling, dredge material use, product stewardship issues/questions, textile recycling, and bio-diesel.

Project Management III, Walden Environmental Engineering

- Provided Subject Matter Expert knowledge, regulatory experience, and technical assistance throughout the company for various solid waste and sewer/water projects. Developed generic CLCPA calculations, including on and off-road co-pollutant emissions, for various types of solid waste projects. Assigned and managed several major solid waste and construction projects overseeing several technical staff.