Appendix G

Other Studies and Plans

Vegetation Management Plan

Vegetation Management Plan
Lakeside Solar, LLC

Prepared for

Lakeside Solar, LLC

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Prepared by

Benjamin Staehlin, M.S., Eoghan O'Neill, M.S., & Kim Chapman, Ph.D.

21938 Mushtown Road

Prior Lake, MN 55372

APPLIED ECOLOGICAL SERVICES

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Appendices

I. Goals and Objectives

Lakeside Solar, LLC (Lakeside Solar), a subsidiary of National Grid Renewables Development, LLC (National Grid Renewables), is developing a solar energy facility (Project) which is planned to cover approximately 1,653 acres in Muskegon County, Michigan, and generate up to 200 megawatts (MW) of energy. Lakeside Solar has developed this Vegetation Management Plan (Plan) to guide site preparation, installation of prescribed seed mixes, management of invasive species and noxious weeds, and control of erosion/sedimentation. The goal of this Plan is to establish vegetative cover that complies with all permits and regulations. The required management is designed to continue for the life of the Project.

This document is intended to be a working document. Revisions will be made as new information is obtained with respect to vegetation management, site characteristics, and availability of management practices at the time of procurement of services.

II. Vegetation Installation Plan

After the solar panels and other infrastructure are constructed, native seed mixes developed for the Project will be installed on site as directed by Lakeside Solar (Owner). A desktop review of the site revealed that Lakeside Solar is located on a historical glacial lake plain and is comprised of over 25% hydric soils. Accordingly, Applied Ecological Services (AES) staff recommended installing three native seed mixes on site: a mesic mix under and around the arrays in upland areas of the site, a wet-mesic mix under and around the arrays and in low areas of the site and in any areas that are known or predicted to hold surface water for part of the growing season (seasonally inundated), and a wet mix around constructed stormwater basins, existing ponds, and irrigation ditches. The three seed mixes developed for the Project are listed in Appendix 1. Based on information from the desktop review, AES compiled a map providing recommendations for distribution of the three mixes (Appendix 2).

1. Seed Mixes

The three mixes prepared for the site have been designed to be used whether Lakeside Solar employs mowing or grazing with sheep for perpetual maintenance. All plant material must be installed as instructed, and at the correct time, as described below. Any exceptions must be discussed with the Owner, and the Contractor shall receive written authorization for any changes prior to the start of work.

All seed mixes must adhere to the specifications described in the Plan. Genetic source origin of all native seed shall be local, and a reasonable effort shall be made to source seeds within the ecoregion. The plant species should be native to the county where the site is located (considerations of range shifts due to climate change may modify this guidance). Species shall be true to their scientific name as specified. Seed tags or nursery confirmation of the order must be provided to Lakeside Solar prior to installation. Any species eliminations, substitutions, or source origin exceptions must be approved by Lakeside Solar prior to installation. If planted in the spring, seeds shall have been properly stratified and/or scarified to break seed dormancy. All legumes shall be inoculated with proper rhizobia at the appropriate time prior to planting.

2. Timing of Seeding

The protocol for installing the native seed mixes depends on the completion date of construction.

Spring. If construction is completed in spring, allowing for seeding between the time when the soil is free of frost and in a workable condition but no later than June 30, native seed mixes shall be installed as specified and include 20 pounds per acre pure live seed (PLS) of oats (*Avena sativa*) as a cover crop.

Summer. If construction is completed in summer, allowing for seeding between July 1 and August 15, the site shall be seeded immediately with a cover crop consisting of 15 pounds per acre PLS of oats and 15 pounds per acre PLS of annual wheat (*Triticum aestivum*) to stabilize the soil and prevent erosion. In that same year, native seed shall be installed as a fall dormant seeding, after November 1 but before the soil starts to freeze, with no additional cover crop added.

Late Summer/Early Fall. If construction is completed in late summer or early fall, allowing for seeding between August 16 and October 31, the site shall be seeded immediately with a cover crop consisting of 20 pounds per acre PLS of winter wheat to stabilize the soil and prevent erosion. In that same year, the native seed mixes shall be installed as a fall dormant seeding with no additional cover crop added.

Late Fall. If construction is completed in late fall, allowing for seeding after November 1 but before the soil starts to freeze, native seed mixes shall be installed as specified and include 30 pounds per acre PLS winter wheat to provide a cover crop for the following year. If agreed to by both the Owner and the Contractor, a spring seeding in the following year can be substituted for a fall dormant seeding.

If a cover crop has been installed at any time during the calendar year, native seed mixes must be installed the same year with a fall dormant seeding, unless the Owner gives permission to the Contractor for a spring seeding.

3. Site Preparation

Prior to seeding, it is anticipated that the site will be free of large debris and that soil decompaction has occurred in disturbed areas across the site. Decompaction of soils will improve vegetation establishment across the site. The preferred method for decompaction is disking, but other methods may be employed if written approval is given by the Owner prior to the start of work.

4. Seeding Method

Seeding may be conducted with a seed drill and/or by broadcast seeding; the Contractor shall evaluate the site and determine which technique will produce the best results. Seed installed into a previous cover crop or other vegetation must be installed with a seed drill. Prior to installation, seed shall be divided into two equal parts. The first half shall be installed in one pass, and the second half installed in a second pass (perpendicular to the first pass, where possible). If broadcast seeding is used, the Contractor is responsible for ensuring good seed-to-soil contact.

III. Vegetation Management Tasks

After the land is cleared and the panels installed, a range of invasive plants will take advantage of the open soil and abundant light and germinate across the site. For the purpose of this Plan, "invasive plants" refers to both non-native and native species that grow in an invasive manner or have the potential to negatively affect the establishment of vegetation at the Project. Michigan publishes both a noxious weed list and a list of additional problem weeds to remove (Michigan Department of Agriculture, 2021); these lists are included as Appendices 3 and 4. While the listed plant species are prohibited from being purposely introduced to the site, only the noxious weeds (Appendix 3) must be controlled. However, all listed plant species must be managed effectively during the first three years to ensure that the planted native species are given the opportunity to establish successfully. The care taken to establish native vegetation by the end of the third year will determine the quality of the plantings and help them resist weed invasion in future years. The initial period of work onsite is referred to as the "establishment phase", while continued annual upkeep after that period is called the "management phase".

A. Establishment Phase

In the first three years of vegetation management, a concerted effort is made to remove invasive vegetation from the site while helping the planted native vegetation establish. If possible, grazing should not occur in the establishment phase. If grazing must occur, stocking should be light so that native plants can develop root systems that will enable them to survive future grazing at higher stocking rates. Grazing during the establishment period may favor some invasive plant species, requiring more frequent monitoring and greater weed control efforts than if grazing did not occur. Additional invasive species control, if required, will consist of mechanical or chemical methods, or a combination of both, as needed to achieve desired outcomes. General tasks described below will be applied as directed, while other management techniques will be used only if required by the unique conditions at the Project.

1. General Tasks for Managing Vegetation

Establishment Year 1. The first year of establishment is focused on consistent invasive plant control on a site-wide basis. Mowing at the proper time in the first year will prevent invasive plants from adding new seeds to the soil and begin to exhaust the soil seed bank (a process that often requires several years to complete). Mowing equipment shall be cleaned prior to use on site to prevent the introduction and spread of invasive and non-native species.

From June 1 of the first establishment year, site-wide mowing to a height of 6-9 inches shall occur whenever vegetation reaches a height of 18-24 inches. Care shall be taken during the nesting season (April 1 to August 1) to avoid the nests of upland grassland birds.

Repeated mowing may produce a buildup of organic thatch, which discourages the development and persistence of diverse native vegetation. To help prevent thatch buildup onsite, either mowing shall be conducted with a flail-type mower to mulch the cut vegetation, or the site shall be hayed so that cut vegetation is removed. A swing arm specifically designed for mowing under solar panels is recommended for cutting beneath panels, but spot-mowing with brush saws, weed whips, and similar

hand-held equipment may also be utilized. It may be possible to coordinate with Lakeside Solar to adjust the orientation of the panels to increase the ease of mowing, but the Contractor should not depend on this coordination to complete its work. Any other technique must be approved by Lakeside Solar prior to the start of work.

This mowing regime will prevent annual and perennial weeds from flowering and setting seed, prevent weeds from shading the solar panels, and help control woody plant growth onsite. Noxious and invasive perennial weeds that persist despite mowing shall be treated by spot-herbiciding, as described below.

Establishment Year 2. The second year of establishment continues invasive plant species control but employs more targeted techniques. Site-wide mowing to a height of 6-9 inches shall occur when vegetation height reaches 18-24 inches. Care shall be taken during the nesting season (April 1 to August 1) to avoid the nests of upland grassland birds.

Spot-mowing may be employed to treat specific invasive plants as needed. Noxious and invasive perennial weeds shall be treated with spot-herbiciding at least twice in Year 2, with the focus on achieving the required performance standards (described below).

Establishment Year 3. In the third year of the establishment phase, invasive plant control should consist of spot-herbiciding to control the remaining small patches of persistent invasive plants. Efforts should be focused on achieving the required performance standards (described below). Additional onsite treatment with spot-mowing or hand weeding can be employed at the discretion of the Contractor.

2. Prescribed Treatment for Common Invasive Species

Every solar energy facility harbors a range of invasive plant species determined by the makeup of the seed bank and the seed inputs from the surrounding environment. Management must be flexible and respond to the specific needs of the Project. This Plan describes common techniques to manage a variety of invasive plants and common weeds in Michigan, but not every technique will be required. In the Establishment Phase, monthly evaluations of the plantings during the growing season (May through September) shall be conducted to determine the appropriate treatment techniques to use and the timing of those treatments. Management techniques for five categories of weeds are described below.

The Contractor is required to have the botanical expertise to correctly identify Michigan plant species and know the difference between invasive species to be removed and similar native species being established.

a. Annual Weeds

Annual weeds include all unwanted species that grow for a single year, set seed, and die. Common annual weeds encountered on solar sites include grasses like barnyard grass (*Echinochloa crus-galli*), foxtails (*Setaria* spp.), and fall panicum (*Panicum dichotomiflorum*) and broadleaf weeds like pigweeds (*Amaranthus* spp.), lambsquarters (*Chenopodium* spp.), velvetleaf (*Abutilon theophrasti*), Pennsylvania smartweed (*Polygonum pensylvanicum*), and eastern black nightshade (*Solanum ptycanthum*) (Michigan State University 2021; University of Minnesota 2018).

The most important purpose and result of treating annual weeds is preventing seed production. Beginning around June 1, the site shall be mowed as described above to prevent annual weeds from flowering and setting seed. Repeated mowings, however, may produce a buildup of organic thatch, which discourages the development and persistence of diverse native vegetation by changing soil nutrient composition and keeping the soil cool. Thatch buildup favors cool-season forage and turf grasses and many species of agricultural weeds. Use of a flail mower or raking, baling, and removing cut vegetation can reduce thatch buildup and is preferred over mowing with a cutting bar or similar device.

b. Michigan Department of Agriculture Noxious Weeds

The Michigan Department of Agriculture and Rural Development maintains a list of noxious weeds in the state which must be controlled (Appendix 3). All species of noxious weeds on site shall be treated by mowing, herbiciding, or a combination of both methods, with the intention of preventing noxious weeds from setting seed or spreading by rhizomes, stolons, or other vegetative means.

c. Perennial Weeds

Perennial weeds include all non-native species and weedy native species that persist for two or more years after germination, from biennials to those that live for many years. Many of these weeds greatly diminish during the establishment phase with proper maintenance, but several require special attention due to their highly competitive behavior. These include grasses like Kentucky bluegrass (*Poa pratensis*), reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites australis*), and several species of bromes, especially smooth brome (*Bromus inermis*). Broadleaf weeds in this category include sweet clovers (*Melilotus alba, M. officinalis*), crown vetch (*Securigera varia*), and spotted knapweed (*Centaurea stoebe*). A list of problem species to remove (in addition to the listed noxious weeds) is provided in Appendix 4.

Mowing is important to prevent seed production (as described above), but herbicide is generally required to prevent the spread of perennial weeds. Perennial grasses shall be treated by spot-spraying or boom spraying, as warranted, with glyphosate or comparably effective herbicide, or the aquatic formulation of the same if near open water. Perennial broadleaf weeds shall be treated by spot-spraying or boom spraying, as warranted, with glyphosate, triclopyr, aminopyralid, or comparably effective herbicide. Any other herbicides must be approved by the Owner in writing before application. All herbicides shall be applied by a licensed applicator, following instructions provided by the manufacturer.

d. Problematic Native Plants

Several native species that are present in the soil seed bank or enter the site by seed rain from neighboring properties have the potential to interfere with the functioning of the solar panels. Giant ragweed (*Ambrosia trifida*) grows tall enough to shade the panels. Several native vines have the potential to overgrow installations, including wild grape (*Vitis riparia*), wild cucumber (*Echinocystis lobata*), bur cucumber (*Sicyos angulatus*), and woodbine/Virginia creeper (*Parthenocissus* spp.). Giant ragweed, or any other native species shading the arrays, should be controlled by mowing (see above). If growing under or near the solar panels, wild cucumber and bur cucumber can be pulled and removed manually, but woody vines such as wild grape and woodbine/Virginia creeper shall be cut to within 1

inch of the ground and the stump treated with glyphosate or triclopyr by a licensed applicator, following instructions provided by the manufacturer. Any other herbicides must be approved by the Owner in writing before application.

e. Woody Species

Almost all woody species can shade or otherwise interfere with the operation of solar panels. During the establishment phase, all woody plants shall be removed from the solar panel/array area. This can be done by mowing, herbiciding, or a combination of both methods. All woody plants over 0.5 inches DBH (diameter at breast height, about 4.5 feet) shall be cut to within 1 inch of the ground and then stump treated with glyphosate or triclopyr by a licensed applicator, following instructions provided by the manufacturer. Any other herbicides must be approved by the Owner in writing before application.

3. Re-seeding Bare Soil

Areas of bare soil are detrimental to the successful establishment of native vegetation. Bare soil provides opportunities for the invasive species described above to colonize and spread. Bare soil also contributes to soil loss through sheet erosion and may prevent Lakeside Solar from discharging its Soil Erosion and Sediment Control (SESC) permit in a timely fashion. If areas of bare soil greater than 75 square feet are found on site, the Contractor shall remedy the issue at its own expense by re-seeding the area, using the seed mix previously installed and following the timing instructions laid out in Section II (Vegetation Installation Plan).

B. Management Phase

1. Mowing for Management

At the end of the Establishment Phase, annual management is required for the life of the Project to control the re-establishment and spread of invasive species, combat the establishment of undesirable and invading trees and shrubs, and reduce biomass/fuel load on site. This management may take the form of mowing or haying, depending on Lakeside Solar preference and feasibility. Some degree of hand weeding, spot-mowing, and/or spot-herbiciding may be warranted thereafter to maintain vegetation quality and achieve the Project goals.

Annual site-wide haying (preferred method) or mowing to a height of 6-9 inches shall occur each October, or after prairie plants have entered dormancy. Where feasible, mowed vegetation shall be raked, baled, and removed to prevent the buildup of organic thatch; thatch buildup discourages the persistence of diverse native vegetation. If vegetation removal is not achievable, mowing shall be conducted with a flail-type mower to finely chop plant material and accelerate decomposition. Should Lakeside Solar enter into a haying partnership for some or all of the site prior to construction, seed mixes will be reviewed and potentially revised to meet the local agricultural needs.

2. Grazing for Management

Lakeside Solar may decide to use grazing as a long-term vegetation management technique. Well-managed grazing can restrict woody vegetation and non-native species encroachment into grasslands, prevent excessive litter accumulation, improve forage production, and accelerate decomposition and nutrient cycling. Should grazing be chosen as a management technique for some or all of the site, the

section below should be consulted when setting up the grazing plan. Grazing solar energy facilities with livestock is a developing management approach; the instructions in this plan should be considered a guide, but the actual practices must adapt year-to-year to evolving vegetation conditions at the Project.

a. Site Setup for Grazing

Portions of the site designated for management with grazing shall be managed with rotational grazing, wherein animals are moved periodically from place to place with the aim of maintaining a vegetation height of 18 inches. For solar energy facilities, sheep are the preferred grazers. The implementation of grazing depends on the identification of willing partners in the surrounding community, as large solar facilities require large numbers of grazers.

In order to achieve management goals while preserving the health of the established native vegetation, each area under grazing management will be divided into grazing units that cover the intended grazing area, with each unit consisting of four equal-size paddocks. As described below, a scalable rotational grazing unit is 16 acres, divided into four 4-acre paddocks. Consequently, a grazing area of 160 acres would be divided into 10 grazing units (and 40 total paddocks).

The sheep in each grazing unit will rotate between the four paddocks (Paddocks A-D) over the course of one month. For the first week of the month, the sheep in each unit will graze Paddock A. The sheep will graze Paddock B for the second week of the month, Paddock C for the third week, and Paddock D for the fourth week. This pattern will result in each paddock in a grazing unit being grazed for one week and rested for three weeks each month. Grazing will continue for the growing season (approximately May 15 – September 15), but warm-season grass height should also be used as a guide. A rule of thumb is to first begin grazing when warm-season grass height reaches 12-14 inches; subsequent grazing should begin before vegetation reaches 18 inches. The Operator shall continuously evaluate the standing forage and adjust the stocking rate in each paddock so as to prevent weakening of the prairie sod, soil erosion and the introduction and spread of weeds that must be controlled (see Appendices 2 and 3).

The preferred method for fencing the site is poly-wire or net electric fencing with plastic step-in poles that are easily installed and removed; the Contractor shall consult with the Owner before another type of fencing is installed. The electric fencing shall be grounded independently of the solar facility infrastructure, with the grounding stakes at least 66 feet from the facility grounding systems. The contractor shall consult local utilities prior to installation and take underground utilities and the Project's maintenance travel corridors into account when placing the grounding stakes. The energizing unit for the electric fence must be independent of Project infrastructure. The energizer can run on 110 V electrical current or be run from a rechargeable battery. The Contractor shall be responsible for any damage to the solar facility infrastructure due to improper setup or maintenance of the electric fencing.

While sheep are grazing each paddock, they need to be provided with drinking water. The method of watering the flock will be left to the Contractor, with approval from the Owner. A mobile watering trough, especially an elevated one that does not kill vegetation while it remains in place, is preferred. Moving the watering trough from paddock to paddock as the flock moves will reduce damage to the vegetation beneath the trough and prevent the formation of dead vegetation areas, which are

susceptible to erosion and colonization by weeds. Watering shall occur as near to the center of the paddock as possible; water is an attractant, and a trough set at paddock's edge or in its corner can lead to uneven grazing, trampling and death of vegetation, erosion, and the introduction and spread of weeds.

The size and layout of each grazing unit can change depending on the number of acres under grazing management and other logistical issues. The Contractor shall prepare a grazing plan for approval by Lakeside Solar that includes the proposed layout of grazing units and paddocks, equipment to be used by the Contractor for both fencing and watering, and a schedule of management activities. This plan must be approved by the Owner before the commencement of any work on site by the Contractor.

b. Stocking Rate and Management

The number of sheep in a paddock at any time is the stocking rate. The concept used to describe the stocking rate, or grazing pressure, is animal unit month (AUM). One animal unit is 1,000 lbs. of livestock, so one AUM is 1,000 lbs. of livestock grazing for one month. AUM is usually considered on a per acre basis, so the final unit for stocking rate is AUM/acre. Depending on the variety of sheep used, 1 animal unit is approximately six ewes. If grazing sections at the Project are divided into grazing units of 16 acres, 1 AUM/acre would be about 100 sheep grazing the entire unit for one month. As described above, the size of grazing units must be agreed to by the Contractor and the Owner before the commencement of grazing.

The Natural Resources Conservation Service recommends that stocking on solar energy facilities start at 0.5 AUM (J. Duchene, personal communication, December 27, 2018). In the example where 16-acre grazing units are used, this would mean an initial stocking rate of 50 sheep per unit. Each 16-acre unit, divided into four paddocks of four acres each, would start with 50 sheep grazing Paddock A for one week, then all 50 sheep would be moved to Paddock B for the second week, and so on.

During the grazing period, the Contractor shall be responsible for monitoring the response of the vegetation to grazing and adjusting stocking and timing to meet the goals of the site. The management goal for the Project is to have a vegetation height of approximately 18 inches when the sheep are first moved into a paddock and a uniform vegetation height of 4-6 inches when the sheep are removed a week later. Each paddock must be grazed completely to the correct height before the livestock are moved to the next paddock. If grazing does not achieve the desired vegetation height and is shading the arrays, the Contractor shall immediately contact the Owner and shall be responsible for mowing the paddock to a uniform height of 4-6 inches. The Contractor shall discuss with the Owner a change in stocking rate in order to improve the effect of future grazing and make adjustments as agreed to by both the Contractor and the Owner. The Contractor shall have access to additional livestock in case the stocking rate needs to be increased to achieve the vegetation management goal.

IV. Vegetation Quality Targets

Vegetation management should result in a diverse plant community dominated by native species. Permits and regulations impose additional requirements on the final quality and performance of native plantings.

A. Native Vegetation Targets

By the end of the first growing season of the vegetation establishment phase, at least 80 percent of the site shall be vegetated. In order to discharge the SESC permit for the site, at least 70 percent of the site must be covered with uniform perennial vegetation; the contractor shall endeavor to achieve this by the end of the first growing season and must achieve this in the second growing season. By the end of the vegetation establishment phase (approximately 36 months after vegetation installation), at least 95 percent of the site shall be vegetated, and at least 90 percent of the cover shall be comprised of native species. Seven or more species of planted native graminoids and six or more species of planted native forbs shall be well-established across the site.

B. Noxious Weeds and Problem Plants

All Michigan prohibited noxious weeds and other problem plants (Appendices 3 & 4) shall be treated repeatedly with herbicide and mowed where appropriate at a frequency sufficient to prevent seed-set and to reduce over time the cover of weeds that must be controlled. Each treatment shall show evidence of at least 90 percent of the target vegetation having been affected by herbicide treatment or removed. Two weeks after treatment, at least 95 percent of all plants treated with herbicide shall be dead or dying within any 100 square foot area.

At the end of the vegetation establishment phase (i.e., approximately 36 months after vegetation installation), all prohibited noxious and other problem plants shall not exceed 5 percent aerial cover within any 100 square foot area across the site.

V. References

Duchene, J. 2018. Natural Resources Conservation Service, Pelham, MN. Personal communication.

Michigan Department of Agriculture and Rural Development. 2018. Michigan Prohibited and Restricted Weeds. Accessed February 2021 at https://www.michigan.gov/documents/mdard/Michigan_Prohibited_and_Restricted_Weeds_641413_7.pdf

Michigan State University Department of Plant, Soil, and Microbial Sciences. 2018. Michigan's Worst Weeds. Accessed February 2021 at https://www.canr.msu.edu/weeds/extension/michigan-s-worst-weeds

University of Minnesota. 2018. Common annual weeds. Accessed April 2020 at https://extension.umn.edu/weed-management/weed-identification

Appendix 1. Seed Mixes for the Lakeside Solar Project

Mesic Array Mix

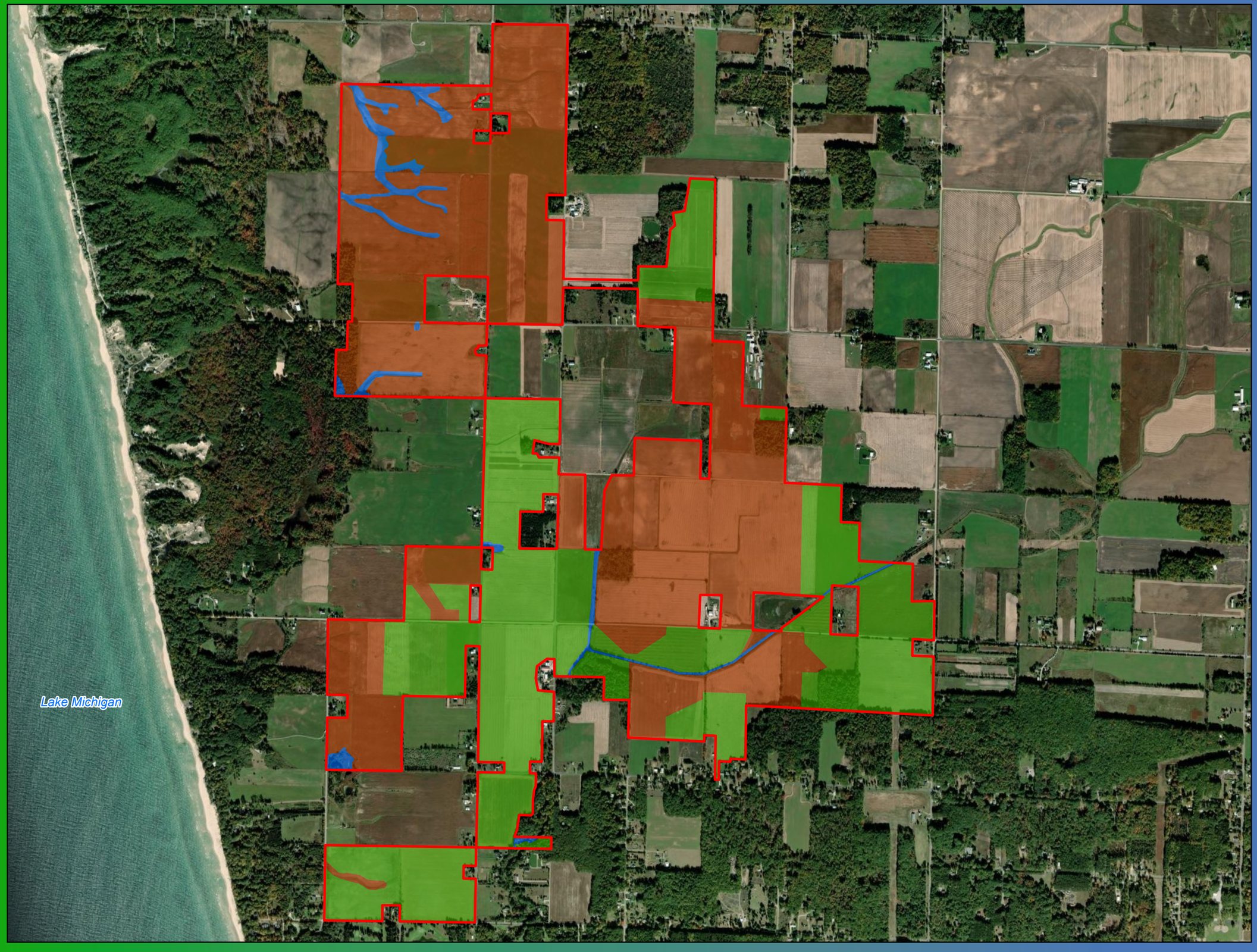
Botanical Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
Bouteloua curtipendula	Sideoats grama	24.00	1.50	18.8	3.3
Carex annectens	Yellow-fruited sedge	1.00	0.06	0.8	2.1
Carex brevior	Short beak sedge	1.75	0.11	1.4	1.2
Elymus canadensis	Canada wild rye	28.00	1.75	21.9	3.3
Elymus trachycaulus	Slender wheatgrass	20.00	1.25	15.6	3.2
Festuca rubra ssp. *rubra*	Red fescue	12.00	0.75	9.4	9.5
Festuca subverticillata	Nodding fescue	1.00	0.06	0.8	0.5
Juncus tenuis	Path rush	0.25	0.02	0.2	5.7
Schizachyrium scoparium	Little bluestem	16.00	1.00	12.5	5.5
	Total Graminoids	**104.00**	**6.50**	**81.3**	**34.2**
Achillea millefolium	Yarrow	0.50	0.03	0.4	2.0
Chamaecrista fasciculata	Partridge pea	12.00	0.75	9.4	0.7
Geum canadense	White avens	1.00	0.06	0.8	0.6
Monarda fistulosa	Wild bergamot	1.00	0.06	0.8	1.6
Oligoneuron rigidum	Stiff goldenrod	1.50	0.09	1.2	1.4
Penstemon digitalis	Beardtongue	0.50	0.03	0.4	1.5
Pycnanthemum tenuifolium	Slender mountain mint	0.25	0.02	0.2	2.2
Rudbeckia hirta	Black-eyed Susan	2.50	0.16	2.0	5.3
Solidago nemoralis	Old-field goldenrod	0.25	0.02	0.2	1.7
Symphyotrichum ericoides	Heath aster	0.25	0.02	0.2	1.1
Verbena stricta	Hoary vervain	1.50	0.09	1.2	1.0
Zizia aurea	Golden alexanders	2.75	0.17	2.1	0.7
	Total Forbs	**24.00**	**1.50**	**18.8**	**19.9**
	Total	**128.00**	**8.00**		**54.1**

Wet-Mesic Array Mix

Botanical Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
Carex hystericina	Bottlebrush sedge	2.00	0.13	1.8	1.4
Carex scoparia	Broom sedge	1.25	0.08	1.1	2.4
Carex vulpinoidea	Fox sedge	1.25	0.08	1.1	2.9
Elymus canadensis	Canada wild rye	26.00	1.63	23.2	3.1
Elymus villosus	Silky wild rye	4.00	0.25	3.6	0.5
Elymus virginicus	Virginia wild rye	40.00	2.50	35.7	3.9
Glyceria striata	Fowl manna grass	1.00	0.06	0.9	3.7
Leersia oryzoides	Rice cut grass	2.00	0.13	1.8	1.6
Muhlenbergia mexicana	Leafy satin grass	1.00	0.06	0.9	4.0
Poa palustris	Fowl bluegrass	1.50	0.09	1.3	4.5
Schizachyrium scoparium	Little bluestem	16.00	1.00	14.3	5.5
	Total Graminoids	**96.00**	**6.00**	**85.7**	**33.4**
Anemone canadensis	Canada anemone	1.50	0.09	1.3	0.3
Bidens cernua	Nodding bur marigold	1.00	0.06	0.9	0.5
Euthamia graminifolia	Grass-leaved goldenrod	0.50	0.03	0.4	4.0
Geum canadense	White avens	1.00	0.06	0.9	0.6
Lobelia siphilitica	Great blue lobelia	0.40	0.03	0.4	4.6
Lycopus americanus	American bugleweed	0.75	0.05	0.7	2.2
Mimulus ringens	Allegheny monkeyflower	0.10	0.01	0.1	5.3
Monarda fistulosa	Wild bergamot	1.00	0.06	0.9	1.6
Pycnanthemum virginianum	Virginia mountain mint	0.50	0.03	0.4	2.5
Rudbeckia hirta	Black-eyed Susan	2.50	0.16	2.2	5.3
Solidago riddellii	Riddell's goldenrod	1.00	0.06	0.9	2.1
Symphyotrichum lateriflorum	Side-flowering aster	0.50	0.03	0.4	2.9
Tradescantia ohiensis	Spiderwort	1.50	0.09	1.3	0.3
Verbena hastata	Blue vervain	0.75	0.05	0.7	1.6
Zizia aurea	Golden alexanders	3.00	0.19	2.7	0.8
	Total Forbs	**16.00**	**1.00**	**14.3**	**34.5**
	Total	**112.00**	**7.00**		**67.9**

Wet Stormwater Mix

Scientific Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
Calamagrostis canadensis	Bluejoint	0.50	0.03	0.7	3.2
Carex hystericina	Bottlebrush sedge	2.75	0.17	3.8	1.9
Carex vulpinoidea	Fox sedge	1.25	0.08	1.7	2.9
Elymus virginicus	Virginia wild rye	48.00	3.00	66.7	4.6
Glyceria striata	Fowl manna grass	1.00	0.06	1.4	3.7
Juncus dudleyi	Dudley's rush	0.10	0.01	0.1	7.3
Juncus effusus	Common rush	0.30	0.02	0.4	6.9
Leersia oryzoides	Rice cutgrass	2.50	0.16	3.5	2.0
Muhlenbergia mexicana	Leafy satin grass	1.00	0.06	1.4	4.0
Poa palustris	Fowl bluegrass	2.00	0.13	2.8	6.0
Scirpus atrovirens	Green bulrush	0.60	0.04	0.8	6.3
	Graminoids	**60.00**	**3.75**	**83.3**	**48.8**
Anemone canadensis	Canada anemone	1.50	0.09	2.1	0.3
Asclepias incarnata	Swamp milkweed	2.00	0.13	2.8	0.2
Bidens cernua	Nodding bur marigold	1.50	0.09	2.1	0.7
Eupatorium perfoliatum	Common boneset	0.75	0.05	1.0	2.8
Euthamia graminifolia	Grass-leaved goldenrod	0.40	0.03	0.6	3.2
Lobelia siphilitica	Great blue lobelia	0.30	0.02	0.4	3.4
Lycopus americanus	American bugleweed	0.80	0.05	1.1	2.4
Mimulus ringens	Allegheny monkeyflower	0.10	0.01	0.1	5.3
Pycnanthemum virginianum	Virginia mountain mint	0.40	0.03	0.6	2.0
Saxifraga pensylvanica	Swamp saxifrage	0.25	0.02	0.3	2.3
Solidago riddellii	Riddell's goldenrod	0.75	0.05	1.0	1.6
Symphyotrichum puniceum	Marsh aster	0.50	0.03	0.7	0.9
Verbena hastata	Blue vervain	0.75	0.05	1.0	1.6
Zizia aurea	Golden alexanders	2.00	0.13	2.8	0.5
	Forbs	**12.00**	**0.75**	**16.7**	**27.3**
	Total	**72.00**	**4.50**		**76.0**



0 750 1,500 Feet

1 inch = 1,583 feet

N
W E
S

Land Control Area

Seed Mix

- Mesic
- Wet-Mesic
- Wet

Recommended Seed Mix Distribution

Lakeside Solar and BESS Project

Muskegon County, Michigan

LAKESIDE SOLAR

For Environmental Review Purposes Only

Source: Z:\Clients\M_P\National_Grid\Lakeside_Solar\ArcGIS\Permitting\Lakeside Solar\Lakeside Solar.aprx

Date: (9/3/2025)

Appendix 3. Michigan Prohibited and Restricted Noxious Weeds

A. Prohibited and Restricted Plant Species

Prohibited Plant Species	
Scientific Name	**Common Name**
Cabomba caroliniana	Fanwort
Cylindrospermopsis raciborskii	Cylindro
Egeria densa	Brazilian elodea
Fallopia japonica	Japanese knotweed
Heracleum mantegazzianum	Giant hogweed
Hydrilla verticillata	Hydrilla
Hydrocharis morsus-ranae	European frogbit
Lagarosiphon major	African oxygen weed
Myriophyllum aquaticum	Parrot's feather
Nitellopsis obtusa	Starry stonewort
Nymphoides peltata	Yellow floating heart
Salvinia molesta	Giant salvinia
Stratiotes aloides	Water soldier
Trapa natans	Water chestnut
Restricted Plant Species	
Scientific Name	**Common Name**
Butomus umbellatus	Flowering rush
Elaeagnus umbellata	Autumn olive
Lythrum salicaria	Purple loosestrife
Myriophyllum spicatum	Eurasian watermilfoil
Phragmites australis	Common reed
Potamogeton crispus	Curly leaf pondweed

B. Prohibited and Restricted Seed Species

Prohibited Seed Species	
Scientific Name	**Common Name**
Agropyron repens	Quackgrass
Cardaria draba	Perennial peppergrass
Carduus acanthoides	Plumeless thistle
Carduus nutans	Musk thistle
Centaurea maculosa	Spotted knapweed
Centaurea picris	Russian knapweed
Cirsium arvense	Canada thistle
Cirsium vulgare	Bull thistle
Convolvullus arvensis	Field bindweed
Convolvulus sepium	Hedge bindweed
Cuscuta spp.	Dodder
Cyperus esculentus	Yellow nutsedge
Euphorbia esula	Leafy spurge
Ipomea species	Morning glory
Nasella trichoma	Serrated tussock
Solanum carolinense	Horsenettle
Sonchus arvensis	Perennial sowthistle
Sorghum halapense	Johnsongrass
Tribulus terrestris	PunctureVine

Restricted Seed Species	
Scientific Name	**Common Name**
Abutilon theophrasti	Velvetleaf
Allium canadense	Wild onion
Allium vineale	Wild garlic
Avena fatua	Wild oat
Barbarea vulgaris	Yellow rocket
Berteroa incana	Hoary alyssum
Brassica juncea	Indian mustard
Brassica nigra	Black mustard
Datura stramonium	Jimsonweed
Daucus carota	Wild carrot
Plantago lanceolata	Buckhorn plantain
Raphanus raphanistrum	Wild radish
Rumex crispus	Curly dock
Seteria faberii	Giant foxtail
Sinapis arvensis	Charlock
Solanum dulcamara	Bittersweet nightshade
Solanum eleagnifolium	Silverleaf nightshade
Solanum nigrum	Black nightshade
Solanum ptycanthum	Eastern black nightshade
Solanum sarrachoides	Hairy nightshade
Xanthium strumarium	Cocklebur

Appendix 4. Additional Problem Weeds to Remove

Scientific Name	Common Name
Annual and Perennial Grasses	
Bromus inermis	Smooth brome
Panicum dichotomiflorum	Fall panicum
Phalaris arundinacea	Reed canary grass
Poa pratensis	Kentucky bluegrass
Typha x glauca	Hybrid cattail
Annual and Perennial Forbs	
Alliaria petiolata	Garlic mustard
Amaranthus spp.	Pigweeds
Ambrosia artimisiifolia	Common ragweed
Ambrosia trifida	Giant ragweed
Apocynum cannabinum	Hemp dogbane
Brassica kaber	Wild mustard
Chenopodium album	Common lambsquarters
Conyza canadensis	Horseweed
Lamium purpureum	Purple deadnettle
Lotus corniculatus	Birdsfoot trefoil
Melilotus alba	White sweet clover
Melilotus officinalis	Yellow sweet clover
Phytolacca americana	Common pokeweed
Polygonum pensylvanicum	Pennsylvania smartweed
Securigera varia	Crown vetch
Silene alba	White campion
Stellaria media	Common chickweed
Taraxacum officinale	Dandelion

Additionally, any tree, shrub, or vine outside the Screening Plantings shall be removed.

Appendix 5. Revision Log

Date	Editor	Content

Operations and Emergency Action Plan &

Emergency Response Questionnaire

Lakeside Solar Operations and Emergency Action Plan

Document ID:	LSS.OPS.001	**Version:**	1	**Date Released:**	06/17/2025
Valid for:	Lakeside Solar				
Author:	J. Hohl	**Verified by:**		**Approved by:**	M. Skorcz

Revision History

Date	Version #	Approved By:	Revision Description
02/10/2021	1	J. Melsha	Initial Release
06/17/2025	2	M. Skorcz	Rebrand & minor updates.

Contents

1 Site Information

Location: Muskegon County Michigan
Operations Phone Number: 833-274-2480
Solar Capacity: 200MW
Remote Operations Center (ROC): TBD

2 Emergency Contacts

2.1 Emergency Dispatch – 911 Coordination

Call goes to:	Montague Police Department
First Fire response:	Montague Fire Department
Main gate lock combination:	Will be provided to Montague Fire Department
Nearest Emergency Medical Facility:	Mercy Health Urgent Care Whitehall Address: 905 E Colby St, Whitehall, MI 49461 Phone: 1 231 672 8050
Emergency Assembly Area:	O&M building gate (TBD)

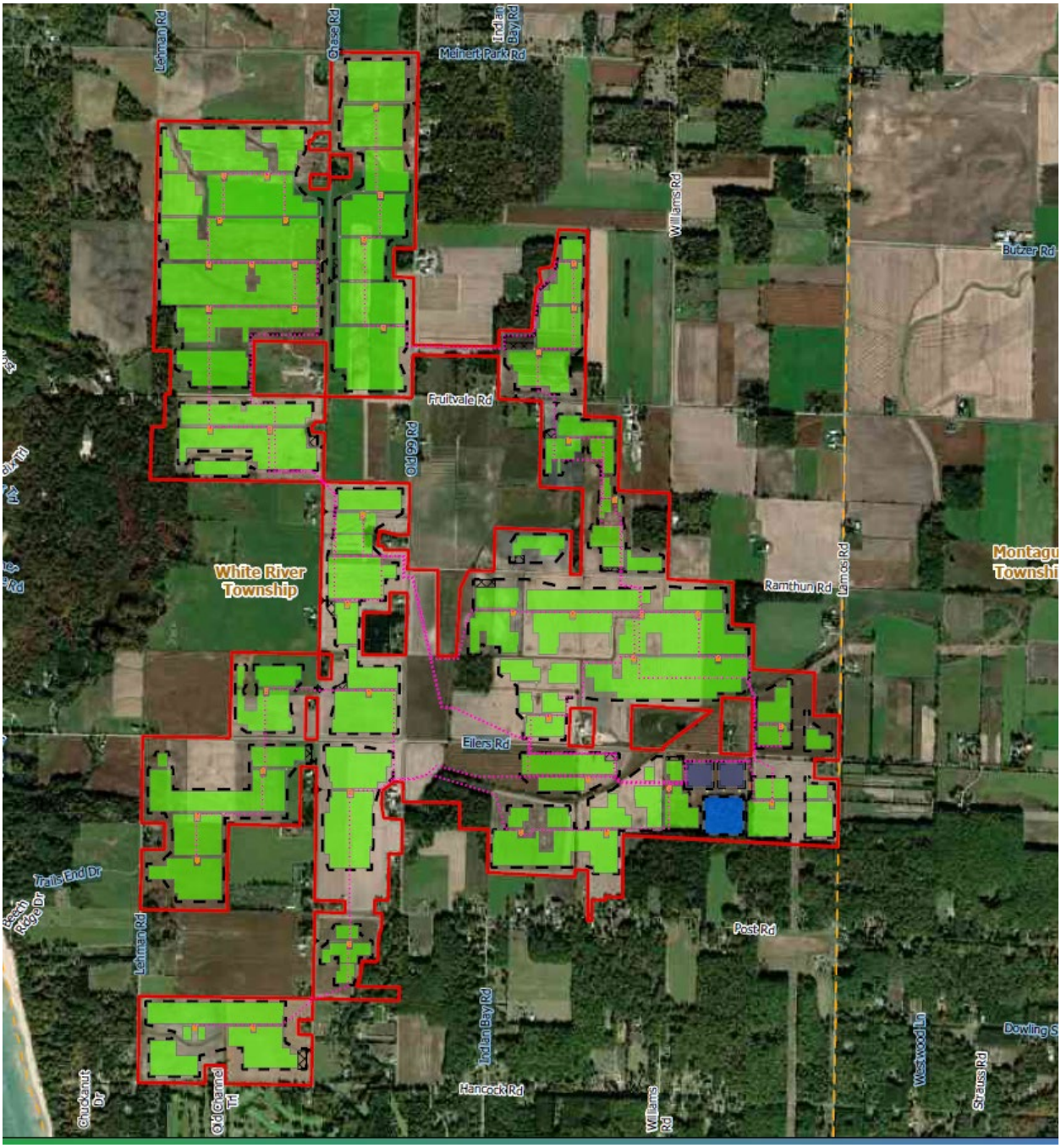
2.2 Geronimo Power Emergency Contacts

Key Contacts at Geronimo Power:

-	TBD	TBD	EHS Contact
-	TBD	TBD	Field Operations Contact
-	TBD	TBD	Construction Contact
-	TBD	TBD	Plant Manager (on-site)

***NOTE**: Fire emergency responders that arrive to the site when no staff are present should make mobile phone contact with one of the contacts listed above, provide an initial assessment with options, and take the agreed course of action, which, in most cases, will require entering the site.*

3 Plant Map



(Larger map may be provided upon request).

4 Emergency Preparation

Near the beginning of commercial operations, Geronimo Power will host a meeting with the local fire department to review the emergency response plan proposed in this document.

All maintenance personnel will carry a fire extinguisher and first aid kit with them when at the plant, which will be inspected monthly. All maintenance personnel will be trained in fire awareness, prevention and the use of fire extinguishers.

5 Fire Prevention

As a minimum standard, Geronimo Power will follow all applicable requirements in National Electric Code (NEC) 690. Additionally, in order to prevent fires, the following rules will be followed:

- No smoking of any kind will be done within the fenced area.
- Any hot work will be performed with a hot work permit and within the requirements of OPS.EHS.015 Hot Work Procedure.
- Any work involving energized equipment or deenergizing equipment will be done within the requirements of OPS.EHS.009 Electrical Safety Program and OPS.ESH.010 Lockout Tagout Procedure.
- Installation of modules and all connections will be performed skilled personnel. The individuals will be required to be properly licensed according to the local electrical codes, qualified and trained in the techniques for making terminations, connections, and supporting of wiring to prevent arcing.
- All crews will be equipped with at least a 2.5lb ABC rate fire extinguishers which will be inspected monthly.
- Vegetation within the fence shall be maintained as required by the vegetation management plan and as required by the building permits.
- Gravel roads will be maintained throughout the site and will act as a fire break to reduce the probability of a fire spreading of a fire outside the facility.
- The storage facility and substation will have gravel around the perimeter at least 15 feet to act as a fire break.

6 Maintenance and Quality

Geronimo Power will hire an operations and maintenance contractor to perform maintenance services at the project.

Quality inspections will reduce the risk of equipment malfunction that could result in a fire.

Geronimo Power performs monthly inspections at each solar and storage facility in addition to contractor inspections that are being performed at periodic intervals.

During operations, maintenance services performed by the operations and maintenance contractor include:

- Annual Visual Inspections of all equipment
- Annual cleaning of cabinets and changing filters
- Quarterly equipment testing

Additionally, troubleshooting will be done for any equipment that may be operating abnormally.

The site will be remotely monitored at all times and technicians will be dispatched in response to alarms or signs of abnormal operations.

7 Security

Site security fencing will be constructed to restrict access to the PV Systems, substation, storage facility and vulnerable sections of the plant. The Operations and Maintenance contractor will control access to the site and maintain an access log. All personnel or visitors must notify the contractor prior to entry. Only authorized personnel or those escorted by an authorized site representative are allowed to enter the site.

Site security fencing will be maintained to restrict access to the solar plant and vulnerable sections of the plant. Fencing shall be inspected regularly for:

- Damage such as holes, broken posts, or loose wire mesh
- Damage due to breaches where animals or personnel have attempted to or have entered.
- Erosion of the ground below it
- Trees or vegetation hanging over it
- Placement of climbing aids or items near the fence to allow unauthorized personnel to gain access.

Signs shall be placed at each gate with the 24/7 phone numbers for the operations and maintenance contractor and Geronimo Power Operations: 210-625-3989.

Cameras, which can be remotely viewed will also be installed in strategic locations throughout the plant. Most anomalies detected will be able to be viewed remotely through these cameras.

8 Remote 24/7 Monitoring

The plant will be monitored at all time by a Remote Operations Center (ROC). The phone number for the ROC will be posted on the exterior fence.

The purpose of the ROC is to:

- Monitor any unique production events. Upon detection of an event, the ROC will try to remotely troubleshoot the event. If the ROC is unable to remotely troubleshoot, based on the severity of the event, the ROC may dispatch local technicians to the site.
- Answer emergency calls and support local emergency response while responding to events.
- When warranted, review camera footage to determine severity of events.

9 Emergency Procedures

9.1 General Emergency Procedure

Anyone observing an emergency condition should immediately contact **911**, then the Geronimo Power Operations Line: 833-274-2480**.** By this number, all relevant Geronimo Power personnel will be notified as well as contractor personnel.

Once appropriate personnel have been notified within Geronimo Power, an Emergency Coordinator will be designated. This person will coordinate the response with the local emergency responders and will dispatch to site if necessary.

If any equipment requires being shut down, the contractor will remotely isolate the equipment**. Emergency responders should never attempt to isolate equipment.**

Once notified of the emergency condition, the Emergency Coordinator shall determine whether outside resources are needed.

If any personnel are on site, they are required to meet at the Assembly Area to support emergency response. One person onsite will become the On-Site Emergency Coordinator. This person will:

- Review the Job Safety Analysis to assure all on-site personnel are accounted for
- Meet emergency responders at designated location, if appropriate.
- Locate missing persons (two person teams if warranted) if necessary.

The Emergency Coordinator will coordinate communications between the above personnel.

9.2 General Evacuation Procedure

If needed, perform the applicable steps of the “General Emergency Response Procedure” above.

In case of an emergency requiring evacuation, the Emergency Coordinator will use the radios, cell phones or other means to contact and inform all employees, contractors and visitors to evacuate.

Upon notification, all employees, contractors, and visitors will immediately:

- Stop work
- If time permits, place equipment in a safe condition
- Evacuate from the nearest, safest exit point and report to the designated evacuation area.
- Personnel will report to the Emergency Coordinator, or designee, when they have safely reached the evacuation area.

10 Fire Response

10.1 Grass, Brush and Forest Fires

Immediately upon discovery of a fire, 911 should be called, then the then Geronimo Power Operations Line: 833-274-2480.

In the event of grass and brush fires, employees and contractors shall notify Plant Management.

Plant Management will designate an Emergency Coordinator to manage the incident.

The Emergency Coordinator will obtain details of the exact location and size of the fire from the notifier.

The Emergency Coordinator will contact 911 and coordinate with the notifier to lead fire-fighting equipment to the scene. The designated responder will be notified by the Emergency Coordinator by radio of the location at which to meet with the fire brigade.

Only employees trained to fight fires may do so and only under instruction from the civil authorities. In all other events, employees shall at no time attempt to extinguish or “fight” a large brush and grass fire.

Fire department should contain the fire.

Note: Access roads are located throughout the solar plant which will help prevent the fire from spreading further. However, ideally local fire firefights can help prevent the fire from getting all the way to the fire breaks.

The Geronimo Power Emergency Coordinator will contact any landowners in the area with the location and size of the fire. Employees may be directed by the Emergency Coordinator to visit any buildings/dwellings that may be in the anticipated path of a fire.

10.2 Equipment Fire

Immediately upon discovery of a fire, 911 should be called, then the Geronimo Power Operations Line: 833-274-2480.

Plant Management will designate an Emergency Coordinator to manage the incident.

The Emergency Coordinator will obtain details of the exact location and size of the fire from the notifier.

The Emergency Coordinator will contact 911 and coordinate with the notifier to lead fire-fighting equipment to the scene. The designated responder will be notified by the Emergency Coordinator by radio of the location at which to meet with the fire brigade.

Fighting the fire:

- No employees shall fight the fire.
- If possible, the maintenance contractor will remotely isolate the solar farm.
- **The Fire Department should not extinguish the fire with water**.
- If the fire department does not have mean to fight an electrical fire, no attempt should be made to fight the fire. The fire department should put barriers around the fire to protect the other equipment and the nearby land.
- A fire watch should stay with the fire until it burns out completely, and for an additional 2 hours.

10.3 Fire at the Operations Facilities

In the event of a fire in the operations facilities, the worker discovering the fire will activate the building fire alarm.

At the alarm, Plant Management will designate an Emergency Coordinator who will immediately notify 911 and request the fire department and medical assistance.

The General Emergency Response and Evacuation Procedures will then be followed.

All employees, contractors and visitors will remain clear of buildings and structures until an all-clear notice is received from fire-fighting personnel.

Employees or contractors shall at no time attempt to extinguish or “fight” a fire.

11 Injury/Illness

In the event of an injury/illness requiring medical treatment, employees will contact the on-site lead immediately.

The onsite lead will become the Emergency Coordinator who will obtain details of the exact location and severity of the injury.

The Emergency Coordinator will contact 911 and coordinate meeting points with ambulance service and plant personnel. Plant personnel will escort the emergency responders to the injured person.

11.1 COVID-19 and Pandemics

Personnel should follow all applicable procedures on COVID-19 and pandemics if operating during a pandemic time period. For the COVID-19 Pandemic, personnel shall follow GER.EHS.020 COVID-19 Field Procedure and Guidelines. Specifically, personal shall practice the following prevention measures:

- When possible, meetings should be held virtually and not in person.
- If feeling ill, personnel must stay home and not go a project site, office, meetings or any other in-person gatherings.
- Personnel should not touch, shake hands or hug.
- All personnel should wash their hands with soap and warm water for at least 20 seconds frequently. In the event that soap and water are not available, use alcohol-based hand sanitizer with at least 60-95% alcohol by covering all surfaces of your hands and rub them together until they are dry.
- All personnel should avoid touching their faces, specifically eyes, nose and mouth.
- Avoid close contact with people who are sick.
- Maintain a minimum separation of 6 feet between any person and any other person.
- Wear a cloth face covering or facemask when in public or meeting with other people.
- When sneezing or coughing, cover mouth and nose with a tissue or inside of elbow. Employees should immediately throw away the tissue and wash their hands after sneezing or coughing.

12 Criminal Behavior

12.1 Suspicious People

In case of suspicious people, it is the responsibility of all employees, contractors and visitors to notify Plant Management and report the location and nature of the suspicious activity. Employees, contractors and visitors should not confront or attempt to detain trespassers or suspicious people.

Plant Management will determine the scope of the emergency response. For reports of criminal behavior such as vandalism, shooting, or illegal vehicles the Plant Management or Emergency Coordinator shall phone 911 for assistance to summon police.

Investigation into suspicious individuals may require conversation with the individual to ascertain that person’s connection with the plant. At no time should any confrontation be allowed. If suspicious individuals seem hostile or violent, employees shall leave the area and inform Plant Management to summon immediate police response.

12.2 Employee, Contractor or Visitor

Confrontational situations between employees, contractors or visitors involving threats, harassment, confrontations or obscene acts or language shall be reported immediately to Plant Management.

If at any time an employee, contractor or visitor working at an asset is concerned about his or her safety, it is their responsibility to report the situation to appropriate management.

12.3 Third party threats to the plant

In the event there is a threat to employees or the plant, Plant Management will designate an Emergency Coordinator, initiate the Evacuation Procedure, and contact law enforcement.

Once all employees have been accounted for, the Emergency Coordinator will order the plant evacuated.

Upon All Clear notification from law enforcement, employees may return to the plant.

12.4 Suspicious Package

If a suspicious package is spotted, 911 should be contacted immediately. Personnel are not permitted to touch/move suspicious packages.

Personnel should immediately move to a safe area.

12.5 Bomb/Terrorist Threat

All bomb and terrorist threats are taken seriously.

In the event of a bomb or terrorist threat, 911 should be contacted immediately. Personnel are not permitted to touch, move or attempt to defuse/detonate a bomb. Personnel should evacuate the threaten area immediately.

If a bomb threat is received by handwritten/typed note: Minimal handling of the note is essential and inform the emergency responders of the note.

If a bomb threat is received by e-mail: Do not delete the message and inform the emergency responders of the email.

If a bomb threat is received by phone the person receiving the call should:

- Keep the caller on the line as long as possible. Be polite and show interest to keep them talking.
- **DO NOT HANG UP**, even if the caller does.
- Determine a way to notify or signal to other personnel without hanging up. This could be a note or a text message to help notify authorities
- Write down as much information as possible—caller ID number, exact wording of threat, type of voice or behavior, etc.—that will aid investigators.
- Record the call, if possible.

13 Extreme Weather

In the event of extreme weather, such as tornados, windspeeds greater than 39 mph, hail or lightning within 10 miles, personnel should evacuate the site and find a safe place to wait out the

storm. After the storm, if the monitoring system notices a reduction in power, the site should be inspected as soon as possible.

14 Review

This plan will be reviewed every three years and revised as necessary to ensure accurate information.

Decommissioning Plan

A DECOMMISSIONING PLAN FOR

Lakeside Solar, LLC

White River Township, Muskegon County, Michigan

AUGUST 07, 2025

PREPARED FOR:

geronimo power

PREPARED BY:

Westwood

Westwood

Decommissioning Plan

Lakeside Solar, LLC

White River Township, Muskegon County, Michigan

Prepared for:

Geronimo Power
8400 Normandale Lake Blvd. Suite 1200
Bloomington, MN 55437

Prepared by:

Westwood Professional Services
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
(952) 937-5150

Project Number: 0026904.00

Date: August 07, 2025

Table of Contents

Attachments

Attachment A: Decommissioning Cost Estimate

1.0 Introduction

This Decommissioning Plan ("Plan") has been prepared for the Lakeside Solar, LLC in accordance with the White River Township, Muskegon County, Ordinance No. 51-2019. The purpose of the Plan is to describe the means and methods that can be used to remove all structures, foundations, collection cables, and equipment and to reclaim and restore the land altered during the construction and operation of the solar project to its predevelopment condition to the extent feasible.

The Lakeside Solar, LLC ("Project") is a solar power generation project proposed by Geronimo Power ("Applicant") in White River Township, Muskegon County, Michigan. The Project will be built within a general Project Area of approximately 978 acres.

1.1 Project Description

1.1.1 Current Land Use

The Project is located northwest of the city of Whitehall, Michigan. Prior to the development of the Project, the land use of the Project Area was primarily agricultural production.

According to the United States Department of Agriculture (USDA's) National Resources Conservation Service (NCRS) Web Soil Survey, site soils consist primary of sands, loams, and sandy loams with relatively low slopes. During construction of the site, topsoil present in any disturbed areas will be stripped, stockpiled, then respread after Project components are installed. During decommissioning, soil conservation practices will be much the same. As such, the soil's physical and chemical properties will be maintained to the greatest extent practicable. In the event that topsoil import is required, soils will be analyzed prior to being brought to the site to ensure they share similar physical and chemical characteristics as the soils previously present at the site.

1.1.2 Proposed Project

The Project will have an aggregate nameplate capacity of up to 150-megawatt (MW) alternating current (AC), 181-MW direct current (DC). Upon completion, the Project will comprise a solar array consisting of solar modules, tracking systems, inverters, transformers, underground and overhead collection lines, a substation, an operations and maintenance (O&M) facility, battery energy storage system (BESS), access roads, and fencing.

After all equipment and infrastructure is removed during decommissioning, any holes or voids created by poles, concrete pads, and other equipment will be filled in with native soil to the surrounding grade, and the site will be restored to pre-construction conditions to the extent practicable. Access roads and other areas compacted by equipment may be decompacted to a depth necessary to ensure drainage of the soil and root penetration prior to fine grading and tilling to a farmable condition. Please refer to Section 3.2 for a detailed description of reclamation activities.

1.1.3 Hazardous Substances Prior to Development

Prior to development, the Project area was used for agricultural production. Therefore, there is potential historical use of pesticides and herbicides at the site, as well as the potential use and storage of fuels and maintenance chemicals, such as lubricants, paints, greases, etc. At the time this Plan was

prepared, there were no environmental due diligence documents available for review.

1.2 Decommissioning Triggers

The useful life of solar panels is generally considered to be 35 years. At that time, the Project will either be decommissioned or repowered with newer technology. The Plan identifies components which may be removed and areas that may be restored once the Project has not operated for twelve consecutive months, or when the Project has surpassed the useful lifespan of the modules and facilities.

2.0 Decommissioning Activities

Decommissioning of the Project will include removing the solar panels, solar panel racking, steel foundation posts and beams, inverters, transformers, overhead and underground cables and lines, equipment pads and foundations, equipment cabinets, and ancillary equipment. The civil facilities, access roads, security fencing, and drainage structures and sedimentation basins are included in the scope. Standard decommissioning practices will be utilized, including dismantling and repurposing, salvaging/recycling, or disposing of the solar energy improvements.

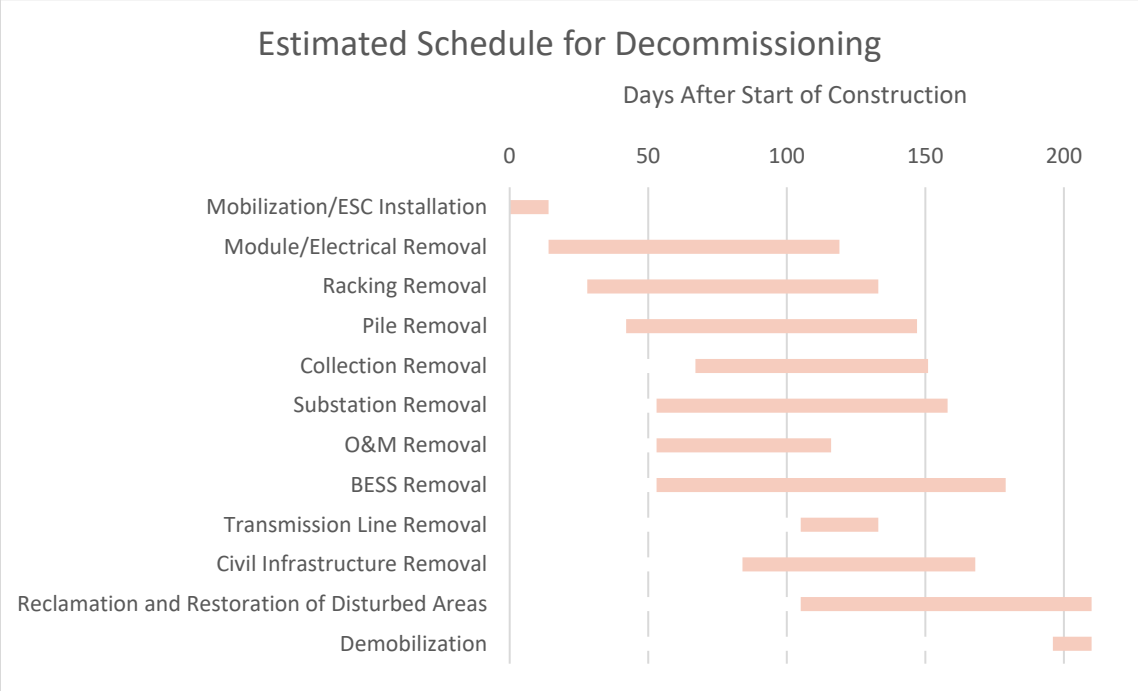
During decommissioning, the landowners will be consulted to identify the extent and type of work to be completed. Some Project infrastructure, such as the access roads may be removed at the discretion of the landowner(s). Underground utility lines, if deeper than three feet below ground surface elevation, may be left in place to minimize land disturbance and associated impacts to future land use.

Decommissioning will include the removal and transportation of all Project components from the Project site. All dismantling, removal, recycling, and disposal of materials generated during decommissioning will comply with rules, regulations, and prevailing Federal, State, and local laws at the time decommissioning is initiated and will use approved local or regional disposal or recycling sites as available. Recyclable materials will be recycled to the furthest extent practicable. Non-recyclable materials will be disposed of in accordance with State and Federal law.

2.1 Timeline

It is anticipated that the decommissioning activities for the Project can be completed in a 30-week period. Please see **Table 1** below for an estimated schedule of decommissioning activities. The estimated costs for decommissioning are tied to assumptions about the amount of equipment mobilized, the crew sizes, weather and climate conditions, and the productivity of the equipment and crews.

Table 1. Estimated Decommissioning Schedule



2.2 Decommissioning of Project Components

2.2.1 Solar Modules

Solar modules will be inspected for physical damage, tested for functionality, and disconnected and removed from racking. Functioning modules will be packed, palletized, and shipped to an off-site facility for reuse or resale. Non-functioning modules will be shipped to the manufacturer or a third party for recycling or disposal.

2.2.2 Racking

Racking and racking components will be disassembled and removed from the steel foundation posts, processed to appropriate size, and sent to a metal recycling facility.

2.2.3 Steel Foundation Posts

Structural foundation steel posts will be pulled out to full depth, removed, processed to appropriate size, and shipped to a recycling facility. The posts can be removed using back hoes or similar equipment. During decommissioning, the area around the foundation posts may be compacted by equipment and, if compacted, the area will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent for vegetation.

2.2.4 Overhead and Underground Cables and Lines

All underground cables and conduits will be removed to a depth of three feet. Topsoil will be segregated and stockpiled for later use prior to any excavation and the subsurface soils will be staged next to the excavation. The subgrade will be compacted per standards. Topsoil will be redistributed across the

disturbed area. Overhead gen-tie lines, support poles, and attachments will be removed from the Project and taken to a recycling facility. Removed pole locations will be backfilled and compacted.

2.2.5 Inverters, Transformers, and Ancillary Equipment

All electrical equipment will be disconnected and disassembled. All parts will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Applicant's sole discretion, consistent with applicable regulations and industry standards.

2.2.6 Equipment Foundations and Ancillary Foundations

The ancillary foundations are pile foundations for the equipment pads. As with the solar array steel foundation posts, the foundation piles will be pulled out completely. Duct banks will be excavated up to three feet in depth. All unexcavated areas compacted by equipment used in decommissioning will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density similar to the surrounding soils. All materials will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Applicant's sole discretion, consistent with applicable regulations and industry standards.

2.2.7 Fence

Fence parts and foundations will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Applicant's sole discretion, consistent with applicable regulations and industry standards. The surrounding areas will be restored to pre-solar farm conditions to the extent feasible.

2.2.8 Access Roads

Project access roads will be used for decommissioning purposes, after which removal of roads will be discussed with the landowner(s) and one of the following options will be pursued:

1. After final clean-up, roads may be left intact through mutual agreement of the landowner and the Applicant unless otherwise restricted by federal, state, or local regulations.
2. If a road is to be removed, aggregate will be removed and shipped from the site to be reused, sold, or disposed of appropriately, at the Applicant's sole discretion, consistent with applicable regulations and industry standards. Clean aggregate can often be used as "daily cover" at landfills for no disposal cost. Internal service roads are assumed to be constructed with geotextile fabric and eight inches of aggregate over compacted subgrade. Any ditch crossing connecting access roads to public roads will be removed unless the landowner requests it remains. The subgrade will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent for reintroduction of farming. Topsoil that was stockpiled during the original construction will be distributed across the open area. Finally, the access road corridors will be tilled to an agricultural condition.

2.2.9 Substation

Decommissioning of the collector substation will be performed with the rest of the Project. All steel, conductors, switches, transformers, and other components of the substation will be disassembled and taken off-site to be recycled or reused. Foundations and underground components will be removed to a

depth of three feet. The rock base will be removed using bulldozers and backhoes or front loaders. The material will be hauled from the site using dump trucks to be recycled or disposed at on off-site facility. Additionally, any permanent stormwater treatment facilities (e.g., infiltration ponds and engineered drainage swales) will be removed. Topsoil will be reapplied to match surrounding grade to preserve existing drainage patterns. Topsoil and subsoil will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent for reintroduction of farming.

2.2.10 Operations and Maintenance Building

The O&M building is a sturdy, general purpose steel building. If the building is not repurposed, decommissioning will include disconnection of the utilities and demolition of the building structure, foundation, rock base parking lot, and associated vegetated/stormwater handling facilities. All associated materials will be removed from the site using wheeled loaders or backhoes and bulldozers and hauled off-site in dump trucks. All recyclable materials will be brought to appropriate facilities and sold; the remaining materials will be disposed of at an approved landfill facility. Subgrade soils will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent for reintroduction of farming. Topsoil will be reapplied to match existing surrounding grade to preserve existing drainage patterns, and the site will be tilled to a farmable condition.

2.2.11 Battery Energy Storage Systems (BESS)

Prior to commencing decommissioning of the BESS, all personnel on-site during the decommissioning process will receive a site-specific safety briefing and will be made aware of all electrical shock and arc flash risks when working within the battery containers. Hazmat training will also be conducted for all personnel handling lithium-ion batteries during the process.

The battery facility will be fully discharged to the minimum state of charge required for removal and safe transportation as per battery manufacturer specifications. The battery modules will be removed from their racks, repackaged on-site, and shipped intact to be reused, recycled, or disposed of appropriately, at the Applicant's sole discretion, consistent with applicable regulations and industry standards. No disassembly of battery modules will be required on-site, and the battery terminals will be taped off to avoid any potential for a short to occur. In the event of any breakage or damage to individual battery modules, such modules will be placed in individual, non-metallic inner packaging that completely encloses the cell.

The United States Environmental Protection Agency ("U.S. EPA") has guidelines for responsible disposal and recycling of lithium-ion batteries that have reached end of life (Title 40 Code of Federal Regulations Part 273: Standards for Universal Waste Management). Additionally, lithium-ion batteries are classified by the US Department of Transportation (DOT) as Class Nine hazardous materials. All applicable requirements related to the packaging, labelling, transportation, and disposal or recycling of the lithium-ion batteries contained in the Code of Federal Regulations, Title 49, Subchapter C, Parts 171-180, will be followed.

The refrigerant/coolant from HVAC units will be collected into separate containers on-site as per the code and industry standard practice. The coolant can be reused after processing. The HVAC units will be sent to the metal recyclers along with other recycling material. Similarly, all fire suppression units will be cleared of the suppression fluids and sent to the suppliers for reuse following the industry standard

practice. All electrical equipment will be disconnected and disassembled. All parts will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Applicant's sole discretion, consistent with applicable regulations and industry standards.

Finally, aggregate ground cover will be removed and shipped from the Project site to be reused, sold, or disposed of appropriately, at the Applicant sole discretion, consistent with applicable regulations and industry standards. Clean aggregate can often be used as "daily cover" at landfills for no disposal cost. All pile foundations will be pulled out completely. Underground cables and duct banks will be removed to a depth of three feet. Topsoil will be reapplied to the disturbed area. Soil and topsoil will be de-compacted, and the site will be restored to the pre-construction condition and re-vegetated in accordance with the Stormwater Pollution Prevention Plan (SWPPP) and/or construction stormwater permits.

In all cases, the Applicant, or their subcontractor as applicable, shall ensure all applicable OSHA, security, safety and health requirements are complied with during the removal and decommissioning of the BESS and its related equipment.

2.3 Hazardous Substances During Decommissioning

Decommissioning will require use of standard construction equipment powered by gasoline or diesel fuel. As a result, temporary stationary or mobile fuel tanks are likely be present at the site during decommissioning. For these and other smaller quantities of oil-based chemicals that may potentially be present during construction, a Spill Prevention, Control, and Countermeasure (SPCC) Plan will be developed.

At the time this Plan was prepared, used solar panels are not considered a hazardous material in the United States. The handling and transport of used solar panels will not pose a significant threat to human health or the environment. The solar panels will be recycled and/or disposed of in accordance with any applicable local, state, or federal regulations at the time decommissioning is completed. Selected disposal or recycling facilities may require waste characterization testing prior to acceptance.

Used batteries are considered to be a hazardous waste and will be handled, packed, transported, and disposed in accordance with all applicable local, state, and federal regulations. Decommissioning and removal of the batteries will not inherently pose a threat to human or environmental health.

2.4 Materials Management

Project components removed from the Project site will be resold, reused, recycled, or scrapped to the greatest extent possible.

- Metal components will be processed to size, sorted, and hauled to a recycling facility (PADNOS Muskegon Recycling Center in Muskegon, Michigan, approximately 21.2 miles from the Project site) to be processed as scrap. This includes:
    - Steel components, including steel piles and trackers, chain-link fencing, , structural steel from the substation, steel from the O&M facility, and smaller components from recycled equipment.
    - Underground and overhead gen-tie collection, , and grounding cables, typically composed of aluminum and copper.

    - Copper windings from transformers and inverters, and the copper ground grid from the substation.
- Other electrical equipment may be assessed for its condition and either sold for reuse or scrapped from its components.
- Fluids, such as transformer oils, will be drained and shipped off-site to an approved recycling facility.
- Solar panels will be resold or recycled to the greatest extent possible, based on their age and condition, as well as market conditions around resale of solar panels and advancements in recycling technologies. For the purposes of this cost estimate, it is assumed that 95% of panels will be resold to another party for reuse or recycling. The estimate further assumes that 5% will be damaged beyond repair and will be hauled to a landfill that accepts solar module components as approved wastes.
- If possible, clean gravel removed from the site may be re-used to improve public roads or used by local landowners to improve driveways or be used as clean fill. For the purposes of this cost estimate, it's assumed that the gravel will be hauled to a landfill, where it may be accepted as "daily cover" at no charge.

Project components that are not recyclable may include items composed of mixed materials, certain plastic components, materials that have been contaminated, and certain general municipal wastes. It may not be feasible for concrete to be recycled due to the distance between the Project site and a sufficient recycling facility. For the purposes of this Plan, it is assumed that these materials will be hauled to Muskegon County Solid Waste located in Ravenna, Michigan, approximately 31 miles from the site.

Please note that the selected facilities reflected in this Plan have been selected to reflect conditions at the time the Plan was prepared. The actual recycling and/or disposal facilities may change depending on facility status, capacity for accepting new waste, or changing regulations surrounding recycling/disposal of project components.

3.0 Restoration

The Applicant will restore and reclaim the site to the pre-solar farm condition in accordance with agreements with landowners. The Applicant assumes that most of the site will be returned to farmland and/or pasture after decommissioning through implementation of appropriate measures to facilitate such uses. If no specific use is identified, the Applicant will vegetate the site with a seed mix approved by the local soil and water conservation district or similar agency. The goal of restoration will be to restore natural hydrology and plant communities to the greatest extent practicable while minimizing new disturbance and removal of native vegetation. In addition to the reclamation activities described above for each decommissioning activity, all unexcavated areas compacted by equipment and activity during the decommissioning will be decompacted as needed to ensure proper density of topsoil consistent and compatible with the surrounding area and associated land use. All materials and debris associated with Project decommissioning will be removed and properly recycled or disposed of at off-site facilities.

4.0 Best Management Practices (BMPs)

The mitigation measures described in this section will be employed during decommissioning to protect Description of resources, conditions, or activities potentially affected by the efforts.

4.1 Notification

Prior to commencing decommissioning activities, the Project Owner will notify and coordinate with the landowners, affected local units (ALUs), and other local units of government not exercising zoning authority of the intended decommissioning activities and schedule. Applicable permits and approvals will be obtained prior to the start of decommissioning work.

These parties will again be notified once decommissioning activities have been completed. A Decommissioning Completion Report will be provided within 60 day of completing all decommissioning activities.

4.2 Construction Stormwater Practices

During decommissioning, erosion and sediment control BMPs will be implemented to minimize potential for erosion of site soils and sedimentation of surface waters and waters of the state. Because decommissioning will entail disturbance of more than one acre of soil, the Applicant will prepare a Soil Erosion and Sedimentation Control (SESC) Plan and obtain coverage with the Michigan Department of Environment, Great Lakes, and Energy (EGLE) under the R 323.2190 National Permit for Storm Water Discharge from Construction Activity prior to initiating soil disturbing activities. Potential BMPs to be implemented during decommissioning activities are described below and will be subject to refinement in the SESC Plan. The decommissioning team will review the permitting requirements at the time of decommissioning and obtain any other necessary permits, which may include a US Army Corps of Engineers (USACE) Section 404 Permit to Discharge Dredged or Fill Material.

4.2.1 Erosion Control

Erosion control measures will be refined based on the standard of practice current at the time the SWPPP is developed for decommissioning. All disturbed areas without permanent impermeable or gravel surfaces, or planned for use as crop land, will be vegetated for final stabilization. All slopes steeper than 4:1 should be protected with erosion control blankets. Restoration should include seed application prior to application of the blanket. All slopes 4:1 or flatter should be restored with seed and mulch, which will be disc anchored.

4.2.2 Sediment Control

Sediment controls, such as silt fences, fiber logs, dewatering practices, construction entrances, and sedimentation traps and/or basins will be implemented during construction to prevent the transport of sediment off-site during decommissioning activities. Street sweeping/scraping will also be implemented to mitigate potential tracking of sediment onto public roadways.

4.2.3 Controlling Stormwater Flowing onto and Through the Project

Given the low gradient of the slopes in the Project Area, controlling stormwater flow that enters the

Project Area will likely require minimal effort during decommissioning activities. Only newly disturbed areas may require new, temporary stormwater control. If necessary, water may be diverted around the Project site using diversion berms.

4.3 Permitting

All decommissioning and reclamation activities will comply with local, state, and federal permit requirements.

- Decommissioning activities that will disturb more than one acre of soil will require coverage under the R 323.2190 National Permit for Storm Water Discharge from Construction Activity for construction stormwater. The permits will be applied for and received prior to decommissioning construction activities commencing. An SESC Plan will be developed prior to filing for construction stormwater permit coverage.
- If necessary for decommissioning activities, wetlands and waters permits will be obtained from the USACE or EGLE.
- An SPCC Plan for decommissioning will likely also be required for the presence of oils on-site during decommissioning work.
- Local permits, which may include but not be limited to building permits, road use permits, driveway permits, stormwater drainage permits, etc. will be obtained prior to decommissioning.

4.4 Health and Safety Standards

Work will be conducted in strict accordance with the Applicant's health and safety plan. The construction contractor hired to perform the decommissioning will also be required to prepare a site-specific health and safety plan. All site workers, including subcontractors, will be required to read, understand, and abide by the plans. A site safety officer will be designated by the construction contractor to ensure compliance. This official will have stop-work authority over all activities on the site should unsafe conditions or lapses in the safety plan be observed.

5.0 Decommissioning Costs

The decommissioning costs are calculated using current pricing. In keeping with the requirements of White River Township, Muskegon County, Ordinance No. 51-2019 the estimate of net costs should be updated on a five-year basis for the first 20 years of operation and every three years thereafter with an update 12 months prior to expiration of project purchase agreement to recognize price trends for both decommissioning costs and the salvage and resale values of the components.

There are currently active markets for scrap steel, aluminum, and copper, used transformers and electrical equipment, and used solar panels. Scrap metal prices have been discounted from posted spot prices found on www.scrapmonster.com. Pricing for used panels has been discounted from the average price of used panels, as published in EnergyBin's 2024 "Module Price Index."

The total estimated cost of decommissioning Lakeside Solar, LLC is approximately $14,474,064 ($79,967 per MW). Estimated salvage/scrap value of the modules, racking, transformers, and other materials is approximately $62,572,873. The net decommissioning costs after accounting for resale and salvage values is approximately $48,098,900 in surplus, or $265,740 in surplus per MW.

6.0 Decommissioning Assurances

According to the White River Township, Muskegon County, Ordinance No. 51-2019 the applicant must post with the Township a Decommissioning Security in the form of a letter of credit, surety bond, or similar monetary guaranty for an amount necessary to accomplish the work specified in the Decommissioning plan, prior to construction or installation. The amount necessary to cover the decommissioning and reclamation shall be presumed to be greater of (i) the net salvage value calculated at 125% of the cost to decommission the project less the salvage value or (ii) an amount equal to $20/kw AC at the time of construction; $40kw AC at the end of year ten; $80/kw AC at the end of year 20.

Attachment A

Decommissioning Cost Estimate

Lakeside Solar, LLC

	Quantity	Unit	Unit Cost	Total Cost
Mobilization/Demobilization	1	Lump Sum	$930,200.00	$930,200
Mobilization was estimated to be approximately 7% of total cost of other items.				
Permitting				
County Permits	1	Lump Sum	$10,000.00	$10,000
State Permits	1	Lump Sum	$20,000.00	$20,000
Subtotal Permitting				**$30,000**
Decommissioning will require SWPPP and SPCC Plans. Cost is an estimate of the permit preparation cost.				
Civil Infrastructure				
Remove Gravel Surfacing from Road	15,851	Cubic Yards (BV)	$2.44	$38,676
Haul Gravel Removed from Road to Landfill (Ravenna, MI)	19,814	Cubic Yards (LV)	$22.86	$452,948
Dispose of Gravel Removed from Road (Landfill uses as Daily Cover)	25,679	Tons	$0.00	$0
Remove Geotextile Fabric from Beneath Access Roads	118,882	Square Yards	$1.40	$166,435
Haul Geotech Fabric to Landfill (Ravenna, MI)	33	Tons	$13.72	$453
Dispose of Geotech Fabric	33	Tons	$42.17	$1,392
Remove and Load Culvert from Beneath Access Roads	20	Each	$420.00	$8,400
Haul Culvert Removed from Access Roads to Landfill (Ravenna, MI)	20	Each	$87.58	$1,752
Dispose of Culvert	6	Tons	$42.17	$253
Remove Low Water Crossing from Access Road	42	Each	$3,400.00	$142,800
Haul Low Water Crossing Materials to Landfill (Ravenna, MI)	1,680	Ton	$13.72	$23,050
Dispose of Low Water Crossing Materials	1,680	Ton	$30.00	$50,400
Grade Road Corridor (Re-spread Topsoil)	53,497	Linear Feet	$1.39	$74,361
Decompact Road Area	24.6	Acres	$249.40	$6,135
Remove Chainlink Fence	141,404	Linear Feet	$5.90	$834,284
Haul Chainlink Fence to Metal Recycling (Muskegon, MI)	753	Tons	$12.50	$9,413
Clear and Grub Vegetative Buffer	17.9	Acres	$4,661.55	$83,442
Haul Cleared Vegetation to Landfill (Ravenna, MI)	448	Tons	$13.72	$6,140
Dispose of Cleared Vegetation	448	Tons	$42.17	$18,871
Subtotal Civil Infrastructure				**$1,919,203**
Civil removal costs are a combination of MNDOT unit costs where applicable, RSMeans cost for Muskegon, MI, and industry standards provided to Westwood.				
Structural Infrastructure				
Remove Steel Foundation Posts (Arrays)	65,716	Each	$16.90	$1,110,600
Haul Steel Post to Metal Recycling (Muskegon, MI)	5,914	Tons	$12.50	$73,925
Remove Tracker Racking per String	57,076	Each	$34.34	$1,959,990
Haul Tracker Racking to Metal Recycling (Muskegon, MI)	9,516	Tons	$12.50	$118,950
Subtotal Structural Infrastructure				**$3,263,465**
Steel removal costs were calculated by using RSMeans information for demolition of steel members.				
Hauling calculations are based on the locations of metals recyclers.				
Electrical Collection System				
Remove PV Panels	342,456	Each	$7.66	$2,623,213
Haul PV 95% of Panels to Reseller (Louisville, KY)	14,237	Tons	$129.13	$1,838,424
Haul 5% of PV Panels to Landfill (Ravenna, MI)	749	Tons	$18.21	$13,639
Dispose of PV Panels	749	Tons	$42.17	$31,585
Remove Combiner Boxes	960	Each	$60.00	$57,600
Remove Equipment Skids	40	Each	$1,210.20	$48,408
Remove Steel Foundation Posts (Equipment Skids)	320	Each	$16.90	$5,408
Haul Steel Post to Metal Recycling (Muskegon, MI)	19	Tons	$12.50	$240
Haul Equipment to Transformer Disposal (Baldwin, MI)	40	Each	$280.27	$11,211
Remove SCADA Equipment	1	Each	$2,000.00	$2,000
Remove DC Collector System Cables (copper)	181	Per MW	$2,000.00	$362,000
Remove Underground (AC) Collector System Cables & Fiber Optic	40	Locations	$400.00	$16,000
Load and Haul Cables for Recycling	25	Tons	$14.38	$360
Dispose of Fiber Optic Cables	0.25	Tons	$42.17	$11
Subtotal Electrical Collection				**$5,010,098**
Electrical removal costs of PV Panels and Combiner Boxes were based industry standard installation rates. Equipment pads, MV Equipment, and SCADA Equipment removal cost are based on removal of equipment, concrete pads, and conduits using a truck mounted crane and RSMeans information on crew production rates.				

Transmission System				
Remove Overhead Cables	856.0	Feet	$4.23	$3,621
Loadout Overhead Cables	17.1	Tons	$25.06	$429
Haul Overhead Cables to Metals Recycling (Muskegon, MI)	17.1	Tons	$12.50	$214
Remove Insulators and Gangs	6	Each	$577.48	$3,465
Remove and Load Timber Transmission Poles	2	Each	$946.11	$1,892
Haul Timber Poles to Landfill (Ravenna, MI)	2	Each	$350.34	$701
Backfill Pole Locations	11.0	Cubic Yards	$42.12	$463
Erosion and Sediment Controls	214	LF	$3.44	$736
Subtotal Transmission System				**$11,520**
Substation				
Disassemble and Remove Main Power Transformer(s)	1	Each	$10,000.00	$10,000
Haul Transformer(s) Offsite	1	Each	$1,121.08	$1,121
Haul Transformer Oil Offsite	12,830	Gallons	$0.11	$1,438
Dispose of Transformer (Including Oil) (Salvage Value)	1	Each	$0.00	$0
Excavate Around Transformer Foundation(s)	1	Each	$1,522.50	$1,523
Remove Complete Transformer Foundation(s)	83	Cubic Yards	$113.89	$9,453
Backfill Excavation Area from Transformer Foundation Removal	168	Cubic Yards	$42.12	$7,076
Haul Concrete (Foundations Transformer, Switch Gear, etc.)	168	Tons	$15.64	$2,628
Dispose of Concrete from Transformer Foundation	168	Tons	$42.17	$7,085
Demolish Substation Site Improvements (fences, etc)	1	LS	$3,500.00	$3,500
Demolish Control Building and Foundation	1	LS	$12,000.00	$12,000
Remove Medium/High Voltage Equipment	1	LS	$3,500.00	$3,500
Remove Structural Steel Substation Frame	1	LS	$3,500.00	$3,500
Remove Copper Ground Grid	1	LS	$8,975.07	$8,975
Load Copper Wire	20,000	Feet	$0.55	$11,000
Haul Copper Wire to Recycling	6.5	Tons	$12.50	$81
Haul - Demolition Materials, Removed Equipment & Structural Steel	10	Tons	$12.50	$125
Dispose of Demolition Materials & Removed Equipment	10	Tons	$42.17	$422
Remove and Load Gravel Surfacing from Substation Site	3,693	Cubic Yards (BV)	$2.44	$9,011
Haul Gravel Removed from Substation Site	4,616	Cubic Yards (LV)	$22.86	$105,522
Dispose of Gravel from Substation Site (Use as Daily Cover)	5,982	Tons	$0.00	$0
Grade Substation Site	149,585	SF	$0.06	$8,975
Erosion and Sediment Control at Substation Site	387	LF	$3.44	$1,331
Decompact Substation Site (Subsoiling)	3.4	Acres	$249.40	$848
Till Substation to Agricultural Condition	3.4	Acres	$216.22	$735
Subtotal Substation				**$209,848**
Battery Energy Storage System (BESS)				
Train Crew in Safety and Hazmat	1	LS	$5,000.00	$5,000
Disconnect Battery Storage Containers	160	Each	$1,571.20	$251,392
Remove and Pack Batteries from Containers for Recycling	160	Each	$2,420.39	$387,262
Remove and Load Tesla MegaPacks	160	Each	$1,489.67	$238,346
Haul Battery Containers for Resale/Recycling (Sparks, NV)	160	Each	$6,115.00	$978,400
Haul Storage Containers to Metal Recycler (Muskegon, MI)	160	Each	$261.16	$41,786
Remove HVAC system/Auxiliary Equipment	160	Each	$196.40	$31,424
Haul Auxiliary Equipment/Racking to Metal Recycler (Muskegon, MI)	11	Tons	$12.50	$138
Remove Equipment Skids	4	Each	$1,210.20	$4,841
Haul Inverters/Transformers to Transformer Disposal	4	Each	$280.27	$1,121
Remove Steel Foundation Posts (Storage Containers and Skids)	32	Each	$16.90	$541
Haul Steel Posts to Metal Recycler (Muskegon, MI)	2	Tons	$12.50	$25
Removal of DC Collector System Cables (copper)	1,600	LF	$1.80	$2,880
Removal of Underground AC Collector Cables (aluminum)	9,600	LF	$1.80	$17,280
Load and Haul Cables for Recycling	14	Tons	$14.38	$201
Remove and Load Gravel Surfacing from BESS Site (Including Roads)	9,047	Cubic Yard (BV)	$2.44	$22,075
Haul Gravel Removed from BESS Site	11,309	Cubic Yard (LV)	$22.86	$258,524
Dispose of Gravel from BESS Site (Use as Daily Cover)	14,656	Tons	$0.00	$0
Erosion and Sediment Controls at BESS Site	1,211	LF	$3.44	$4,166
Decompact BESS Site	8	Acres	$249.40	$2,095
Grade BESS Site	366,402	SF	$0.06	$21,984
Revegetate BESS to Permanent Condition	8	Acres	$1,322.93	$11,113
Subtotal BESS				**$2,295,045**

O&M Building				
Demolish O&M Building	24,000	Cubic Feet	$0.41	$9,840
Remove and Load O&M Building Foundation	178	Cubic Yards	$11.93	$2,123
Haul Concrete (O&M Building Foundation)	361	Tons	$15.64	$5,646
Dispose of Concrete from O&M Building Foundation	361	Tons	$42.17	$15,223
Demolish O&M Site Improvements (fences, etc)	326	Linear Feet	$5.90	$1,923
Cap and Abandon Well	1	Lump Sum	$1,000.00	$1,000
Remove & Restore Septic and Drainfield area	1	Lump Sum	$3,000.00	$3,000
Dispose of O&M Building Demolition and Removed Site Improvements	1	Lump Sum	$2,500.00	$2,500
Remove and Load Gravel Surfacing of O&M Site	128	Cubic Yards (BV)	$2.44	$312
Haul Gravel Removed from O&M Site	160	Cubic Yards (LV)	$22.86	$3,658
Dispose of Gravel from O&M Site	207	Tons	$0.00	$0
Decompact O&M Building Site	0.1	Acres	$350.00	$35
Grade O&M Building Site	1	LS	$2,575.42	$2,575
Erosion and Sediment Control at O&M Building Site	163	Linear Feet	$3.44	$561
Till O&M Site to Agricultural Condition	0.1	Acres	$216.22	$22
Subtotal O&M Building				**$48,418**
Site Restoration				
Stabilized Construction Entrance	23	Each	$2,000.00	$46,000
Perimeter Controls (Erosion and Sediment Control)	70,702	Linear Feet	$3.44	$243,215
Permanent Seeding on Roadway Areas	24.6	Acres	$1,322.93	$32,544
Till Array Areas to Agricultural Condition	966	Acres	$216.22	$208,877
Subtotal Site Restoration				**$530,636**
Decommissioning Consultant - Project Management				
Project Manager	30	Weeks	$3,749.00	$112,470
Superintendent (half-time)	30	Weeks	$1,762.50	$52,875
Field Engineer (half-time)	30	Weeks	$1,634.50	$49,035
Clerk (half-time)	30	Weeks	$375.00	$11,250
Subtotal Project Management				**$225,630**
Standard industry weekly rates from RSMeans.				
Subtotal Demolition/Removals				**$14,474,064**
Salvage				
Fencing (Chain Link)	753	Tons	$251.74	$189,560
Steel Posts	4,732	Tons	$251.74	$1,191,234
Module Racking	9,516	Tons	$251.74	$2,395,558
PV Modules	325,333	Each	$31.80	$10,345,596
Transformers and Inverters	356,352	Pounds	$0.38	$135,414
Substation Transformers (Core and Coils)	327,162	Pounds	$0.38	$124,322
Substation Transformers (Tanks and Fittings)	110	Tons	$251.74	$27,691
Transformers (Oil)	43,230	Gallons	$0.70	$30,261
Substation Ground Grid (Copper)	13,000	Pounds	$3.35	$43,550
Lithium-Ion Battery Resale	600,000,000	Wh	$0.08	$48,000,000
DC Collection Lines (Copper)	42,400	Pounds	$1.42	$60,208
AC Collection Lines (Aluminum)	7,500	Pounds	$0.92	$6,900
Ground Conductor Lines (Copper)	762	Pounds	$1.42	$1,082
Transmission Lines (Steel)	6	Tons	$289.17	$1,851
Transmission Lines (Aluminum)	21,355	Pounds	$0.92	$19,647
Subtotal Salvage				**$62,572,873**
Salvage values are a combination of the following factors; current market metal salvage prices, current secondary market for solar panel				
Total Demolition Minus Salvage				**($48,098,900)**

Notes:

1. Prices used in analysis are estimated based on research of current average costs and salvage values.
2. Prices provided are estimates and may fluctuate over the life of the project.
3. Contractor means and methods may vary and price will be affected by these.

Cost Estimate Assumptions

To develop a cost estimate for the decommissioning of the Lakeside Solar, LLC, Westwood engineers made the following assumptions and used the following pricing references. Costs were estimated based on current pricing, technology, and regulatory requirements. The assumptions are listed in order from top to bottom of the estimate spreadsheet. When publicly available bid prices bid summaries were not available for particular work items, we developed time- and material-based estimates considering composition of work crews and equipment and material required. While materials may have a salvage value at the end of the Project life, the construction activity costs and the hauling/freight costs, are separated from the disposal costs or salvage value to make revisions to salvage values more transparent.

1. Project quantities are based on Lakeside Solar Project Civil Permitting Plans, dated 06/13/2025.
2. A project of this size and complexity requires a half-time project manager with full-time support staff.
3. RS Means pricing was used for the Muskegon, MI region for timeframe Year 2025, Quarter 2.
4. Common labor will be used for the majority of tasks, supplemented by electricians, steel workers, and equipment operators where labor rules may require. The labor rates reflect union labor rates.
5. Mobilization was estimated at approximately 7% of total cost of other items.
6. Permit applications will require the preparation of a SWPPP and an SPCC Plan.
7. Road gravel removal was estimated on a time and material basis. Since the material will not remain on-site, a hauling cost is added to the removal cost. Clean aggregate can typically be used as “daily cover” at landfills without incurring a disposal cost. The road gravel may also be used to fortify local driveways and roads, lowering hauling costs but incurring placing and compaction costs. The hauling costs to a landfill represents an upper limit to costs for disposal of the road gravel.
8. The selected disposal facility (Muskegon County Solid Waste) is located in Ravenna, MI, approximately 31 miles from the Project site. Hauling costs to the landfill are estimated to be $13.72 per ton.
9. Erosion and sediment control along road reflects the cost of silt fences on the downgradient side of the proposed roads. As such, the length of controls has been estimated to be approximately 50% of the road length.
10. Topsoil is required to be stockpiled on-site during construction, so no topsoil replacement is expected to replace the road aggregate. Subsoiling cost to decompact roadway areas is estimated as $249.40 per acre, and tilling to an agriculture-ready condition is estimated as $216.22 per acre.
11. The selected metal recycling facility (PANDOS Muskegon Recycling Center) is located in Muskegon, MI, approximately 21.2 miles from the Project site. Hauling costs to the recycling facility are approximately $0.59 per ton mile, or $12.5 per ton.
12. Tracker foundation posts are lightweight “I” beam sections installed with a specialized piece of equipment and can be removed with a standard backhoe with an attachment for gripping the piles. We estimate crew productivity at 240 posts per day, resulting in a per post cost of approximately $16.90. The posts weigh approximately 150 pounds each.
13. It is assumed that the racking structures weigh approximately 15 pounds per linear foot of array. Each solar panel has a width of 47.87 inches. The Project will have approximately 342,456 modules and 1,268,827 feet of array. The arrays are made of steel pipes; a crew with hand tools can

disassemble and cut the pieces to sizes for recycling at a rate of about 1800 pounds per person per hour, or about $205.97 per ton.

14. The solar panels for this Project measure approximately 3.99 feet by 7.55 feet and weigh 87.52 pounds. They can easily be disconnected, removed, and packed by a three-person crew at a rate we estimate at 18 panels per hour.
15. The equipment skids will consist of inverter(s), a transformer, and a panel on a metal frame approximately 19 feet long by 8 feet wide by 8 feet 6 inches tall. The skids weigh approximately 41,200 pounds and can be disconnected by a crew of electricians. They must be lifted by a mobile crane for transport to the recycler. They contain copper or aluminum windings.
16. The transformers contain copper windings that have significant salvage value. They are typically oil filled, but most transformer recyclers will accept the transformers with oil. The estimated costs include removal of metal frame and conduits feeding the equipment.
17. Medium voltage (MV) equipment and SCADA equipment are mounted on the same equipment skids as the inverters and transformers, and they are enclosed in weatherproof cabinets. Their size requires light equipment to remove them. The costs for the removal of the pile foundations are included in the "Remove Steel Foundation Posts" estimate.
18. The underground collector system cables are placed in trenches with a minimum of 18 inches of cover. Several cables/circuits are placed side by side in each trench. The conduits and cables can be removed by trenching.
19. Perimeter control pricing is based on silt fence installation around downgradient sides of the project perimeter.
20. Metal salvage prices (steel, aluminum, copper) are based on June 2025 quotes from www.scrapmonster.com for the Midwest Region. Posted prices are three months old. These prices are based on delivery to the recycling facility with the material prepared to meet size, thickness, cleanliness, and other specifications.
21. A reduction of 25% has been taken from all pricing obtained from www.scrapmonster.com to reflect the processing by the contractor to meet the specifications.
22. The salvage value for steel uses pricing from the Midwest United States at $370 per metric ton, or $335.66 for U.S. ton.
23. Solar module salvage values are shown in current values, assuming near-new conditions for the first few years of operations. Pricing for used panels has been discounted from the average resale price of used panels, as published in EnergyBin's 2024 "Module Price Index." Module values will decline over time as a function of loss of output and age.
24. There is an active market for reselling and recycling electrical transformers and inverters with several national companies specializing in recycling. However, we have assumed that the electrical equipment will be obsolete at the time of decommissioning, so we have based the pricing on a percentage of the weight that reflects the copper windings that can be salvaged. Pricing was used for Copper Transformer Scrap for the Midwest United States, at $0.5 per pound.
25. The collection lines are priced assuming copper conductor wire for the direct current circuits and aluminum wire for the alternating current circuits. The prices reflect a reduced yield of copper or aluminum resulting from the stripping of insulation and other materials from the wire prior to recycling. The estimate uses the Midwest Region prices of #2 insulated copper wire with a 50% recovery rate ($1.89 /pound) and E.C. Aluminum Wire ($1.22 /pound).

26. Care to prevent damage and breakage of equipment, PV modules, inverters, capacitors, and SCADA must be exercised, but removal assumes unskilled common labor under supervision.

Glare Analysis Memorandum

HMMH
700 District Ave, Suite 800
Burlington, Massachusetts 01803
781.229.0707
www.hmmh.com

MEMORANDUM

To: Lakeside Solar, LLC - c/o Amber Miller

From: Philip DeVita, HMMH

Date: February 11, 2021

Subject: Lakeside Solar, LLC Glare Analysis

Reference: HMMH Job No.309700.027

Introduction

Harris Miller Miller & Hanson Inc. (HMMH) completed a glare analysis on behalf of Lakeside Solar, LLC for the proposed up to 200 MW solar project located just northwest of Montague, Michigan to comply with the local glare ordinance 16.06 MM.9. The analysis evaluated potential glare from the proposed project on sensitive roadway observer locations on nearby Chase Road, Eilers Road, Fruitville Road, and Williams Road along with Ottiger Airport located approximately 2.75 miles east of the proposed project location. **Figure 1** shows the project location relative to the nearby roadways and airport.

HMMH used the latest version of the ForgeSolar GlareGauge solar glare tool, formerly known as the Solar Glare Hazard Analysis Tool (SGHAT) developed by Sandia National Laboratories to analyze potential glare at the roadway locations. GlareGauge is used to assess glare impacts at airport observation locations from solar photovoltaic (PV) projects and is currently the best tool available for analyzing solar glare impacts from PV projects and also has the ability to simulate glare to observers along a continuous roadway segment. In lieu of specific county standards for glare, model results were reviewed and compared relative to the Federal Aviation Administration's (FAA) Interim Policy of Solar Projects at Airports[1], specifically standards for pilots on final approach to address ordinance 16.06 MM.9.

[1] https://www.federalregister.gov/documents/2013/10/23/2013-24729/interim-policy-faa-review-of-solar-energy-system-projects-on-federally-obligated-airports

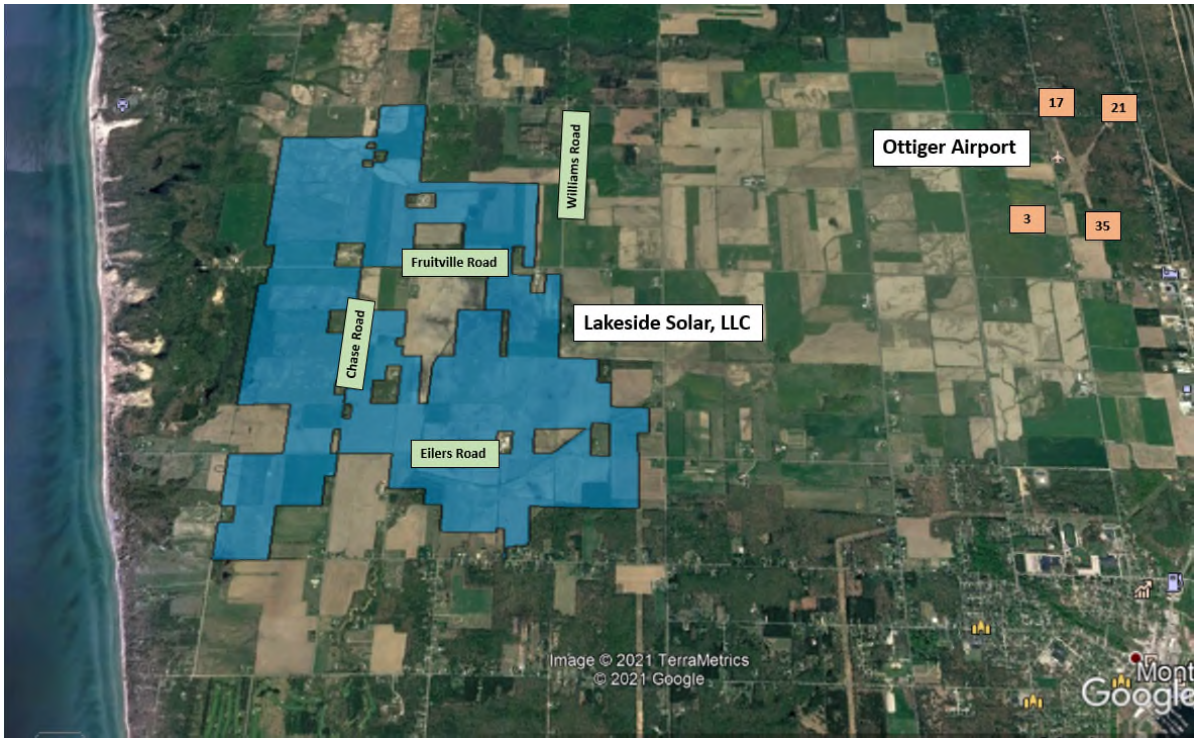


Figure 1. Lakeside Solar, LLC Relative to Ottiger Airport and Nearby Roadways

Design Parameters

In deploying the model, we selected the footprint of the solar project area of the Lakeside Solar, LLC solar array on the GlareGauge map interface and input the project design parameters provided by National Grid Renewables as shown in **Table 1.**

Table 1. Lakeside Solar, LLC Proposed Project Design Parameters

Solar System	*System*	*Orientation*	*Tilt Angle*	*Panel Height (AGL)*
Lakeside Solar, LLC Array	***Single Axis***	***180°***	***60°[1]***	***15 feet***

The Project is proposing up to 200 MW single axis tracking system with a tracking orientation north to south and a maximum tracking angle of 60°. The project will be located on the ground, and a height of up to 15 feet above ground level was assessed for the modules.

Airport Sensitive Receptors and Pilot Analysis

To assess airport sensitive receptors, the FAA requires an evaluation of potential glare for pilots on final approach and at the air traffic control tower (ATCT). For the pilot analysis, we selected the runway threshold and a second point away from the runway to represent the direction of the flight path. GlareGauge automatically evaluates glare along the entire distance of the flight path at a 3-degree glide slope out to two miles. There is no ATCT at Ottiger Airport; therefore, the analysis only included evaluating impacts to aircraft on approach to each runway end.

FAA Jurisdiction and Standards for Measuring Ocular Impact

The FAA published an Interim Policy for Solar Projects at Airports on October 23, 2013. The policy clarifies the FAA's jurisdiction in reviewing solar projects and the standards it uses to determine if a project will result in a negative glare impact to airspace safety.

Relative to its jurisdiction, the FAA affirmed that it has jurisdiction to regulate potential glare impacts as part of its responsibilities under Federal Aviation Regulations (FAR) Part 77 to any solar project proposed on the property of a Federally-obligated airport, which includes most airports in the U.S. The FAA also clarified that it does not have jurisdiction to regulate potential glare from projects located on non-airport land. However, as stated in the Policy, "the FAA urges proponents of off-airport solar-installations to voluntarily implement the provisions in this policy.

The Policy also describes the standards for measuring ocular impact:

To obtain FAA approval and 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 Air Traffic Control Tower cab, and (2) no potential for glare or "low potential for after-image" (shown in green) along the final approach path.

Table 2 presents the airport sensitive receptors that must be evaluated, the potential results presented by the Glaregauge model and whether the result complies with the FAA ocular hazard standard presented in the Policy.

Table 2. Levels of Glare and Compliance with FAA Policy

Airport Sensitive Receptor	Level of Glare	Color Result	Compliance with FAA Policy
ATCT Cab	No glare	None	Yes
	Low Potential for After-Image	Green	No
	Potential for After-Image	Yellow	No
	Potential for Permanent Eye Damage	Red	No
Aircraft along final approach path	No glare	None	Yes
	Low Potential for After-Image	Green	Yes
	Potential for After-Image	Yellow	No
	Potential for Permanent Eye Damage	Red	No

Any glare recorded on the ATCT is not compliant with FAA policy and will not receive a "no objection" determination from the FAA. Measurement of *low potential for after-image* or "Green" is acceptable for aircraft on final approach but greater levels (indicated in yellow and red) are not allowed.

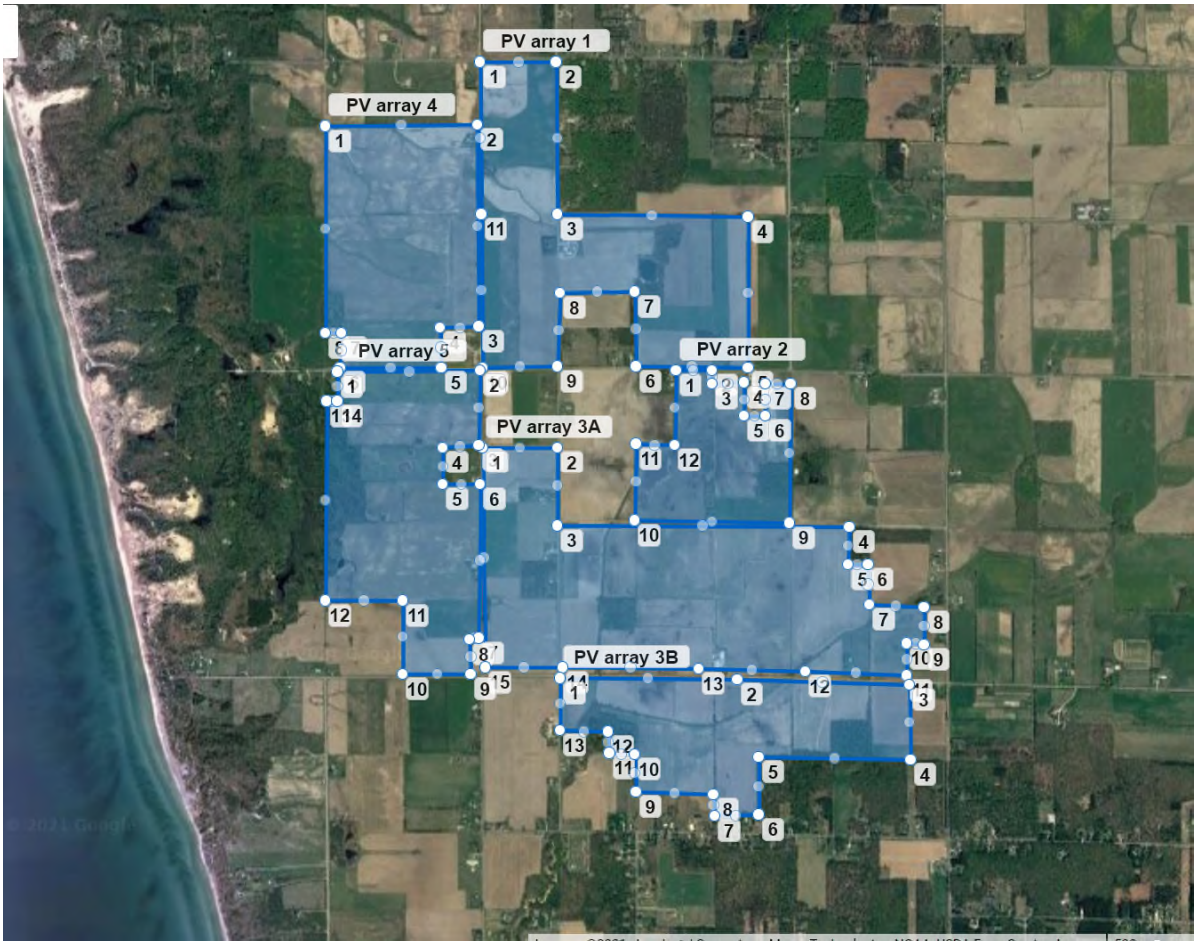
Summary of Results

HMMH analyzed the potential for the Lakeside Solar, LLC Project site to produce glare on pilots on final approach to Ottiger Airport. Based on the design and layout, GlareGauge modeling showed:

- Runway End 17 and 35: No glare detected at any observation points along the flight path; proposed design meets the FAA Standard for aircraft on final approach
- Runway End 03 and 21: No glare detected at any observation points along the flight path; proposed design meets the FAA Standard for aircraft on final approach
- ATCT: no analysis conducted, no ATCT at the airport.

Results in Detail

To accurately model the proposed project, HMMH outlined the project array on the model's interactive map, and the GlareGauge tool analyzed the potential glare impact from the project site. **Figure 2** shows the layout of the project area as input into the model for the northern and southern portions, respectively.



Source: GlareGauge

Figure 2. Lakeside Solar, LLC Array as Input into the GlareGauge Model

HMMH input the specifications of the array including a single axis tracking system with a north-south orientation, maximum tracking angle of 60° and a panel height of 15 feet above ground level. A smooth panel surface without any anti-reflective coating was assumed to provide maximum flexibility in module selection. Modeling was then undertaken for the applicable sensitive receptors required by FAA: the pilots in aircraft along final descent to each runway end. The modeling result output sheets are provided as **Attachment A**.

ATCT

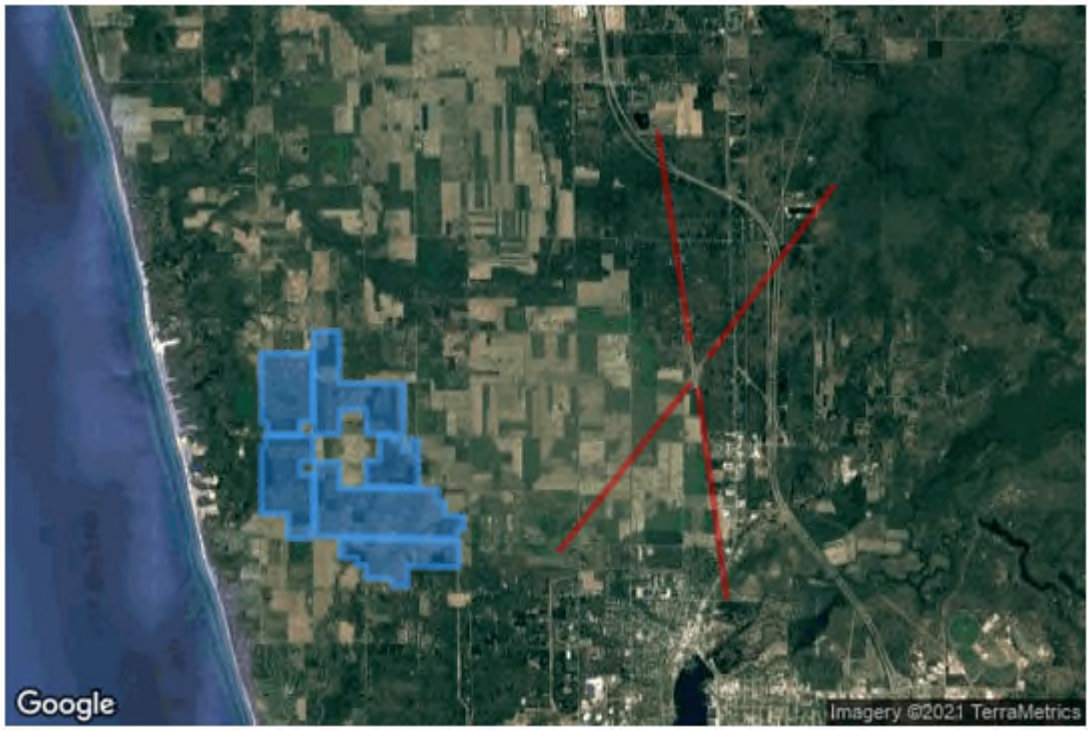
For the Air Traffic Control Tower (ATCT) analysis, no analysis was conducted as Ottiger Airport does not have an ATCT.

Arriving Aircraft

To analyze arriving aircraft, HMMH selected locational information associated with each runway individually and generated associated results to evaluate the potential impacts of the proposed project on that runway. Given that there is two runways and four runway ends at the airport; modeling was conducted separately for each runway end.

To model a runway approach, a point was selected at the centerline on the runway threshold which is located near the runway end. A second point was selected away from the runway to represent the orientation of the aircraft descent (or glide) path. The model automatically plots the glide path out two miles from the runway end and evaluates potential for glare along the entire glide path. Given that Ottiger Airport has four runway ends each; the model assessed the potential for glare along each of the four aircraft flight paths landing at

the airport. The model automatically plots the location and height above ground of each observation point along the glide path assuming a 3-degree glide slope for the approach. In the model's flight path window, HMMH checked the "consider pilot visibility from cockpit" box and kept the default azimuth-viewing angle of 50° so that the model would not register glare that the pilot would not see from behind the aircraft. The default downward viewing angle of 30° was used to eliminate false glare results from below the aircraft. **Figure 3** shows the flight path analyzed by the model for each runway.



Source: GlareGauge

Figure 3. Flight Path Analyzed by GlareGauge

The latest version of the model now shows component results in time for the aircraft along a continuous route. **Table 3** presents the GlareGauge modeling results for each runway in terms of predicted minutes of green, yellow, or red glare at Ottiger Airport.

As shown in **Table 3,** no glare was detected by the model for any of the runway approaches for the single axis tracking system. The no glare result on aircraft on approach to each runway comply with the FAA's ocular impact standard as published in the Federal Register on October 23, 2013 and shown in **Table 2**.

Table 3 – GlareGauge Results (in minutes per year) for the Lakeside Solar, LLC Project near Ottiger Airport

Site	Fixed/Tracker System	(orientation/tilt)	ATCT	RWY 17	RWY 35	RWY 3	RWY 21	Comply with FAA Thresholds
Lakeside Solar, LLC	Single Axis Tracker	180° (max tracker of 60°)	N/A	0	0	0	0	Yes

Notes:

G (Green) = Low Potential for Temporary After-Image
Y (Yellow) = Potential for Temporary After-Image
R (Red) = Potential for Permanent Eye-Damage

N/A = Not applicable, no analysis conducted.

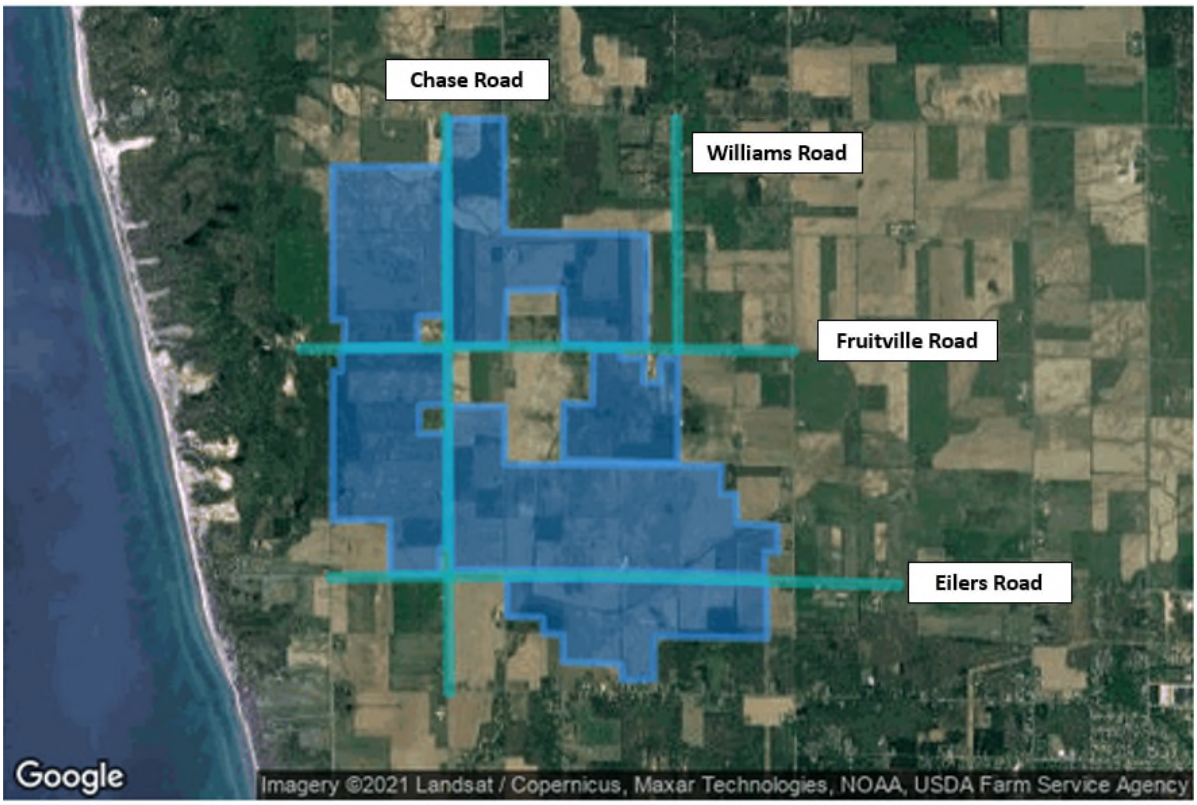
Therefore, there is no evidence based upon our modeling of the potential array locations that glare from the Project will cause an adverse impact for pilots on final approach to Ottiger Airport runways and satisfies the requirements in local glare Ordinance 16.06 MM.9.

Summary of Results for Nearby Roadway Observation Locations

HMMH analyzed the potential for the Lakeside Solar, LLC Project to produce glare at nearby roadway observation locations using GlareGauge. As discussed, the GlareGauge model is currently the best tool available for analyzing solar glare impacts from PV projects and is able to simulate glare from proposed solar PV projects to observers along a continuous roadway segment.

Methodology

For the roadway analysis, the closest nearby main roadways of Chase Road, Eilers Road, Fruitville Road, and Williams Road were chosen as they traverse near the project boundary's. **Figure 4** shows the Project array boundaries and roadway segment locations from the GlareGauge model selected for analysis.

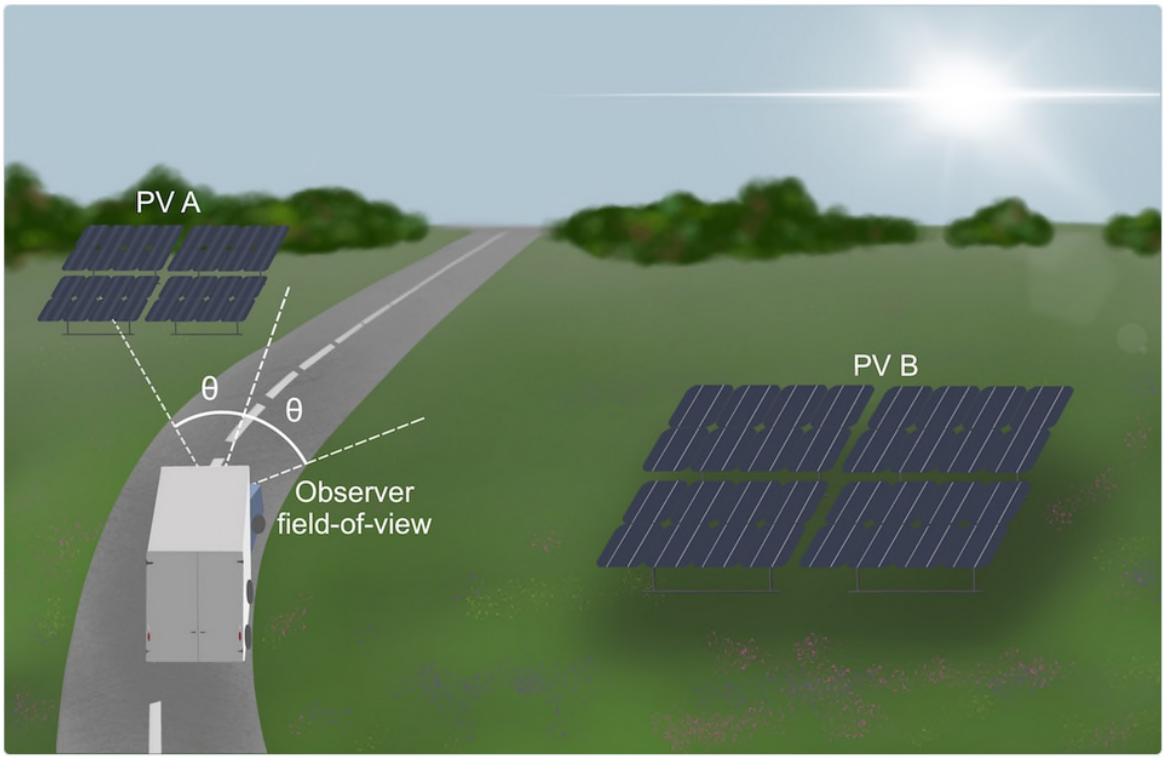


Source: GlareGauge

Figure 4 Nearby Roadway Segments Analyzed in GlareGauge

HMMH input the same specifications of the project array design parameters as described above in **Table 1**. A smooth panel surface without any anti-reflective coating was assumed to provide maximum flexibility in module selection.

The model was run for a full calendar year to calculate information for every sun position scenario over a typical year and the model assessed potential for glare at one-minute intervals. A viewing height of 6 feet above ground level was chosen as the height of the roadway observer as well as assuming two-way viewing meaning the observers travel along the route in both directions. A viewer default angle of 50° was chosen as the field of view where the observer can see 50 degrees to the left and right for a total field of view of 100°. **Figure 5** shows a depiction of the route field of view in GlareGauge.



*Route receptor field-of-view is defined by view angle (theta) to left and right. Default FOV is 100° (i.e. 2 * 50° view angle).*

Source: GlareGauge

Figure 5. Route Receptor Field of View in GlareGauge

A summary of the model output is presented in **Table 4** for the nearby roadway observer segments. The modeling result output sheets for the roadway locations are provided as **Attachment B** and denoted as Chase Road, Eilers Road, Fruitville Road, and Williams Road in the model output. As shown in **Table 4**, no glare was detected by the model for all of the PV locations to the nearby roadway observer locations.

Table 4 – GlareGauge Results (in minutes per year) for the Lakeside Solar, LLC Project for Nearby Roadway Segments

Site	Fixed/Tracker System	(orientation/tilt)	Chase Road	Williams Road	Fruitville Road	Eilers Road	Comply with FAA Thresholds for Pilots
Lakeside Solar, LLC	Single Axis Tracker	180° (max tracker of 60°)	0	0	0	0	Yes

Notes:

G (Green) = Low Potential for Temporary After-Image
Y (Yellow) = Potential for Temporary After-Image
R (Red) = Potential for Permanent Eye-Damage

N/A = Not applicable, no analysis conducted.

As discussed above, measurement of no or Low Potential for After-Image or Green is acceptable for aircraft on final approach but greater levels (indicated in yellow and red) are not allowed.

Any potential solar glare to the vehicles traveling along the nearby roadways is very similar or representative to aircraft along final approach in the FAA standards. Therefore in lieu of county specific glare standards, the standards of acceptable ocular impact as contained in the FAA policy for aircraft on final approach were applied to the vehicles traveling along these nearby roadway sections. It should be noted that the GlareGauge model does not consider potential obstacles associated with the landscape such as trees, buildings or hills which could block a direct view of the solar panels to the nearby observer locations.

Based on the design and layout of the Lakeside Solar, LLC Project as modeled, the GlareGauge modeling showed no glare detected at nearby roadway points, accordingly, the proposed design locations for these arrays meets the FAA Standard for aircraft at each modeled observer location. *Therefore, there is no evidence based upon our modeling of the potential array locations that glare from the Project will cause an adverse impact for drivers along analyzed along nearby roadway segments and satisfies the requirements in local glare Ordinance 16.06 MM.9.*

Conclusions

Harris Miller Miller & Hanson Inc. (HMMH) completed a glare analysis on behalf of Lakeside Solar, LLC for the proposed solar project located just northwest of Montague, Michigan to comply with the local glare ordinance 16.06 MM.9. The analysis evaluated potential glare from the proposed project on sensitive roadway observer locations on nearby Chase Road, Eilers Road, Fruitville Road, and Williams Road along with Ottiger Airport located approximately 2.75 miles east of the proposed project location.

GlareGauge model results were compared to the FAA's ocular hazard standard. The model results provided in **Attachment A** show that for aircraft on final approach to Runways 17, 35, 3, and 21, GlareGauge model results for the project design result in no glare detected along the approach to each runway end. *These results comply with the FAA standards described in the Interim Solar Policy and satisfies the requirements in local glare Ordinance 16.06 MM.9.*

In addition to the airport observation locations, HMMH analyzed the potential for the Lakeside Solar Project to produce glare at nearby roadway observation locations (Chase Road, Eilers Road, Fruitville Road, and Williams Road) using GlareGauge. GlareGauge is used to assess glare impacts at airport observation locations from solar photovoltaic (PV) projects and is currently the best tool available for analyzing solar glare impacts from PV projects and has the ability to simulate glare to observers along a continuous roadway segment. **Attachment B** includes the Glaregauge modeling results for the nearby roadway segments. Based on the design and layout of the Lakeside Solar Project, the GlareGauge modeling showed no glare detected at any nearby roadway observation segments, accordingly, the proposed design meets the FAA Standard for aircraft at each modeled observer location.

Therefore, there is no evidence based upon our modeling that glare from the Project will cause an adverse impact for pilots on final approach to Ottiger Airport and drivers along portions of Chase Road, Eilers Road, Fruitville Road and Williams Road and satisfies the requirements in local glare Ordinance 16.06 MM.9.

Attachment A

GlareGauge Modeling Results – Lakeside Solar, LLC – Ottiger Airport

FORGESOLAR GLARE ANALYSIS

Project: **Lakeside Solar, LLC**
Near Montague, MI

Site configuration: **Lakeside Solar LLC Ottiger Airport**
Analysis conducted by Phil DeVita (pdevita@hmmh.com) at 18:08 on 09 Feb, 2021.

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
2-mile flight path(s)	PASS	Flight path receptor(s) do not receive yellow glare
ATCT(s)	N/A	No ATCT receptors designated

Default glare analysis parameters and observer eye characteristics (for reference only):

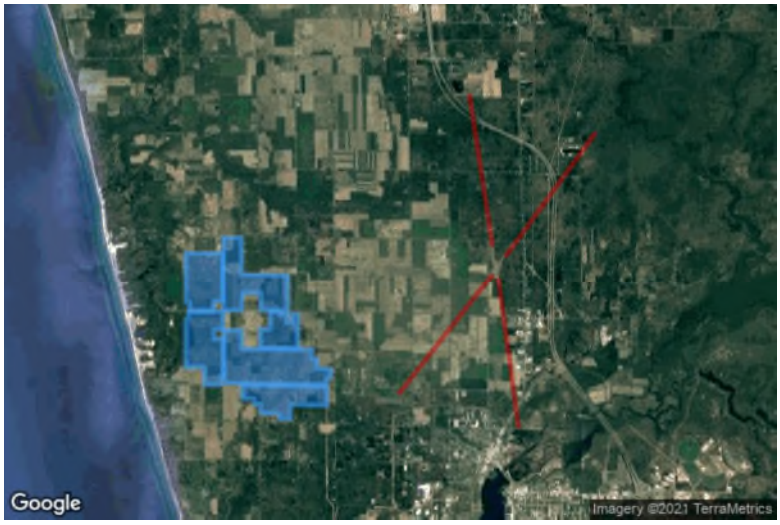
- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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

SITE CONFIGURATION

Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 49344.8830



PV Array(s)

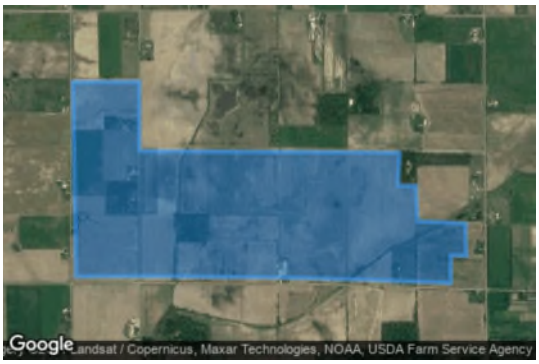
Name: PV array 1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.459208	-86.426761	691.29	15.00	706.29
2	43.459235	-86.421858	657.18	15.00	672.18
3	43.452132	-86.421815	663.52	15.00	678.52
4	43.451977	-86.409541	668.74	15.00	683.74
5	43.444936	-86.409539	654.22	15.00	669.22
6	43.445013	-86.416706	652.31	15.00	667.31
7	43.448503	-86.416803	656.84	15.00	671.84
8	43.448425	-86.421620	658.73	15.00	673.73
9	43.444998	-86.421835	663.69	15.00	678.69
10	43.444959	-86.426646	687.70	15.00	702.70
11	43.452107	-86.426733	685.88	15.00	700.88

Name: PV array 2
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

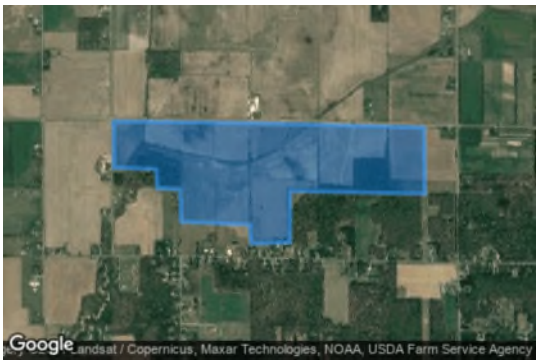
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.444828	-86.414177	650.43	15.00	665.43
2	43.444813	-86.411838	653.08	15.00	668.08
3	43.444213	-86.411806	652.63	15.00	667.63
4	43.444236	-86.409756	651.56	15.00	666.56
5	43.442692	-86.409773	652.48	15.00	667.49
6	43.442692	-86.408389	652.36	15.00	667.36
7	43.444218	-86.408400	655.79	15.00	670.79
8	43.444218	-86.406813	653.50	15.00	668.50
9	43.437637	-86.406841	652.21	15.00	667.21
10	43.437770	-86.416785	649.05	15.00	664.05
11	43.441377	-86.416747	646.81	15.00	661.81
12	43.441315	-86.414258	647.49	15.00	662.49

Name: PV array 3A
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.441190	-86.426647	678.80	15.00	693.80
2	43.441190	-86.421830	655.12	15.00	670.12
3	43.437544	-86.421830	649.70	15.00	664.71
4	43.437450	-86.402990	655.74	15.00	670.74
5	43.435705	-86.403119	654.45	15.00	669.46
6	43.435705	-86.401831	658.56	15.00	673.56
7	43.433836	-86.401703	660.99	15.00	675.99
8	43.433711	-86.398226	658.97	15.00	673.97
9	43.432000	-86.398166	660.38	15.00	675.38
10	43.432031	-86.399282	657.18	15.00	672.18
11	43.430563	-86.399287	659.28	15.00	674.28
12	43.430751	-86.405843	650.87	15.00	665.87
13	43.430865	-86.412682	648.51	15.00	663.51
14	43.430924	-86.421491	648.12	15.00	663.12
15	43.430913	-86.426415	650.06	15.00	665.06

Name: PV array 3B
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.430452	-86.421641	647.38	15.00	662.38
2	43.430331	-86.410220	651.26	15.00	666.26
3	43.430117	-86.399143	658.93	15.00	673.93
4	43.426611	-86.399100	657.54	15.00	672.55
5	43.426758	-86.408860	649.15	15.00	664.15
6	43.424039	-86.408860	658.34	15.00	673.34
7	43.423977	-86.411693	660.53	15.00	675.54
8	43.424974	-86.411779	658.59	15.00	673.59
9	43.425130	-86.416757	651.86	15.00	666.86
10	43.426844	-86.416843	654.69	15.00	669.69
11	43.426906	-86.418473	655.26	15.00	670.26
12	43.427904	-86.418559	697.60	15.00	712.60
13	43.427989	-86.421617	650.14	15.00	665.15

Name: PV array 4
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.456248	-86.436742	633.92	15.00	648.92
2	43.456279	-86.426972	686.08	15.00	701.08
3	43.446857	-86.426900	686.35	15.00	701.35
4	43.446826	-86.429325	691.65	15.00	706.65
5	43.444972	-86.429303	693.50	15.00	708.50
6	43.444941	-86.435758	665.92	15.00	680.93
7	43.446593	-86.435672	651.04	15.00	666.04
8	43.446593	-86.436702	650.77	15.00	665.77

Name: PV array 5
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.444726	-86.435944	669.31	15.00	684.31
2	43.444788	-86.426803	688.81	15.00	703.81
3	43.441301	-86.426855	680.97	15.00	695.97
4	43.441208	-86.429216	693.09	15.00	708.09
5	43.439483	-86.429178	677.90	15.00	692.90
6	43.439483	-86.426818	670.64	15.00	685.65
7	43.432290	-86.426830	658.24	15.00	673.24
8	43.432243	-86.427431	669.90	15.00	684.91
9	43.430607	-86.427398	654.92	15.00	669.92
10	43.430615	-86.431744	672.23	15.00	687.23
11	43.434042	-86.431786	669.17	15.00	684.17
12	43.434011	-86.436743	675.90	15.00	690.90
13	43.443383	-86.436695	713.00	15.00	728.00
14	43.443383	-86.435987	721.86	15.00	736.86

Flight Path Receptor(s)

Name: RWY 03
Description:
Threshold height: 50 ft
Direction: 38.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	43.451875	-86.355158	676.19	50.00	726.19
Two-mile	43.429088	-86.379701	659.27	620.37	1279.64

Name: RWY 17
Description:
Threshold height: 50 ft
Direction: 171.3°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	43.458007	-86.355093	680.68	50.00	730.68
Two-mile	43.486589	-86.361111	674.83	609.31	1284.14

Name: RWY 21
Description:
Threshold height: 50 ft
Direction: 216.2°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	43.455886	-86.351304	673.12	50.00	723.12
Two-mile	43.479233	-86.327781	730.43	546.14	1276.57

Name: RWY 35
Description:
Threshold height: 50 ft
Direction: 352.3°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	43.451109	-86.353441	671.22	50.00	721.22
Two-mile	43.422459	-86.348078	592.59	682.09	1274.68

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV array 1	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	0	0	-
PV array 3A	SA tracking	SA tracking	0	0	-
PV array 3B	SA tracking	SA tracking	0	0	-
PV array 4	SA tracking	SA tracking	0	0	-
PV array 5	SA tracking	SA tracking	0	0	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
RWY 03	0	0
RWY 17	0	0
RWY 21	0	0
RWY 35	0	0

Results for: PV array 1

Receptor	Green Glare (min)	Yellow Glare (min)
RWY 03	0	0
RWY 17	0	0
RWY 21	0	0
RWY 35	0	0

Flight Path: RWY 03

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 17

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 21

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 35

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array 2

Receptor	Green Glare (min)	Yellow Glare (min)
RWY 03	0	0
RWY 17	0	0
RWY 21	0	0
RWY 35	0	0

Flight Path: RWY 03

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 17

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 21

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 35

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array 3A

Receptor	Green Glare (min)	Yellow Glare (min)
RWY 03	0	0
RWY 17	0	0
RWY 21	0	0
RWY 35	0	0

Flight Path: RWY 03

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 17

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 21

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 35

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array 3B

Receptor	Green Glare (min)	Yellow Glare (min)
RWY 03	0	0
RWY 17	0	0
RWY 21	0	0
RWY 35	0	0

Flight Path: RWY 03

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 17

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 21

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 35

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array 4

Receptor	Green Glare (min)	Yellow Glare (min)
RWY 03	0	0
RWY 17	0	0
RWY 21	0	0
RWY 35	0	0

Flight Path: RWY 03

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 17

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 21

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 35

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array 5

Receptor	Green Glare (min)	Yellow Glare (min)
RWY 03	0	0
RWY 17	0	0
RWY 21	0	0
RWY 35	0	0

Flight Path: RWY 03

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 17

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 21

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 35

0 minutes of yellow glare
0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Attachment B

GlareGauge Modeling Results – Lakeside Solar, LLC – Nearby Roadway Segments

ForgeSolar

Site Configuration: Lakeside Solar LLC

Near Montague, MI

Created **Feb. 5, 2021 10:21 a.m.**
Updated **Feb. 8, 2021 2:09 p.m.**
DNI **varies** and peaks at **1,000.0 W/m^2**
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
Timezone **UTC-5**
Site Configuration ID: 49220.8830

Summary of Results No glare predicted!

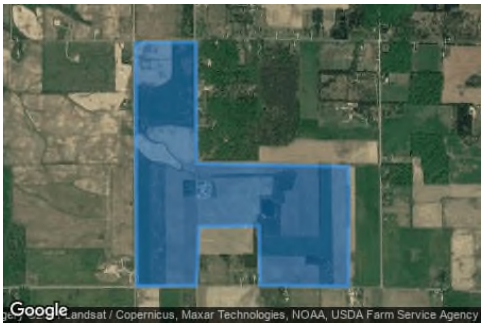
PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	0	0	-
PV array 3A	SA tracking	SA tracking	0	0	-
PV array 3B	SA tracking	SA tracking	0	0	-
PV array 4	SA tracking	SA tracking	0	0	-
PV array 5	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: PV array 1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 13,341,062 sq-ft



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	43.459208	-86.426761	691.29	15.00	706.29
2	43.459235	-86.421858	657.18	15.00	672.18
3	43.452132	-86.421815	663.52	15.00	678.52
4	43.451977	-86.409541	668.74	15.00	683.74
5	43.444936	-86.409539	654.22	15.00	669.22
6	43.445013	-86.416706	652.31	15.00	667.31
7	43.448503	-86.416803	656.84	15.00	671.84
8	43.448425	-86.421620	658.73	15.00	673.73
9	43.444998	-86.421835	663.69	15.00	678.69
10	43.444959	-86.426646	687.70	15.00	702.70
11	43.452107	-86.426733	685.88	15.00	700.88

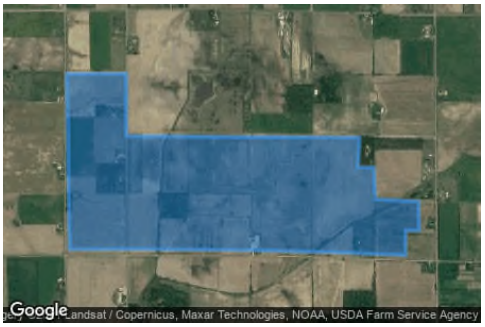
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: PV array 2
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 5,443,048 sq-ft

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	43.444828	-86.414177	650.43	15.00	665.43
2	43.444813	-86.411838	653.08	15.00	668.08
3	43.444213	-86.411806	652.63	15.00	667.63
4	43.444236	-86.409756	651.56	15.00	666.56
5	43.442692	-86.409773	652.48	15.00	667.49
6	43.442692	-86.408389	652.36	15.00	667.36
7	43.444218	-86.408400	655.79	15.00	670.79
8	43.444218	-86.406813	653.50	15.00	668.50
9	43.437637	-86.406841	652.21	15.00	667.21
10	43.437770	-86.416785	649.05	15.00	664.05
11	43.441377	-86.416747	646.81	15.00	661.81
12	43.441315	-86.414258	647.49	15.00	662.49

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

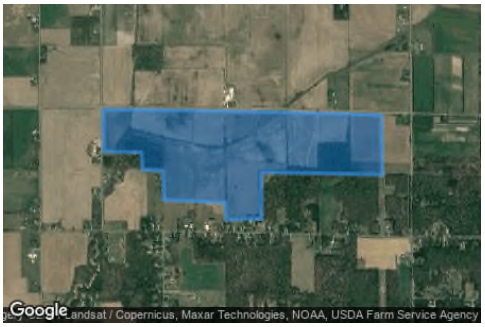
Name: PV array 3A
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 18,357,515 sq-ft



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	43.441190	-86.426647	678.80	15.00	693.80
2	43.441190	-86.421830	655.12	15.00	670.12
3	43.437544	-86.421830	649.70	15.00	664.71
4	43.437450	-86.402990	655.74	15.00	670.74
5	43.435705	-86.403119	654.45	15.00	669.46
6	43.435705	-86.401831	658.56	15.00	673.56
7	43.433836	-86.401703	660.99	15.00	675.99
8	43.433711	-86.398226	658.97	15.00	673.97
9	43.432000	-86.398166	660.38	15.00	675.38
10	43.432031	-86.399282	657.18	15.00	672.18
11	43.430563	-86.399287	659.28	15.00	674.28
12	43.430751	-86.405843	650.87	15.00	665.87
13	43.430865	-86.412682	648.51	15.00	663.51
14	43.430924	-86.421491	648.12	15.00	663.12
15	43.430913	-86.426415	650.06	15.00	665.06

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: PV array 3B
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 8,938,836 sq-ft



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	43.430452	-86.421641	647.38	15.00	662.38
2	43.430331	-86.410220	651.26	15.00	666.26
3	43.430117	-86.399143	658.93	15.00	673.93
4	43.426611	-86.399100	657.54	15.00	672.55
5	43.426758	-86.408860	649.15	15.00	664.15
6	43.424039	-86.408860	658.34	15.00	673.34
7	43.423977	-86.411693	660.53	15.00	675.54
8	43.424974	-86.411779	658.59	15.00	673.59
9	43.425130	-86.416757	651.86	15.00	666.86
10	43.426844	-86.416843	654.69	15.00	669.69
11	43.426906	-86.418473	655.26	15.00	670.26
12	43.427904	-86.418559	697.60	15.00	712.60
13	43.427989	-86.421617	650.14	15.00	665.15

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: PV array 4
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 10,015,626 sq-ft

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	43.456248	-86.436742	633.92	15.00	648.92
2	43.456279	-86.426972	686.08	15.00	701.08
3	43.446857	-86.426900	686.35	15.00	701.35
4	43.446826	-86.429325	691.65	15.00	706.65
5	43.444972	-86.429303	693.50	15.00	708.50
6	43.444941	-86.435758	665.92	15.00	680.93
7	43.446593	-86.435672	651.04	15.00	666.04
8	43.446593	-86.436702	650.77	15.00	665.77

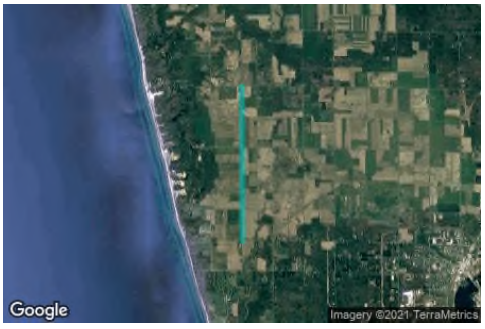
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: PV array 5
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 11,194,285 sq-ft

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	43.444726	-86.435944	669.31	15.00	684.31
2	43.444788	-86.426803	688.81	15.00	703.81
3	43.441301	-86.426855	680.97	15.00	695.97
4	43.441208	-86.429216	693.09	15.00	708.09
5	43.439483	-86.429178	677.90	15.00	692.90
6	43.439483	-86.426818	670.64	15.00	685.65
7	43.432290	-86.426830	658.24	15.00	673.24
8	43.432243	-86.427431	669.90	15.00	684.91
9	43.430607	-86.427398	654.92	15.00	669.92
10	43.430615	-86.431744	672.23	15.00	687.23
11	43.434042	-86.431786	669.17	15.00	684.17
12	43.434011	-86.436743	675.90	15.00	690.90
13	43.443383	-86.436695	713.00	15.00	728.00
14	43.443383	-86.435987	721.86	15.00	736.86

Route Receptor(s)

Name: Chase Road
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	43.459294	-86.426871	689.68	6.00	695.68
2	43.452074	-86.426802	686.21	6.00	692.21
3	43.448468	-86.426783	682.99	6.00	688.99
4	43.446649	-86.426779	685.03	6.00	691.03
5	43.444877	-86.426732	689.51	6.00	695.51
6	43.434031	-86.426732	661.59	6.00	667.59
7	43.431281	-86.426740	653.62	6.00	659.62
8	43.428857	-86.426705	648.10	6.00	654.10
9	43.423238	-86.426635	652.55	6.00	658.55

Name: Eilers Road
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	43.430434	-86.436801	674.71	6.00	680.71
2	43.430489	-86.431834	674.47	6.00	680.47
3	43.430500	-86.426818	651.78	6.00	657.78
4	43.430528	-86.418155	643.40	6.00	649.40
5	43.430508	-86.414123	649.28	6.00	655.28
6	43.430458	-86.410049	652.86	6.00	658.86
7	43.430360	-86.404607	655.74	6.00	661.74
8	43.430216	-86.399165	659.91	6.00	665.91
9	43.429982	-86.387771	659.92	6.00	665.92

Name: Fruitville Road
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	43.444784	-86.439419	663.55	6.00	669.55
2	43.444909	-86.425010	678.28	6.00	684.28
3	43.444932	-86.420772	662.77	6.00	668.77
4	43.444932	-86.415623	651.21	6.00	657.21
5	43.444823	-86.409647	653.33	6.00	659.33
6	43.444722	-86.402136	667.89	6.00	673.89
7	43.444644	-86.396890	694.15	6.00	700.15

Name: Williams Road
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	43.459192	-86.406991	665.02	6.00	671.02
2	43.452193	-86.406941	672.12	6.00	678.12
3	43.448563	-86.406877	664.54	6.00	670.54
4	43.444824	-86.406855	656.05	6.00	662.05

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt deg	Orientation deg	"Green" Glare min	"Yellow" Glare min	Energy Produced kWh	Data File
PV array 1	SA tracking	SA tracking	0	0	-	-
PV array 2	SA tracking	SA tracking	0	0	-	-
PV array 3A	SA tracking	SA tracking	0	0	-	-
PV array 3B	SA tracking	SA tracking	0	0	-	-
PV array 4	SA tracking	SA tracking	0	0	-	-
PV array 5	SA tracking	SA tracking	0	0	-	-

Click the name of the PV array to scroll to its results

PV & Receptor Analysis Results detailed results for each PV array and receptor

PV array 1 no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Chase Road	0	0
Route: Eilers Road	0	0
Route: Fruitville Road	0	0
Route: Williams Road	0	0

No glare found

PV array 2 no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Chase Road	0	0
Route: Eilers Road	0	0
Route: Fruitville Road	0	0
Route: Williams Road	0	0

No glare found

PV array 3A no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Chase Road	0	0
Route: Eilers Road	0	0
Route: Fruitville Road	0	0
Route: Williams Road	0	0

No glare found

PV array 3B no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Chase Road	0	0
Route: Eilers Road	0	0
Route: Fruitville Road	0	0
Route: Williams Road	0	0

No glare found

PV array 4 no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Chase Road	0	0
Route: Eilers Road	0	0
Route: Fruitville Road	0	0
Route: Williams Road	0	0

No glare found

PV array 5 no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Chase Road	0	0
Route: Eilers Road	0	0
Route: Fruitville Road	0	0
Route: Williams Road	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

Construction Waste Management Plan

Construction Waste Management Plan

Company: Lakeside Solar, LLC

Project: Lakeside Solar

Location: Muskegon County, MI

Waste Management Goals

1. Waste generated on-site from the construction project shall be recycled or salvaged for reuse whenever practical.
2. Develop a plan consisting of waste types, methods of disposal, handling, and transportation procedures.

Performance and Requirements

1. Conduct construction waste management activities in accordance with all applicable laws and ordinances.
2. Waste Management will be performed by using a combination of the following activities: salvage, reuse, source-separated, recycling.
3. Waste materials that can be salvaged, reused or recycled include, but are not limited to the following: Asphalt, asphalt shingles, concrete, materials, window glass, wood, field office waste, office paper, storage pallets, aluminum cans, glass, plastic, and cardboard.

Communication Plan

1. Waste prevention and recycling activities will be discussed at the beginning of the project with all contractors and sub-contractors.
2. As each new subcontractor comes on-site, the project recycling coordinator will present him/her with a copy of the Construction Waste Management Plan, go through the established practices, and provide a tour of the recycling areas.
3. The subcontractor will be expected to make sure all their crews comply with the Construction Waste Management Plan.
4. All recycling containers will be clearly labeled.
5. Lists of acceptable/unacceptable materials will be posted throughout the project site.
6. Train site employees on proper containers and procedures for waste management.

Expected Project Waste, Disposal, and Handling

The following chart identifies waste materials anticipated on this project, their disposal method, and handling procedures. Contractors and Subcontractor employees will inform the Recycling Coordinator of other materials not included here that may be recoverable.

Material	Quantity (Estimates)	Disposal Method	Handling Procedure
Cardboard	(100) 40 yd dumpsters	Reuse of material, dispose of at project site recycling dumpster	Disassemble/cut down boxes in stacks, transfer to recycling dumpster
Pallets	11,800 pallets	Reuse of material, sale or donation to local businesses for reuse	Stack in a centralized location(s) for reuse. Recycle broken wood in wood recycling bin
Copper/Aluminum Wire	(20) 40 yd dumpsters	Dispose of at project site recycling dumpster	Centrally collect waste in a stockpile/bin and transport to recycling dumpster at the end of day or when bin is full
Construction Debris	(50) 40 yd dumpsters	Dispose of at project site recycling dumpster	Centrally collect waste in a stockpile/bin and transport to recycling dumpster at the end of day or when bin is full
Plastic/Glass Bottles and Aluminum Cans	Thousands of drinking containers	Dispose of at project site recycling dumpsters	

1. Waste Descriptions (included but not limited to):
    a. Cardboard – Cardboard waste generated from shipping PV modules, project equipment, fasteners, hardware, office cardboard, etc.
    b. Pallets – Used for the transport of PV modules, delivery, equipment delivery, material delivery, etc.
    c. Copper / Aluminum Wire – Generated from electrical connection waste, end cable management, grounding material, etc.
    d. Construction Debris –Debris such as, concrete, 2x4 up to 2x12 form boards left over from bracing/bracketing/shipping, plastic wrap, plastic ribbon tape, field office waste, including paper, etc.
    e. Plastic / Glass Bottles and Aluminum Cans – Primarily drinking containers.
2. Proposed methods for salvage, reuse, recycling, and disposal during construction:
    a. Reuse of materials on-site or off-site sale or donation to a third party.
    b. Requiring subcontractors to take their waste to a recycling facility,
    c. Contracting with a recycling hauler to haul recyclable waste to an approved recycling or material recovery facility,
    d. Processing and reusing materials on-site,
    e. Self-hauling to a recycling or material recovery facility.

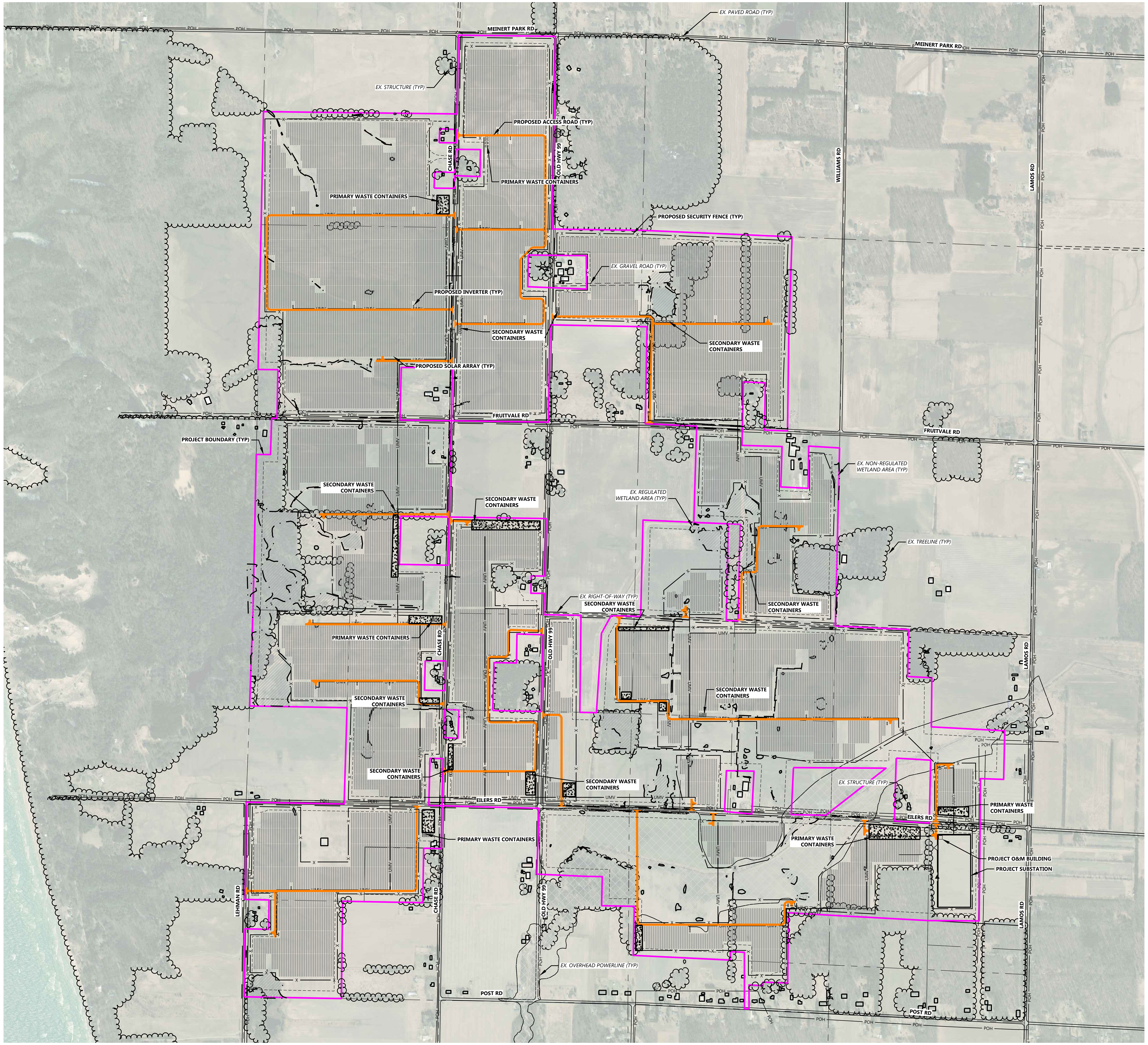
Site Management

1. Provide containers for recycling waste that is clearly labeled as such with a list of acceptable and unacceptable materials. The list of acceptable materials must be the same as the materials recycled at the facility receiving the waste material.
2. Provide containers for landfill waste that is clearly labeled as such.
3. Use detailed material estimates to reduce risk of unplanned and potentially wasteful cuts.

4. To the greatest extent possible, include in material purchasing agreements a waste reduction provision requesting that materials and equipment be delivered in packaging made of recyclable material, that they reduce the amount of packaging, that packaging be taken back for reuse or recycling, and to take back all unused product. Ensure that subcontractors require the same provisions in their purchase agreements.
5. Conduct regular visual inspections of dumpsters and recycling bins to remove contaminants.
6. To prevent debris from being spread around (or windblown), the waste dumpsters will be moved around the site to where the work is being completed to prevent unnecessary hauling of waste throughout the site. Filled dumpsters will be packed down with an excavator to be sure contents will not leave the container before being emptied. Contractors and Subcontractors will be required to make multiple passes throughout the day to prevent trash build up and/or windblown items.

Removal of Construction Waste Materials

1. Remove waste materials from project site on a regular basis. Do not allow waste to accumulate on-site if not stored in a site identified dumpster.
2. Transport waste materials off property and legally dispose of them.
3. Burning of waste is not permitted.



LEGEND:

- PROJECT BOUNDARY
- RIGHT-OF-WAY LINES
- EASEMENT LINES
- EX. TREELINE
- EX. PAVED ROAD
- EX. GRAVEL ROAD
- POH — EX. OVERHEAD POWER
- PROPOSED SOLAR ARRAY
- PROPOSED ACCESS ROAD
- PROPOSED SECURITY FENCE LINE
- PROPOSED MODULE SETBACK
- UMV — PROPOSED UNDERGROUND COLLECTION
- PROPOSED INVERTER
- EXISTING REGULATED WETLAND
- EXISTING NON-REGULATED WETLAND
- FEMA FLOODZONE

0' 700' 1400' 2100'

Westwood

Phone (952) 937-5150
Fax (952) 937-5822
Toll Free (888) 937-5150
12701 Whitewater Drive, Suite #300
Minnetonka, MN 55343
westwoodps.com

Westwood Professional Services, Inc.

PREPARED FOR:

nationalgrid renewables

8400 NORMANDALE LAKE BLVD, STE 1200
BLOOMINGTON, MN 55437

REVISIONS:

#	DATE	COMMENT

Lakeside Solar, LLC

Muskegon County, MI

Waste Management Plan

NOT FOR CONSTRUCTION

DATE: 03/12/2021

SHEET: C.900

Complaint Resolution Plan

COMPLAINT RESOLUTION PLAN

A. Purpose

Lakeside Solar, LLC ("Lakeside") has developed a Complaint Resolution Plan to address concerns and complaints during the construction and operation of the Lakeside Solar Project ("Lakeside Project"). The purpose of this document is to establish a uniform and timely method of reporting and responding to complaints received by Lakeside concerning the site preparation, construction, cleanup, restoration, and operation of the Lakeside Project in Muskegon County, Michigan. This plan identifies the process for the public to file a complaint as well as Lakeside's response and processing.

Annually Lakeside will prepare a report of complaints and responses for submittal to White River Township.

B. Scope

This document describes complaint reporting procedures and timing to be used by Lakeside in its response to all complaints received.

C. Applicability

The procedures for processing complaints related to the Lakeside project will be consistent with the terms of this document.

D. Definitions

1. Complaint Type A-General. A verbal or written statement presented to Lakeside by a person expressing dissatisfaction or concern regarding the Lakeside Project, including, but not limited to, regarding the site preparation, construction, cleanup, restoration, and operation of the Lakeside Project. Complaints do not include requests, inquiries, questions, or general comments.

2. Complaint Type B-Interference. A written complaint expressing dissatisfaction or concern regarding noise, vibration or any 9-1-1 communications, emergency communications, or official County communications reception as a result of the site preparation, construction, cleanup, restoration, or operation of the Lakeside Project.

3. Person. An individual, partnership, joint venture, private or public corporation, association, firm, public service company, cooperative, political subdivision, municipal corporation, government agency, public utility district, or any other entity, public or private, however organized.

E. Complaint Documentation and Processing

To the extent practicable, upon receipt of a complaint, Lakeside will document and maintain a record of all applicable information concerning the complaint the following at a minimum:

1. Name of complainant, address, phone number, and email address.

2. Precise property description or parcel number.
3. Name of Lakeside representative receiving complaint and date of receipt.
4. Nature of complaint.
5. Activities undertaken to resolve the complaint.
6. Final disposition of the complaint. Lakeside will designate an individual to receive, document, and respond to complaints. This person's name, phone number, and email address will accompany all complaint submittals. In maintaining records, the Lakeside representative will:
    a) Determine the nature of the complaint.
    b) If the record is not a complaint, but rather a request, general comment, inquiry, or question, it will be forwarded to the representative responsible for follow-up.
    c) If the record is a Type A-General Complaint, but not a Type B-Interference Complaint, Lakeside's representative will contact the appropriate Project personnel to follow up with the complainant with a proposed resolution. The Project personnel will process the complaint within 72 hours of when the complaint is received.
    d) If the record is a Type B-Interference complaint, Lakeside's representative will collect more information on the issue as needed, contact the appropriate Project personnel to follow up with a resolution, and respond to the Type B-Interference complaint in the following timeframes:
        i. Noise or vibration complaints within 48 hours of receiving the Type B-Interference complaint;
        ii. Emergency communications (9-1-1-related or other emergency communications) interference within 12 hours of receiving the Type B-Interference complaint.

F. Complaint Response

For each complaint, Lakeside will contact the complainant to discuss the issue and attempt to reach a mutually agreeable solution in good faith. Lakeside will make its best efforts to reach resolution on Type B-Interference complaints to the greatest extent possible in the shortest time possible. The current status of all attempted and successful complaint resolution efforts will be logged in Lakeside's complaint resolution records.

G. Muskegon County Representative Contact Information

All requests, general comments, inquiries, questions, and complaints should be directed to:

Lakeside, LLC
8400 Normandale Lake Blvd, Suite 1200
Bloomington, MN 55437
Main office: 952.988.9000
Email: lakeside@geronimopower.com

A toll-free number and email reserved for complaints received regarding the Lakeside Project as well as on-site personnel will be provided prior to construction. Lakeside, LLC will provide the Township with contact information for a local project representative after the project is operational and such information is available.

Questionnaire

Thank you for your interest in Lakeside Solar, LLC. We strive to be a good neighbor and appreciate your input. To submit a Concern:

1) Email a completed copy of this form to
2) If desired, call a Lakeside Solar, LLC representative at and they will assist you in filling out this form. This method may require a return call form a representative.

A Lakeside Solar, LLC representative will attempt to contact you via phone number provided within five business days, excluding federally-designated holidays.

Date:	**Recorders Name:** (If received via phone)
Community Member's Name:	**Community Member's Phone:**
Community Member's Email:	**Community Member's Address:**

Describe the question/concern:

(Attach additional sheets if necessary)

When did the problem begin? (If applicable)

Community Member's signature / Date (If emailed)	**Recorders Signature / Date** (Affirming that they recorded the inquiry accurately to the best of their ability)

Date(s) of Follow up and Summary of Discussion:

(Attach additional sheets if necessary)

Documentation of Resolution Attached (Images, Notes, etc.)? Yes: ☐ No: ☐

Has the inquiry been resolved? Yes: ☐ No: ☐	**Date of resolution:**

I (Lakeside Employee) Affirm that I received verbal confirmation from the community member that their complaint was fully resolved and that community member had no further inquiries at the date of my signature.