*** All present are expected to conduct themselves in accordance with our City's Core Values ***

OFFICIAL NOTICE AND AGENDA

Notice is hereby given that the Solar Array Task Force of the City of Wausau, Wisconsin will hold a regular or special meeting on the date, time and location shown below.

SOLAR ARRAY TASK FORCE
Monday, December 11, 2023 at 5:00 p.m.
Location: **City Hall (407 Grant Street, Wausau WI 54403) - Board Room**
Members: Chad Henke, John Robinson, Jay Coldwell, Paul Svetlik, Susan Woods

AGENDA ITEMS

1. Approval of Minutes from previous meeting (10/16/2023 and 11/16/2023).
2. Discussion on power usage from the new water treatment facility and estimated increase with new GAC treatment process.
3. Discussion on costs for placement of a solar array at various locations and primary cost drivers for capital cost differences.
4. Discussion on possible additional costs for placement of the solar array in the Village of Maine, related to ground mount solar arrays.
5. Discussion and possible action on scheduling future meetings.
6. Public Comment.

Adjourn

Signed by Chad Henke, Chairperson

This Notice was posted at City Hall, on the City of Wausau website, and sent to the Daily Herald newsroom on 12/08/2023 @ 4:00PM. Questions regarding this agenda may be directed to the City Clerk.

In accordance with the requirements of Title II of the Americans with Disabilities Act of 1990 (ADA), the City of Wausau will not discriminate against qualified individuals with disabilities on the basis of disability in its services, programs or activities. If you need assistance or reasonable accommodations in participating in this meeting or event due to a disability as defined under the ADA, please call the ADA Coordinator at (715) 261-6622 or ADAServices@ci.wausau.wi.us to discuss your accessibility needs. We ask your request be provided a minimum of 72 hours before the scheduled event or meeting. If a request is made less than 72 hours before the event the City of Wausau will make a good faith effort to accommodate your request.

SOLAR ARRAY TASK FORCE

Date and Time: Monday, October 16, 2023, at 5:00 pm, City Hall, Board Room
Members Present: Chad Henke (C), Paul Svetlik, Jay Coldwell, John Robinson
Members Excused: Susan Woods
Others Present: Deb Hoppa, Pete Roth, Eric Lindman, Kody Hart, Alder Gary Gisselman

Noting the presence of a quorum Chairperson Henke called the meeting to order at 5:00 p.m.

Approval of Minutes from previous meetings: (9/11/2023 and 9/25/2023)
Minutes from 9/25/2023 listed the incorrect public members present as Deb Hoppa should be properly listed as such. Motion by Coldwell, seconded by Svetlik, to approve the minutes as amended. Motion carried 4-0.

Discussion and review of all feedback received from the community meeting held on 9/27/2023 at Northcentral Technical College
Henke reviewed the survey and commented on the results. The open-ended questions of the survey commented on options for fencing to obstruct the view of the array and fencing options were reviewed.

Robinson weighted the answers of the results of the survey and found that blending into the design of the neighborhood was most important to those participating followed by reduce the carbon footprint while return on investment and reduce taxes or utility bills tied in last place.

Coldwell questioned if there was a requirement for fencing to protect the security of the facility. It was stated that there were no requirements that Eric Lindman, Director of the Department of Public Works, was aware of for solar arrays but the power generating facility would need to be secured in some way.

Staff are directed to look into brims and/or fences similar to Monk Gardens within the neighborhood. A top consideration when exploring buffer options should be neighborhood desirability.

Henke mentioned that the survey is available online. It was stated that there were few responses but there would be a press release to promote the online survey and solicit more responses.

Staff are directed to consider scoring ranked questions on the online survey with a weighted result system as Robinson outlined when reviewing.

Discussion pertaining to the Village of Maine in regards to a proposed project
Robinson questioned if the solar array would have the capability to sell power back to the grid. It was stated that the size of the array would require it to be interconnected to the gird via Wisconsin Public Service and that selling power back to the grid would be a possibility.

Pete Roth, community member, reviewed what was discussed at a recent Village of Maine Board meeting in which the solar array was discussed. A concern raised was that the village would not see a funding mechanism that would make it advantageous and that the solar array would not be sustainable in terms of the lifespan of equipment.

Coldwell questioned if the Village of Maine would not receive property tax on this property. It was stated that this may fall under a utility tax in which the property tax is paid to the state which brings those funds back to the municipalities and county from the state. Staff are directed to explore this as a future discussion by the task force.

Discussion pertaining to size and location options for the array
Robinson suggested the following options: proposed locations solely within the city limits; proposed location within the city limits and in the Village of Maine; proposed locations on the roof of the water treatment plant; proposed locations that incorporate a combination of any of those options. Other considerations should include battery energy storage options, buffers, and not proposing any solar array.

Staff are directed to consider options that include cost estimates, stationary verses tracking array options, return on investment, design and size of the array, setback and location options. The options should be presented in December and January meeting of the task force in order to start working with a consultant and present at a community meeting in January.

Discussion and possible action on scheduling the next meeting in November

Staff are directed to schedule the next meeting on Thursday, November 16th at 5pm.

Staff are directed to reach out to the task force to schedule a December task force meeting.

Public Comment

1) Mark Lammar, 112 Ethel Street – spoke about concerns on the design options specifically in regards to the array being on the roof of the water treatment facility in addition to questions asked.
2) Deb Hoppa – spoke on concerns on vendors used, warranties on the equipment, and the amount of energy used in addition to questions asked.
3)

Adjourn

Motion by Robinson, seconded by Svetlik, to adjourn. Motion carried. Meeting adjourned at 6:17 pm.

SOLAR ARRAY TASK FORCE

Date and Time: Thursday, November 16, 2023, at 5:00 pm, City Hall, Board Room
Members Present: Chad Henke (C), Paul Svetlik, Jay Coldwell, Susan Woods
Members Excused: John Robinson
Others Present: Eric Lindman, John Kahon, Kody Hart, Alder Gary Gisselman

Noting the presence of a quorum Chairperson Henke called the meeting to order at 5:01 P.M.

Approval of Minutes from previous meeting (10/16/2023).
Motion by Svetlik to approve. Motion did not receive a second as members wanted more time to review the minutes from the previous meeting. Approval of the minutes of the 10/16/2023 meeting postponed to the next meeting.

Discussion on power usage from the new water treatment facility.
Coldwell stated that a more detailed listing of the particular water treatment facility power usage is needed as opposed to the document provided which outlines all of the power usage of all Wausau Water Works facilities. It was stated that Clark Dietz should have that information however they are looking at usage more as opposed to cost.

Discussion and information on the health and vitality of the trees on 1010 Bugbee Ave.
Woods questioned what the risk of tree falls were for a potential array. It was stated that the location in question is a natural wood lot with natural tree growth and few trees dying likely due to a noted lack of disease or insect concerns. There is a red pine plantation in a section of the location which are typically planted for harvest and have tall crowns which could be a risk for tree falls. It is likely that a stressor, such as a drought, could cause all the red pines to die at the same time causing major tree falls.

Svetlik questioned if there could be measures to improve the health of the wood lot. It was stated that there was not a lot that could be done outside of leaving the lot alone to improve the health of the trees in this area.

Henke questioned if this wood lot was planned to be harvested in a management cycle. It was stated that the lot is too small and the lumber is not of quality for any large-scale harvesting to be a good return on investment.

Woods questioned as to how tall these trees are and if that would impact the workable area of a solar array. It was stated that the height of the trees would need to be considered when locating the array.

Svetlik questioned if more trees could be planted in these areas. It was stated that additional planting of trees would need to be considered with respect to soil and wildlife.

Discussion on the subsurface soil investigation completed on the property north of the water treatment facility.
Woods questioned what was found in other areas. It was stated that most of the area in question for a possible array has construction debris in various sizes that would have to be mitigated during construction. A solar array could be mounted on slabs of concrete that would have little impact on the soil quality or be pile driven into the ground if the soil on site would be appropriate.

Discussion on the ordinance adopted by the Village of Maine related to ground mount solar arrays.
Henke stated that the lone no vote in the recommendation of the ordinance adopted by the Village of Maine was due to a concern that smaller arrays put in by homeowners would be impacted by regulations meant to protect the community from large industrial arrays.

Woods questioned if this would impact constructing a solar array within the village limits. It was stated that the passage of the ordinance provided a pathway to do so. Wood further questioned if the ordinances would hamper possible construction. It was stated that the city would be able to work within the regulations.

Woods questioned if part of the ordinance requiring sheltering a solar array from a residence would impact construction options that are near existing homes. It was stated that much of the potential array would not be constructed near a home invoking this ordinance.

Discussion on alternative locations for solar arrays on city owned property near the water treatment facility.
Svetlik questioned what it would take to find out the structural limitations on the roof mounted solar array. It was stated that the information could be discovered for future considerations.

Coldwell questioned if they should make considerations based on the option that produces the most megawatts. It was stated that existing switch gear in the new water treatment facility can only accept up to 1.1 megawatts with anything larger requiring additional switch gear to tie it into the facility adding complexities.

Woods questioned if the 1.1 megawatt concept offsets 50-40% of the cost. It was stated that if a solar array with a greater output was constructed, the remainder of the electricity would be sold back to the grid. Woods further questioned if the newer structures of the water treatment facility were considered in the 1.1 megawatt calculation. It was stated that the newer structures would require a recalculation.

Henke directed staff to bring a concept for a 1.5 or 1.4 solar array on the Bay Shore site to the December meeting.

Woods directed staff to bring numbers on the cashflow of the concept presented and other iterations on the Bay Shore site based on using the electricity produced on site and selling additional watts to the grid.

Coldwell questioned if any of the structures are within a flood stage. It was stated that none of the proposed structures are close to a flood stage plain.

Woods and Henke directed staff to bring a better calculation of the switch gear capacity based on the increased usage of the water treatment plant in full usage.

Coldwell directed staff to bring back projected usage rate increases for the water and sewer utility to be considered.

Discussion and possible action on scheduling the next meeting in December.
It was stated that Monday, December 11, 2023, at 5:00 P.M. will be the next meeting of the Solar Array Task Force.

Public Comment
Henke asked what members of the public would like to see at the next meeting. It was stated that the public would want to see the differential building costs of the various design concepts and the reasoning for the variances. It was also stated if a preliminary inquiry could be put into the Village of Maine to see what conditions would need to exist to seek approval.

Adjourn
Motion by Coldwell, seconded by Woods, to adjourn. Motion carried.
Meeting adjourned at 6:12 P.M.

Meter #: 6003352 Account #: [redacted]
Address: 1801 burek WPS ACCOUNT: [redacted]

Month	Rdg Date	Rdg Date	Reading	KWH	Charge	Help Cr	Amt Paid
January	1/1/2023	2/2/2023			14,729.68		14,729.68
February	2/2/2023	3/3/2023			13,264.30		13,264.30
March	3/3/2023	3/31/2023			13,410.35		13,410.35
April	3/31/2023	5/3/2023			14,691.78		14,691.78
May	5/3/2023	6/1/2023			16,504.36		16,504.36
June	6/1/2023	7/3/2023			18,509.37		18,509.37
July	7/5/2023	8/3/2023			18,918.40		18,918.40
August	8/3/2023	9/1/2023			18,319.72		18,319.72
September							
October							
November							
December							
TOTALS				0	128347.96	0	128,347.96

Clark Dietz

Engineering Quality of Life®

Wausau Solar Array Task Force

November 16, 2023

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Clark Dietz

PROJECT TITLE
WAUSAU DRINKING WATER TREATMENT FACILITY SOLAR

DATE REVISION

DRAWING TITLE
SCENARIO 1 - WELL HOUSE ARRAY

PROJECT No.
W0400110

DRAWING No.
E000-1

NOTE: DIMENSIONAL DATA IS NOT TO BE OBTAINED BY SCALING ANY PORTION OF THIS DRAWING.

Clark Dietz

PROJECT TITLE
WAUSAU DRINKING WATER
TREATMENT FACILITY SOLAR

DATE REVISION

DRAWING TITLE
SCENARIO 2 - NE FIXED ARRAY

PROJECT No.
W0400110

DRAWING No.
E000-2

NOTE: DIMENSIONAL DATA IS NOT TO BE OBTAINED BY SCALING ANY PORTION OF THIS DRAWING.

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Clark Dietz

PROJECT TITLE
WAUSAU DRINKING WATER TREATMENT FACILITY SOLAR

DATE REVISION

DRAWING TITLE
SCENARIO 3 - BAY SHORE ARRAY

PROJECT No.
W0400110

DRAWING No.
E000-3

NOTE: DIMENSIONAL DATA IS NOT TO BE OBTAINED BY SCALING ANY PORTION OF THIS DRAWING.

Clark Dietz

PROJECT TITLE
WAUSAU DRINKING WATER TREATMENT FACILITY SOLAR

DATE REVISION

DRAWING TITLE
SCENARIO 4 - WELL HOUSE / MAINE ARRAY

PROJECT No.
W0400110

DRAWING No.
E000-4

NOTE: DIMENSIONAL DATA IS NOT TO BE OBTAINED BY SCALING ANY PORTION OF THIS DRAWING.

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PLOT DATE 11/15/2023 5:07 PM

Clark Dietz

PROJECT TITLE
WAUSAU DRINKING WATER TREATMENT FACILITY SOLAR

DATE REVISION

DRAWING TITLE
SCENARIO 5 - ROOF ARRAYS

PROJECT No.
W0400110

DRAWING No.
E000-5

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Conceptual Array Options Summary

Option	Mount	Approximate Size*	Estimated Cost	Estimated Cost w/ Tax Credit & Grants***
Well House Array	Single Axis Tracker	1.1 MW ac	$3,800,000	$2,660,000
NE Fixed Array	Fixed Ballast	1.5 MW ac	$8,200,000	$5,740,000
Bayshore Array	Fixed	3.1 MW ac	$10,600,000	$7,420,000
Well House/Maine Array	Single Axis Tracker	1.2 MW ac	$4,100,000	$2,870,000
Roof Arrays**	Roof Ballast	0.3 MW ac	$800,000	$560,000

*The existing DWTF switchgear is limited to a tie-in of approximately 1.1 MW ac due to the ampacity rating of the bussing. Additional switchgear would be necessary to tie-in a larger array.
**There may be structural limitations to the existing roofs that would not allow the addition of solar panels, or the roofs may need reinforcing. Further structural evaluation is necessary.
***Assumes a 30% federal tax credit. Grants may be available but exact amounts for each option are unknown.

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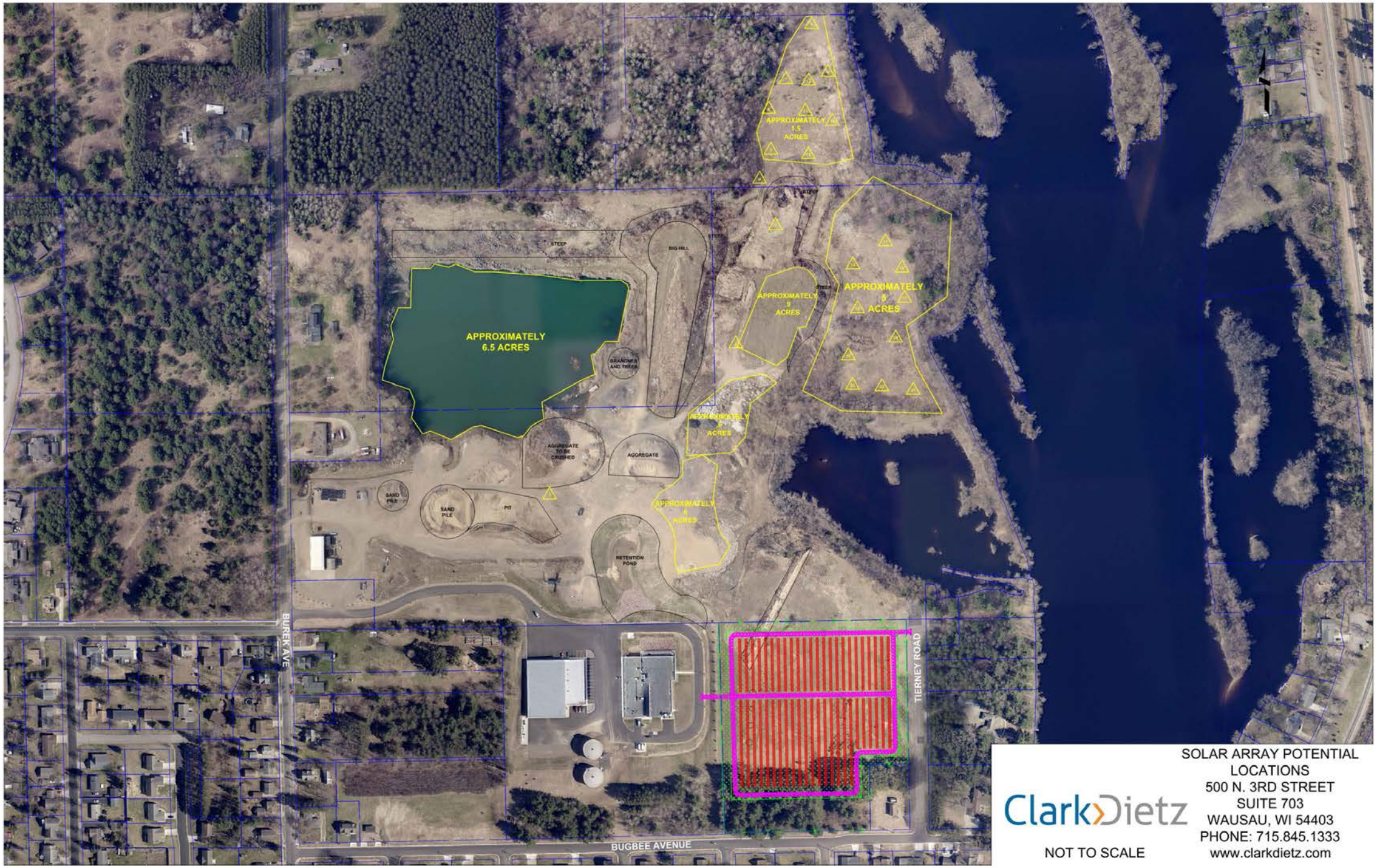


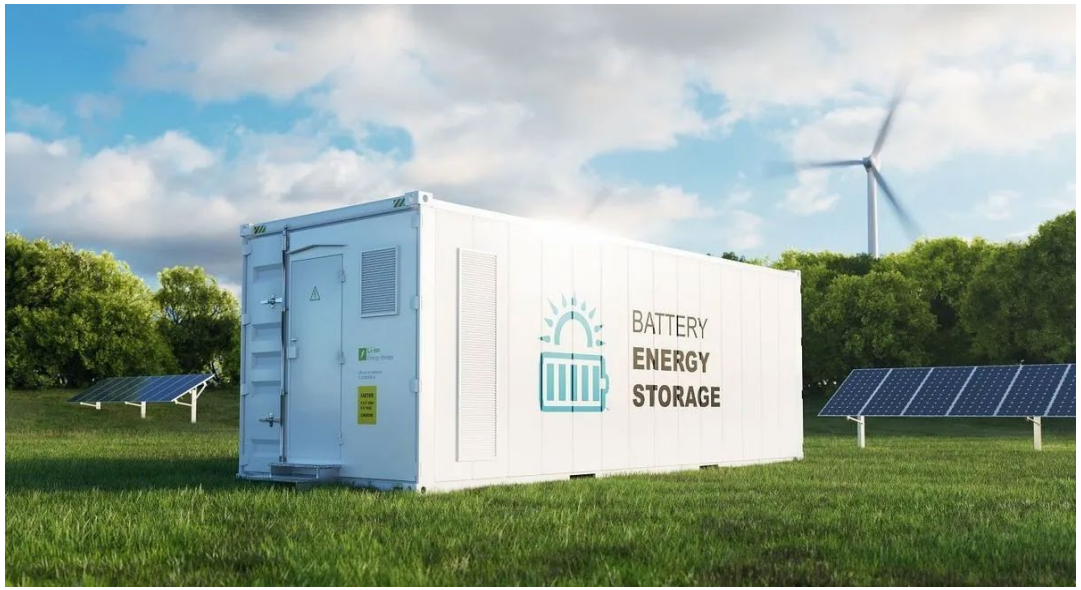
SOLAR ARRAY POTENTIAL LOCATIONS

NOT TO SCALE

ClarkDietz
500 N. 3RD STREET
SUITE 703
WAUSAU, WI 54403
PHONE: 715.845.1333
www.clarkdietz.com

Contents

Battery Storage



- Two types of batteries used for storage are lead acid and lithium ion.
  - Lead acid – lower energy density, cost effective
  - Lithium ion – higher energy density, more efficient, higher cost, most common for this application

- Pros of battery storage:
  - Greater energy independence allowing for use of solar generated power at times when the array is not producing

- Cons of battery storage:
  - Expensive
  - Requires a considerable amount of space
  - Adds complexity and additional maintenance to the system

Battery Storage (cont.)

- Battery storage can add up to 70% to the cost of the project based on cost benchmarks from NREL. The main factor affecting the cost is the amount of storage needed/desired. A larger array would benefit from having more storage, however storage should be limited to an amount that makes sense based on the usage of the DWTF.
- Solar battery systems do qualify for the 30% federal tax credit.
- Battery systems are typically packaged in a shipping container and multiple systems can be connected to achieve the desired storage capacity.

City of Wausau - Solar Array Task Force

12/11/23

Alternatives Analysis Scope of Work

Establish project criteria to evaluate alternatives (constraints, opportunities, design preferences)

General Conditions and Approvals

- Collaborate with the City/Water Works for ownership and project funding scenarios.
- Coordinate with the local utility and summarize interconnection requirements and potential impacts.
- Summarize permitting requirements and their anticipated impacts/conditions.
- Summarize requirements and timelines for approvals by Authority Having Jurisdiction (AHJ).
- Explore Funding alternatives and project delivery scenarios.
- Present alternatives to the City Council/Commission.

Electrical

Evaluate power usage for the DWTF, including PFAS addition, to optimize array size.

For each alternative:

- Develop layout of solar array specific to location, topography, and array type.
- Develop preliminary one-line diagram of system.
- Develop opinion of probable cost, savings over utility purchased power, ROI.
- Establish practical construction timeframe based on equipment lead times.

Site Work

For each alternative:

- Site Due Diligence
    - Site Topography
    - Subsurface conditions (geotechnical)
    - Environmental
    - Zoning
- Develop site grading, drainage, and restoration analysis to support array geometry.
- Determine site access and site roadway geometric layout.
- Develop opinion of probable construction costs.
- Establish practical construction timeframe based on seasonal and market limitations, and approval timelines.

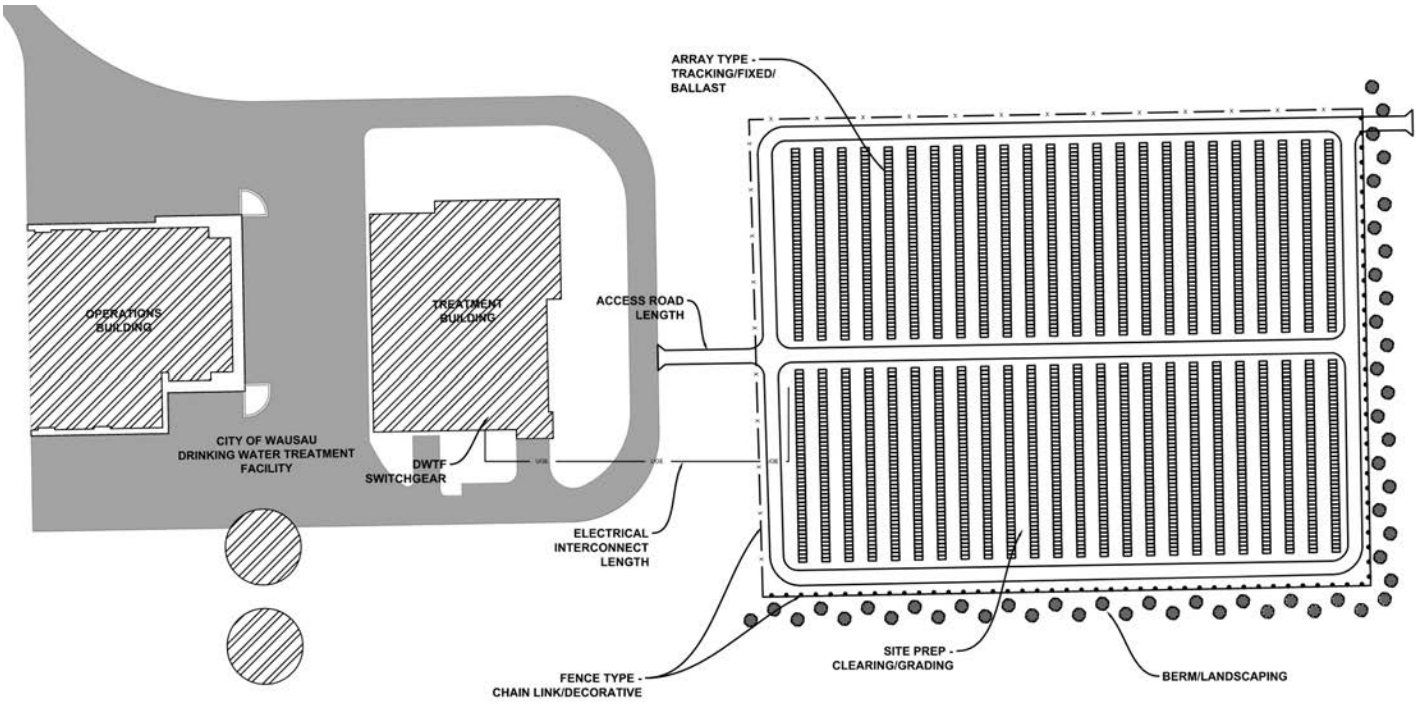
Estimated Fee

$60-90,000. Fee is dependent upon number of alternatives and depth of analysis.

Schedule

About 6-8 months.

Solar Array Drivers of Cost Diagram and Example 1.02 MW Array



Solar Array Estimated Costs and Drivers of Cost

	1.02 MW Wellhouse Array- Single Axis Tracker	1.02MW NE Fixed Array- Fixed Ballast	1.02 MW Bayshore Array- Fixed
Estimated Cost*	$3,800,000	$7,500,000	$5,300,000
Significant Drivers of Cost			
Array Type - Fixed, Tracking, Ballasted		X	
Site Prep - Clearing, Grading		X	X
Electrical Interconnect & Access Road Length		X	X

*These estimates are planning level only. Actual costs may vary due to equipment availability, material and labor costs at time of procurement, and current bidding environment. Other drivers many affect these costs if additional scenarios are considered.

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17.09.100 - Solar Energy Systems.

(a) Title And Purpose. The purpose of this section is to, within the limited authority granted to the Village Board as a political subdivision, establish regulations on the installation and use of Solar Energy Systems within the Village of Maine, and preserve and protect the public health and safety of the Village of Maine.

(b) Authority. The Village Board of the Village of Maine has the specific authority under § 66.0401 Wis. Stats., and general authority under its village powers under§ 60.22 61.34, Wis. Stats., to adopt this ordinance. Section 66.0401 of the Wisconsin Statutes limits and defines the ability of political subdivisions to regulate solar energy systems.

(c) Intent, Interpretation, Abrogation And Lesser Restrictions.

(1) Intent. It is the general intent of this Ordinance to regulate, within the limited authority granted to the Village Board by the Sections 66.0401 and 66.0403 of the Wisconsin Statutes, the installation and use of Solar Energy Systems within the Village of Maine.

(2) Interpretation. The provisions of this Chapter shall be liberally construed in favor of the Village and public health and safety and shall not be deemed a limitation or repeal of any other power granted by the Wisconsin Statutes.

(3) Abrogation and Lesser Restrictions. It is not intended by this Chapter to repeal, abrogate, annul, impair or interfere with any existing easements, covenants, deed restrictions, agreements, or permits adopted or issued pursuant to law. If any specific provision of this Chapter is found to be a greater restriction than a specific restriction created by Wisconsin Statute Section 66.0401 and defined in Wisconsin Statute Section 13.48(2)(h)1.g., then the lesser restriction of Wisconsin Statute Section 66.0401 shall apply.

(d) Definitions. In this ordinance:

(1) *Applicant* means an Owner applying to the Village of Maine for approval of a Solar Energy System to be sited fully or partially within the Village of Maine and/or for a Permit.

(2) *Application* means an application to the Committee for approval of a Solar Energy System to be sited fully or partially within the Village of Maine. Rock County, Wisconsin.

(3) *Building-Integrated Solar Energy System* means a combination of building components integrated into any building envelope system such as vertical facades, including glass and other facade material, semitransparent skylight systems, roofing materials and shading over windows, rather than a separate

mechanical device, for the purpose of producing electricity for on- site usage or consumption.

(4) *Commercial Communications* includes communications used by government and military entities for emergency purposes, licensed amateur radio service, and non-emergency communications used by agricultural, business, government, and military entities including aviation radar, commercial mobile radio service, fixed wireless service, global positioning, line-of-sight, microwave, Personal Communications service, weather radar, and wireless internet service.

(5) *Committee* means a Solar Energy committee composed of the members of the Village's planning and zoning committee, but excluding the member of the planning and zoning committee who is also a member of the Village Board, and adding a member of the Village's board of appeals appointed by the Village Chair President.

(6) *Community-Scale Solar Energy Systems* means a commercial Solar Energy System that converts sunlight into electricity for the primary purpose of serving electric demands off-site from the facility, either retail or wholesale. Community-Scale Solar Energy Systems are principal uses.

(7) *Decommissioning* means removing solar panels, buildings, cables, electrical components, roads, and any other facilities associated with a Solar Energy System that are located at the site of a Solar Energy System and restoring the site of the Solar Energy System, as close as reasonably possible, to the condition existing prior to installation of the Solar Energy System that was removed.

(8) *Glare* means the effect by reflections of light with intensity sufficient as determined in a commercially reasonable manner to cause annoyance, discomfort, or loss in visual performance and visibility in any material respects.

(9) *Ground-Mounted Solar Energy System* means a solar energy system anchored to the ground and mounted on a rack or pole, detached from any other structure for the purpose of producing electricity for on-site or off-site usage or consumption of any kilowatt (kw) alternating current (ac) capacity.

(10) *Large-Scale Solar Energy System* means a solar energy system that is ground-mounted and produces energy for the purpose of on-site usage or consumption with system capacity of more than 25 kW AC and generates no more than 110% of the electricity consumed on the site over the previous 12 months.

(11) *Nonparticipating Property* means real property that is not a Participating Property.

(12) *Nonparticipating Residence* means a residence located on Nonparticipating Property.

(13) *Occupied Community Building* means a municipal building, school, church or similar place of worship, daycare facility or public library.

(14) *Owner* means:

(A) A person with a direct ownership interest in a Solar Energy System, regardless of whether the person was involved in acquiring the necessary rights, permits and approvals or otherwise planning for the construction and operation of a Solar Energy System.

(B) At the time a Solar Energy System is being developed, a person who is acting as a Solar Energy System developer by acquiring the necessary rights, permits and approvals for or by planning for the construction and operation of a Solar Energy System, regardless of whether the person will own or operate the Solar Energy System.

(15) *Participating Property* means any of the following:

(A) Property on which a Solar Energy System is located.

(B) Real property that is the subject of an agreement that does all of the following: provides for the payment of monetary compensation to the landowner from an Owner regardless of whether any part of a Solar Energy System is constructed on the property; and specifies in writing any waiver of a requirement or right under this Ordinance and that the landowner's acceptance of payment establishes the landowner's property as a Participating Property.

(16) *Participating Residence* means a residence located on a Participating Property.

(17) *Personal Communications* includes wireless telecommunications, Personal Communications service, radio, television, wireless internet service, and other systems used for personal use purposes.

(18) *Photovoltaic System* means a solar energy system that converts solar energy directly into electricity.

(19) *Residence* means an occupied primary or secondary personal residence including a manufactured home, a hospital, community-based residential facility, residential care apartment complex or similar facility, or a nursing home. "Residence" includes a temporarily unoccupied primary or secondary personal residence. "Residence" does not include any of the following: (a) recreational vehicles; (b) camping trailers; or (c) permanently abandoned personal residences.

(20) *Residential Solar Energy System* means a Roof-Mounted Solar Energy System located on a Residence.

(21) *Roof-Mounted Solar Energy System* means a solar panel system located on the roof of any legally permitted building or structure for the purpose of producing

electricity for on-site usage or consumption of any kilowatt (kw) alternating current (ac) capacity.

(22) *Solar Access* means an unobstructed access to direct sunlight on a lot or building through the entire year, including access across adjacent parcel air rights, for the purpose of capturing direct sunlight to operate a solar energy system.

(23) *Solar Collector* means a device, structure or a part of a device or structure for which the primary purpose is to transform solar radiant energy into thermal, mechanical, chemical, or electrical energy.

(24) *Solar Energy Equipment* means electrical energy storage devises material, hardware, inverters or other electrical equipment and conduit of photovoltaic devices associated with the production of electrical energy.

(25) *Solar Energy System* means the components and subsystems required to convert solar energy into electric energy suitable for use and storage. The term includes, but is not limited to, solar panels and solar energy equipment. The area of a solar energy system includes all the land inside the perimeter of the solar energy system, which extends to any interconnection equipment.

(26) *Solar Energy System Emergency* means a condition or situation at a Solar Energy System that presents a significant threat of physical danger to human life or a significant threat to property or a natural event that causes damage to Solar Energy System Facilities.

(27) *Solar Farm* means the use of land where a series of one or more solar collectors are placed in an area on a parcel of land for the purpose of generating photovoltaic power and said series of one or more solar collectors placed in an area on a parcel of land collectively has nameplate generation capacity of more than 25 kW alternating current ("AC") or more when operating at maximum efficiency for the purpose of off-site sale, usage, and/or consumption. The term solar farm shall not be construed to include, so as to prohibit, or have the effect of prohibiting, the installation of a solar collector that gathers solar radiation as a substitute for traditional energy for water heating, active space heating and cooling, passive heating or generating electricity for a residential property. The term solar farm shall not be construed in such a way as to prohibit the installation or mounting of a series of one or more solar collectors upon the roofs of residential and/or commercial structures regardless of whether said series of one or more solar collectors collectively has a total nameplate generation more than 25kW AC when operating at maximum efficiency.

(28) *Solar Panel* means a photovoltaic device capable of collecting and converting solar energy into electrical energy.

(29) *Solar Thermal System* means a solar energy system that utilizes solar energy solely to heat water.

(30) *Solar Storage Unit* means a component of a solar energy device that is used to store solar generated electricity or heat for later use.

(e) Application Procedure.

(1) Permits Required. No Owner may construct a Solar Energy System within the Village of Maine or expand an existing or previously approved Solar Energy System within the Village of Maine without first obtaining required permits.

(2) Reimbursement of Expenses. The Applicant shall reimburse the Village for all expenses incurred by the Village in conjunction with the review of an Application (including the fees of engineers, attorneys, planners, environmental specialists, and other consultants or experts retained by the Village).

(3) Application and Notice. Prior to the filing of an Application with the Village regarding a Solar Energy System, the Owner shall meet with the Village of Maine building inspector to discuss the application and the permit process.

(4) A building and zoning permit is required for all Solar Energy Systems. Each Application for approval of Solar Energy System shall be filed with the Village Clerk and shall contain the following information:

(A) To-scale horizontal and vertical elevation drawings signed by a professional engineer or registered architect. The drawings must show the location of the system on the building or on the property for a ground-mounted system, including the property lines.

i) Pitched Roof Mounted Solar Energy Systems: For all roof-mounted systems other than a flat roof, the elevation must show the highest finished slope of the solar collector and the slope of the finished roof surface on which it is mounted. Solar Panels on pitched roofs must be mounted at the same angle as the roof's surface with a maximum distance of eight inches between the roof and highest edge of the system and not extend beyond the highest point of the roof system.

ii) Flat Roof Mounted Solar Energy Systems: For flat roof applications, a drawing shall be submitted showing the distance to the roof edge and any parapets on the building and shall identify the height of the building on the street frontage side, the shortest distance of the system from the street frontage edge of the building, and the highest finished height of the solar collector above the finished surface of the roof. Solar Panels on flat roofs shall not extend above the top of the surrounding parapet, or

more than 24 inches above the flat surface of the roof, whichever is higher.

(B) Technical description of solar panels and solar panel sites, including equipment specification sheets that document all photovoltaic panels, significant components, mounting systems and inverters that are to be installed.

(C) Timeline and process for constructing the Solar Energy System.

(D) Property operations and maintenance plan. Such plan shall describe continuing photovoltaic maintenance property upkeep, such as mowing and trimming.

(E) Information regarding anticipated impact of the Solar Energy System on local infrastructure.

(F) Information regarding anticipated Glare attributable to the Solar Energy System.

(G) Information regarding anticipated effects of the Solar Energy System on airports and airspace.

(H) A list of all state and federal permits required to construct and operate the Solar Energy System.

(I) Information regarding the planned use and modification of roads within the Village during the construction, operation, and Decommissioning of the Solar Energy System, including a process for assessing road damage caused by the Solar Energy System activities and for conducting road repairs at the Owner's expense.

(J) A Decommissioning site restoration plan providing reasonable assurances that the Owner will be able to comply with VI.

(K) A representative copy of all notices issued under this Section V.

(L) Any other information necessary to understand the construction, operation, or decom- Missioning of the proposed Solar Energy System.

(5) A conditional use permit is required for all Large-Scale Solar Energy Systems and Solar Farms. The conditional use permit shall follow all conditional use requirements within this ordinance.

(f) Permitted Accessory Use. Solar Energy Systems are a permitted accessory use in all zoning districts where structures of any sort are allowed, subject to certain requirements set forth below. Ground-Mounted Solar Energy Systems shall be an accessory building on lot or lots where there exists a primary structure. Solar Energy Systems that do not meet the following design standards will require a conditional use permit:

(1) Height. Solar Energy Systems must meet the following height requirements:

(A) Building-Integrated or Roof-Mounted Solar Energy Systems shall not exceed the maximum allowed height in any zoning district. For purposes of height measurement, Solar Energy Systems other than Building-Integrated Solar Energy Systems shall be given an equivalent exception to height standards as building- mounted mechanical devices or equipment.

(B) Ground-Mounted Solar Energy Systems shall not exceed 15 feet in height when oriented at maximum tilt.

(2) Setback. Solar Energy Systems must meet the accessory structure setback for the zoning district and primary land use associated with the property on which the system is located, except as allowed below:

(A) Building-Integrated or Roof-Mounted Solar Energy Systems - the collector surface and mounting devices for Roof-Mounted Solar Energy Systems shall not extend beyond the exterior perimeter of the building on which the system is mounted or built, unless the collector and mounting system has been explicitly engineered to safely extend beyond the edge, and setback standards are not violated.

(B) Exterior piping for solar hot water systems shall be allowed to extend beyond the perimeter of the building on a side-yard exposure.

(C) Solar Collectors mounted on the sides of buildings and serving as awnings are considered to be Building-Integrated Systems and are regulated as awnings.

i) Ground-Mounted Solar Energy Systems - the Solar Collector may not extend into the side-yard or rear setback when oriented at minimum design tilt, except as otherwise allowed for building mechanical systems.

(3) Visibility. Solar Energy Systems in residential districts shall be designed to minimize visual impacts from the public from the public right-of-way, to the extent that doing so does not affect the cost or efficacy of the system, consistent with Wis. Stat. §66.0401.

(A) Building-Integrated Solar Energy Systems - it is anticipated that Building-Integrated Solar Energy Systems shall be visible from the public right-of-way, but must still meet all required setbacks, land uses, or performance standards for the district in which the building is located.

(B) Aesthetic Restrictions - Roof-Mounted or Ground-Mounted Solar Energy Systems shall not be restricted for aesthetic reasons if the system is not visible from the closest edge of any public-right-of-way other than an alley, or if the system meets the following standards:

i) Roof-Mounted Solar Energy Systems on pitched roofs that are visible from the nearest edge of the front right-of-way shall have the same finished pitch as the roof and be no more than ten (10) inches above the roof.

ii) Roof-Mounted Solar Energy Systems on flat roofs that are visible from the nearest edge of the front right-of-way shall not be more than five feet above the finished roof and are exempt from any rooftop equipment or mechanical system screening.

(C) Reflectors - All Solar Energy Systems using a reflector to enhance solar production shall minimize Glare from the reflector affecting adjacent or nearby properties.

(4) Lot Coverage.

(A) Ground-Mounted Solar Energy Systems total collector area shall not exceed half the building footprint of the principal structure, if applicable.

(B) Ground-Mounted Solar Energy Systems shall be exempt from lot coverage or impervious surface standards if the soil under the collector is maintained in vegetation and not compacted, and the system area is less than one acre in size.

(C) Ground-Mounted Solar Energy Systems shall not count toward accessory structure limitations.

(D) Solar carports in non-residential districts are exempt from lot coverage limits.

(5) Approved Solar Components. Electric Solar Energy System components must have a UL or equivalent listing and solar hot water systems must have an ICC Evaluation Service Solar Rating & Certification Corporation rating.

(6) Compliance with Building Code. All Solar Energy Systems shall meet approval of local building code officials, consistent with the State of Wisconsin Building Code and solar thermal systems shall comply with HVAC-related requirements of the Energy Code.

(7) Compliance with State Electric Code. All Photovoltaic Systems shall comply with the Wisconsin State Electric Code.

(8) Compliance with State Plumbing Code. Solar Thermal Systems shall comply with the applicable Wisconsin state Plumbing Code requirements.

(9) Utility Notification. All grid-intertie Solar Energy Systems shall comply with the interconnection requirements of the electric utility. Off-grid systems are exempt from this requirement.

(g) Principal Uses.

(1) Principal Uses. The Village of Maine encourages the development of Community-Scale Solar Energy Systems where such systems present few land-use conflicts with current and future development patterns. Ground-Mounted Solar Energy Systems that are the principal use on the development lot or lots are conditional uses in all districts.

(2) Principal Use General Standards.

(A) Site Design.

i) Setbacks - Community-Scale and Large-Scale Solar Energy Systems must meet the following setbacks:

I) Property line setbacks for buildings or structures in the district in which the system is located.

II) Roadway setback of 150 feet from the Right-of-way centerline of state and county highways, 100 feet for Village roads.

III) Housing unit setback of 150 feet from any existing dwelling unit or more if set forth in this Zoning Ordinance.

IV) Setback distance should be measured from the edge of the Solar Energy System array, excluding security fencing, screening, or berm.

ii) Screening - Community-Scale and Large-Scale Solar Energy Systems shall be screened from existing Residences.

I) A screening plan shall be submitted identifying the type and extent of screening.

II) Screening shall not be required along property lines within the same zoning district, except where the adjoining lot has an existing Residence.

III) The Village may require screening where it determines there is a clear community interest in maintaining a viewshed.

iii) Ground cover and buffer areas - the following provisions shall apply to the clearing of existing vegetation and establishment of vegetated ground cover:

I) Large-scale removal of mature trees on the site is discouraged; Owners shall take all reasonable steps to preserve mature trees.

II) Applicant shall submit a vegetative management plan prepared by a qualified professional or reviewed and

approved by a natural resource agency or authority, sum as the Wisconsin Department of Natural Resources, County Land Conservation Department, or Natural Resource Conservation Service. The plan shall identify:

a) The natural resource professionals consulted or responsible for the plan.
b) The conservation, habitat, eco-system, or agricultural goals, which may include; providing habitat for pollinators such as bees and monarch butterflies, providing habitat for wildlife such as upland nesting birds and other wildlife, establishing vegetation for livestock grazing, reducing on-site soil erosion, and improving or protecting surface or ground water quality.
c) The intended mix of vegetation upon establishment.
d) The management methods and schedules for how the vegetation will be managed on an annual basis, with particular attention given to the establishment period of approximately three years.

III) Soils shall be planted and maintained in perennial vegetation for the full operational life of the project, to prevent erosion, manage runoff and build soil.

IV) Vegetative cover should include a mix of perennial grasses and wildflowers that will preferably result in a short stature prairie with a diversity of forbs or flowering plants that bloom throughout the growing season. Blooming shrubs may be used in buffer areas as appropriate for visual screening. Perennial vegetation (grasses and forbs) are preferably native to Wisconsin, but where appropriate to the vegetative management plan goals, may also include other naturalized and non-invasive species which provide habitat for pollinators and wildlife and/or other ecosystem services (i.e. clovers).

V) Plant material must not have been treated with systemic insecticides, particularly neonicotinoids.

iv) Foundations - a qualified engineer shall certify that the foundation and design of the Solar Panel racking and support is within

accepted professional standards, given local soil and climate conditions.

v) Power and communication lines - power and communication lines running between banks of Solar Panels and to nearby electric substations or interconnections with buildings shall be buried underground. Exemptions may be granted by the Village in instances where shallow bedrock, water courses, or other elements of the natural landscape interfere with the ability to bury lines, or distance makes undergrounding infeasible, at the discretion of the Village Board.

(B) Stormwater and NPDES. Solar farms are subject to the Rock County Village of Maine Stormwater Management and Erosion Control Ordinance and NPDES permit requirements.

(C) Compliance. All Solar Farms shall be in compliance with all applicable local, state, and federal regulatory codes, including the State of Wisconsin Uniform Building Code, as amended, and the National Electric Code, as amended.

(D) Site Plan Required. The applicant shall submit a detailed site plan for both existing and proposed conditions, showing locations of all solar arrays, other structures, property lines, right-of-way, service roads, floodplains, wetlands, and other protected natural resources, topography, electric equipment, and all other characteristics requested by the Village. This site plan shall show all zoning districts and overlay districts.

(E) Aviation Protection. For Solar Farms located within approval zones of an airport, the Applicant must complete and provide the results of a glare analysis through a qualitative analysis of potential impact, field test demonstration, or geometric analysis of ocular impact in consultation with the Federal Aviation Administration ("FAA") Office of Airports, consistent with the Interim Policy, FAA Review of Solar Energy Projects on Federally Obligated Airports, or mot recent version adopted by the FAA.

(F) Agricultural Protection. Solar Farms must comply with site assessment or soil identification standards that are intended to identify agricultural soils. The Village may require mitigation for use of prime soils for solar array placement, including the following:

i) Demonstrating co-location of agricultural uses (agrivoltaics) on the project site.

ii) The site shall be restored to agriculture at the end of life of the solar installment.

iii) Placing agricultural conservation easements on an equivalent number of prime soils acres adjacent to or surrounding the project site.

iv) Locating the project in a wellhead protection area is not allowed.

(G) Decommissioning. A Decommissioning plan shall be required to ensure that facilities are properly removed after their useful life.

i) Decommissioning of the Solar Energy System must occur in the event the project is not in use for 12 consecutive months.

ii) The plan shall include provisions for removal of all structures and foundations, restoration of soil and vegetation, and assurances that financial resources will be available to fully decommission the site.

iii) The Village will require the posting of a bond, letter of credit, or the establishment of an escrow account to ensure proper Decommissioning.

(3) Community-Scale Solar Energy Systems. The Village permits the development of Community-Scale Solar Energy Systems, subject to the following standards and requirements:

(A) Rooftop gardens permitted - rooftop Community-Scale Solar Energy Systems are permitted in all districts where buildings are permitted.

(B) Community-scale uses - Ground-Mounted Community-Scale Solar Energy Systems must cover no more than one (1) acre, and are a permitted use in industrial and agricultural districts, and permitted with standards or conditional in all other non-residential districts. Ground-Mounted Solar Energy Systems covering more than one (1) acre shall be considered Large-Scale Solar Energy Systems.

(C) Dimensional standards - all structures must comply with setbacks and height standards for the district in which the system is located.

(D) Other standards - Ground-Mounted Solar Energy Systems must comply with all required standards for structures in the district in which the system is located.

(4) Large-Scale Solar Energy Systems. Ground-Mounted Solar Energy Systems that are the primary use on the Participating Property, designed for providing energy to off-site uses or export to the wholesale market, are conditional uses in all districts.

(h) Penalties And Enforcement. Any person who violates any of the prohibitions, restrictions and requirements set forth in this Ordinance or any conditions established under a permit issued under this Ordinance shall be in violation of this Ordinance and the Village Board may initiate action in any court of competent jurisdiction to impose a forfeiture and/or enjoin the violation. Any person shall, upon conviction of any such violation, forfeit not less than $200 nor more than $5,000 for each day the violation continues, together with the costs of prosecution, and, in default of payment, shall be imprisoned in the county jail until such forfeiture is paid, but not to exceed ninety (90) days.

(i) Effective Date. This Ordinance shall take effect and be in force from and after the day after passage and publication as required by law.