*** 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.

Meeting of the:	**SOLAR ARRAY TASK FORCE**
Date/Time:	**Monday, September 25, 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. Discussion and possible action on presentation for September 27 public informational meeing.
   a. Presentation to neighborhood group
   b. Hand outs: Survey questions and Frequently Asked Questions document
2. 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 09/15/23 @ 1:00PM. 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.

CITY OF WAUSAU
SOLAR ARRAY
TASK FORCE

September 27th, 2023

TASK FORCE HISTORY

- Started meeting in the spring of 2023
- Members

  Chad Henke – Chair

  Paul Svetlik – Vice Chair

  John Robinson

  Susan Woods

  Jay Coldwell

Goal is to make a recommendation for the Water Utility and City Council

TASK FORCE TIMELINE

- Part 1

  Collect Solar Background Information

    Effectiveness of Solar

    System Lifecycles

  Utility Costs and Needs

    New Utility costs

    Solar Project Funding available

  Other conditions to be considered – that is why we are here today

TASK FORCE TIMELINE CONT.

- Part 2

  Develop options

  Size, Location, Configuration

  Gather public input on options in December

- Part 3

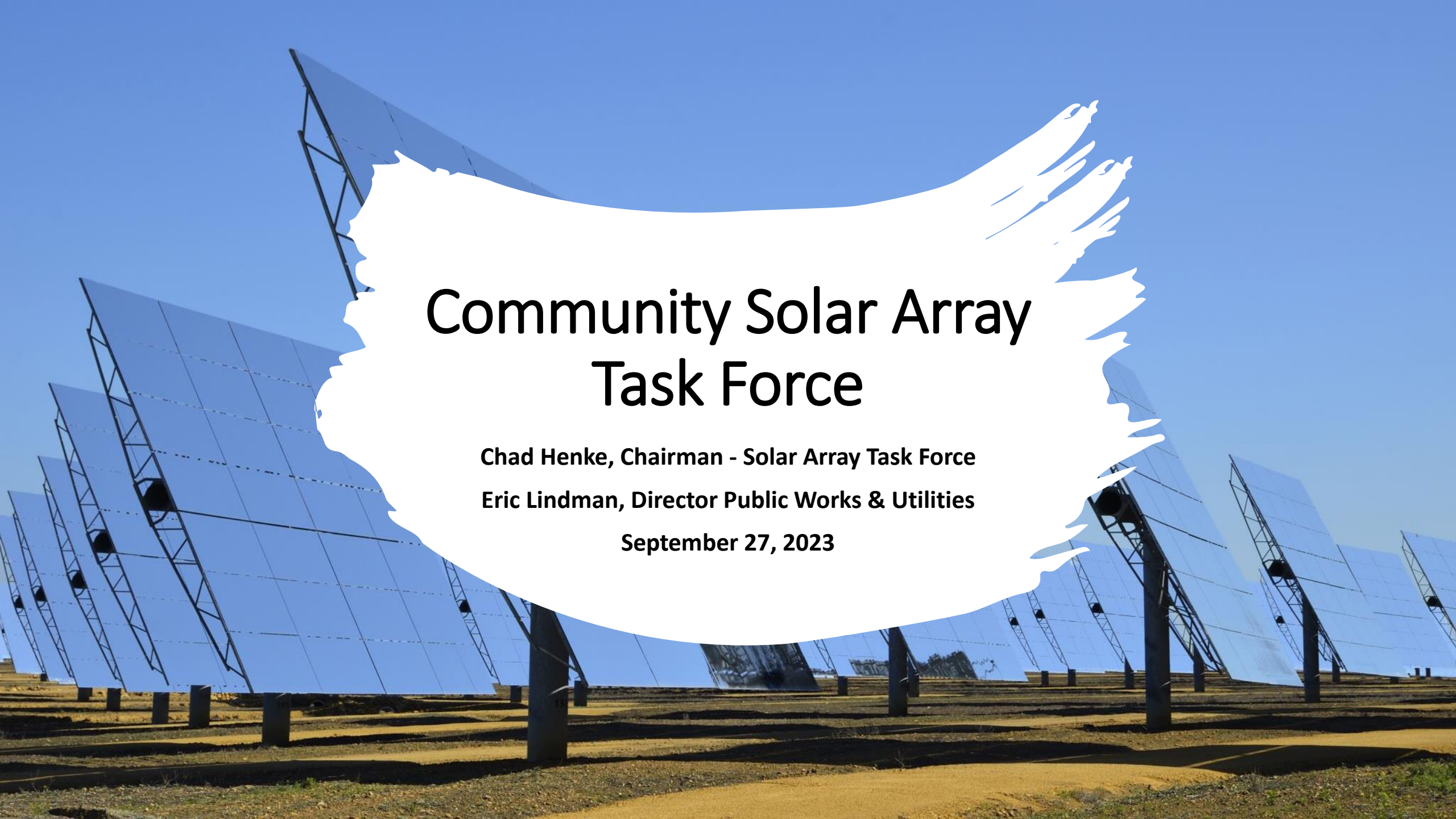
  Evaluate options

  Long/Short Term Effectiveness, Practical, Monitorable, Cost

  Public input and comment period in Early 2024

TODAY

- Share our Facts and Questions sheet
- Survey
- Eric to discuss City Objectives
- Question and Answer lead by Paul



Community Solar Array Task Force

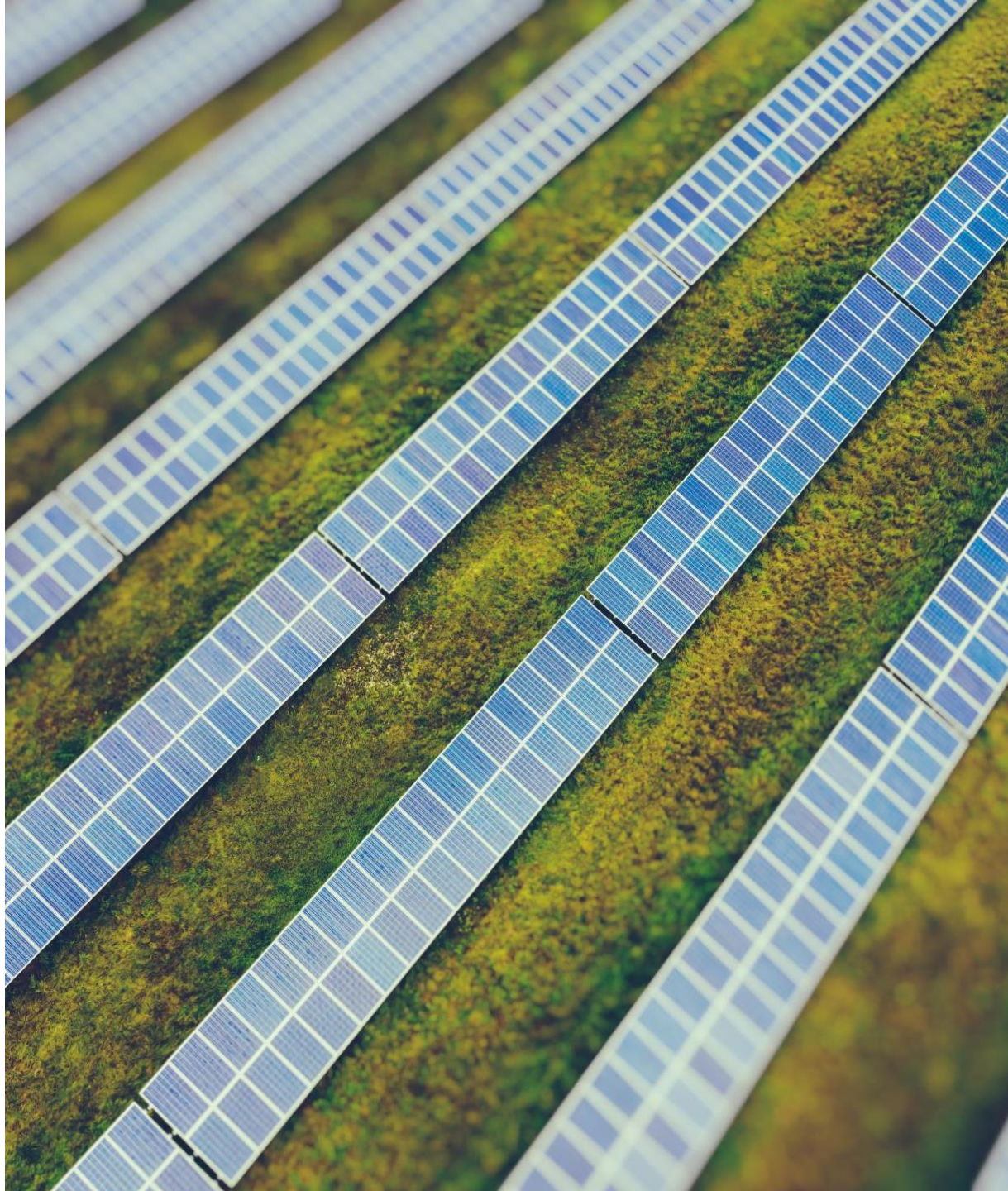
Chad Henke, Chairman - Solar Array Task Force

Eric Lindman, Director Public Works & Utilities

September 27, 2023

Solar Array Task Force Objectives

- As part of the City's Strategic Plan to "Support and lead in green and eco-friendly efforts and initiatives for a cleaner, healthier and sustainable environment", the City is pursuing planning and installation of solar at or nearby city owned facilities.
- The goal is to use any generated power directly, reducing electric dependency and operational costs.



Objectives – Cont’d

- **Reduce reliance on fossil fuels and decrease greenhouse gas emissions**
- **Improve grid security and stability**
- **Reduce electricity bills and get paid for electricity generated**
- **Accelerate the development and deployment of solar technology to support a decarbonized energy sector**
- **Improve the resilience and reliability of the Drinking Water Treatment Facility**

Benchmarks Proposed

- Use benchmark of 10-year Return on Investment for Solar Array Construction
- Consider solar array locations for direct use of power generated
- Prepare education and information related to solar for public input and feedback
- Prepare 5-minute online survey for public response and feedback

Public Input and Notices

- Register on the City Website to receive notices (upper right corner of the web page click on “Sign Up”; can receive texts or emails)
- Education/outreach materials will be posted on website
- Residents may provide comment by clicking on the “Contact Us” and using the “feedback” link on the web page

Discussion & Questions

Frequently Asked Questions with Answers and Sources

Consider organizing the FAQs into topic areas or categories so that it is easier for the public to find the answers to the questions they may have. I added some suggested headers for categories and reorganized the questions under those categories. Feel free to reword or re-organize, as appropriate. By having the questions organized into topic areas of categories it become a more useful document over time as you add questions to it. It becomes less of a "laundry list" of questions and instead, you can have similar topics addressed together.

Consider using consistent terminology in all of your communications. Throughout the document the terms solar plant, solar, solar array, solar panels, and solar farm are used.

Consider adding the following section as background, using the same language from the survey:
BACKGROUND

- What is the City of Wausau's solar objective?
    - As part of the City of Wausau's Strategic Plan to "support and lead in green and eco-friendly efforts and initiatives for a cleaner, healthier and sustainable environment," the city is pursuing the planning and installation of solar at or nearby city owned facilities, including the new Drinking Water Treatment Facility. The goal is to use any generated power directly, thereby reducing electric dependency and operational costs. The city is pursuing the following objectives:
        - reduce reliance on fossil fuels and decrease greenhouse gas emissions;
        - improve grid security and stability;
        - reduce electricity bills and get paid for electricity generated;
        - accelerate the development and deployment of solar technology to support a decarbonized energy sector; and
        - improve the resilience and reliability of the Drinking Water Treatment Facility.

- Why is Wausau considering a solar array?
    - City staff has been considering solar at its facilities since 2017. With new laws changing in the State of Wisconsin and at the federal level, municipalities are now eligible for direct federal tax credits which improves the return on investment (ROI) for solar arrays. Through previous investigation it has been determined to place solar array facilities to directly use the power generated by the facility and then sell back any excess power to the utility company. New legislation now allows non-taxable entities, such as municipalities, to take advantage of tax credits and offset capital costs for the installation of a solar array, making these facilities more affordable.

Frequently Asked Questions with Answers and Sources

- Solar was part of the planning and design of the new Drinking Water Treatment Facility. Land is available nearby to build the solar array and the drinking water facility may directly use the power generated, reducing energy costs and helping to mitigate future rate increases.

- What is the Solar Array Task Force? < consider adding

NEW DRINKING WATER TREATMENT FACILITY

- Where is the new Drinking Water Treatment Facility located? < consider adding this information?

- What volume of water do we treat and supply to the community?
  - We treat an average of 4.5 million gallons per day, the treatment facility is capable of providing 9 million gallon a day of treated water
    - Source: The Drinking Water Treatment Facility.

- How much electricity does the new drinking water treatment plant use?
  - In the month of May 2023, the new plant used 163.976 MWH with an average of 4.969 MWH per day. < Should these be abbreviated as MWH or MWh? Make consistent with the abbreviation in the next question.
  - In the month of April 2023, the new plant used 140.25 MWH with an average of 4.836 MWH per day.
    - Source: The Drinking Water Treatment Facility's electricity bill.

- How much power is a MWh?
  - The average USA household consumes 10,715 kWh or 10.715 MWh each year. Around every other day the Drinking Water Treatment Facility uses the same amount of power an average US household consumes in a year.
    - Source: How Many Watts Are Needed To Power A House? – Forbes Home

SOLAR PANEL PRODUCT-RELATED QUESTIONS

- Where are solar panels made?
  - China has the highest market share in 2020.
    - Source:
      - The 5 Countries That Produce the Most Solar Energy (investopedia.com)

Frequently Asked Questions with Answers and Sources

- What is the current domestic production of solar panels?
  - In 2021, 46% of new solar electricity generating capacity was domestic.
    - Source:
      - R47093 (congress.gov)

- What types of materials are solar panels made of?
  - The one in the solar plant would be monocrystalline since it provides the highest efficiency.
    - Source:
      - Monocrystalline solar panels vs. polycrystalline solar panels: Find out which ones are right for you - CNET

- How tall are solar panels?
  - Maximum of 15 feet
    - Source:
      - WI-Solar-Ordinance-2020.pdf (growsolar.org)

- How heavy are solar panels?
  - Between 40lbs and 70lbs.

- How weather resistant are solar panels?
  - ~~e~~ Solar panels are extremely weather resistant, being able to withstand winds of up to 160 mph and hail. ~~no problem.~~
    - Source:
      - How weather resistant are solar panels - SolarPowerGenie.com

- What is the lifespan of a solar panel?
  - Around 30 years is when they should be replaced.
    - Source:
      - How Long do Solar Panels Last? Solar Panel Lifespan 101 | EnergySage

- Can solar panels be recycled?
  - Yes, solar panels can be recycled through the installer or a 3rd party.
    - Source:
      - Utility-Scale Solar Panel Decommissioning – We Recycle Solar

Commented [SB1]: I don't understand this question or the answer. Is this getting at what percentage of solar panels are produced domestically or what percentage of the US current solar electric capacity is produced domestically?

Commented [SB2]: Do you mean to say: "The panels in the proposed solar array would be monocrystalline since this material provides the highest efficiency".

Frequently Asked Questions with Answers and Sources

SOLAR POWER PRODUCTION

- How much power can solar produce in WI?
    - 15.5 – 46.5 kWh of energy each month per panel.
        - Source:
            - Average Solar Production In Wisconsin USA - Shrink That Footprint

- What is the difference between a solar tracking system and a non-tracking system?
    - Solar tracking can have upwards of an 18% increase in solar power output compared to non-tracking systems.
    - Solar tracking systems cost about 30% more than non-tracking systems.
    - Solar tracking systems have a slightly longer return on investment (ROI), but after completion, the solar tracking system will save significantly more over the lifespan.
        - Source:
            - Is Solar Tracking Worth It? Sun Tracking Vs Fixed Solar Panels (solarempower.com)

- Is the task force looking at a tracking or static array?
    - Both, depending on the site that is chosen and the method needed for mounting.

Commented [SB3]: Is this same as a non-tracking system referenced in the question above it? If so, consider making it more clear like: static (non-tracking)

LOCATION, CONSTRUCTION, AND MAINTENANCE OF THE SOLAR ARRAY

- What is the location of the proposed solar array? < consider adding this

- Why is the location proposed to be near the water plant, as opposed to somewhere else?
    - The water plant will be the major consumer of the power generated. It is more cost effective to locate it near the plant than it is to route the electricity a farther distance.

- Why is it better to have the array close to a major consumer like the water treatment plant?
    - If the array is not directly hooked up to the major consumer it must be sold to the utility company at a significantly lower rate.
        - Source:
            - PSC Customer-Owned Electrical Generation (wi.gov)

Frequently Asked Questions with Answers and Sources

- Is there a flooding concern with the panels being so close to the river?
    - When designing the placement of the array we are using data from the government of the areas where flooding is likely and avoiding those spots.

- If the solar array would be placed in the area to the north, how deep do we need to go? Could we build on 4 to 8 feet?
    - If the solar array is placed to the north, it would likely be designed with a fixed tilt ballasted system so the underground conditions would have less impact on the design.

- What is the depth of footing?
    - A pile driven racking system is typically driven between 8' and 15' in the ground.

- What are the landscaping options of a solar array?
    - There are a variety of options you can choose for landscaping underneath ground mounted solar panels. Plants such as wildflowers, vegetables and grass often grow well under solar panels. Shaded plants require less water and help to keep the temperature under the panel's cooler, in turn maximizing the panel's efficiency. Other options include rocks or mulch on top of landscape cloth to reduce the possibility of unwanted growth for a cleaner lower maintenance appearance.
        - Source:
            - What do I do with the ground under a ground mounted solar array? - Eagle Point Solar

- What is the plan to beautify the space?
    - Look to Rhinelander, wildflower habitat.

- Will construction take a long time?
    - It takes a relatively short time for an array to be built since the panels are pre-built in the factory. The only lengthy part is landscaping and installing the racking for the panels.
        - Source:
            - How Long do Commercial Solar Projects Take? | EnergyLink (goenergylink.com)

- How does the city plan to maintain the array?
    - In house with our electricians.

Frequently Asked Questions with Answers and Sources

- Solar panel maintenance of snow, dirt, or dust?
    - The dark silicone cells of solar panels are designed to absorb heat from sunlight. Once any portion of a panel is exposed to the sun, a small amount of heat spreads throughout the panel and melts the snow. You see this same effect with a blacktop driveway, once a hole in the snow becomes exposed to the sun, it quickly grows. Other weather like rain clears off any dirt or dust that the solar array accumulates.
    - Tracking solar panels have even less snow that accumulates since ~~it moves and~~ the snow that ~~it~~ accumulates slides off due to gravity.
        - Sources:
            - Here's Why You Don't Have To Worry About Snow On Solar Panels This Winter | Simpleray Solar
            - How Do Tracker Mounted Solar Panels Perform in Snow? - Solaflect

Commented [SB4]: Do you meant to say: How are solar panels maintained in terms of snow, dirt, and dust?

THE SURROUNDING COMMUNITY

- How noisy is a solar farm?
    - Solar projects are effectively silent. Tracking motors and inverters may produce an ambient hum that is not typically audible from outside the enclosure.
        - Source:
            - Solar Property Value FactSheet 2019-PRINT_1.pdf (seia.org)

- Will there be increased traffic?
    - Solar projects do not attract high volumes of additional traffic, as they do not require frequent maintenance after installation.
        - Source:
            - Solar Property Value FactSheet 2019-PRINT_1.pdf (seia.org)

- Do solar panels cause glare?
    - No. Solar panels are built to absorb the sun's light and energy, causing about as much glare as a blacktop driveway.
        - Sources:
            - Here's Why You Don't Have To Worry About Snow On Solar Panels This Winter | Simpleray Solar
            - How Do Tracker Mounted Solar Panels Perform in Snow? - Solaflect

Frequently Asked Questions with Answers and Sources

ESTIMATES OF RETURN ON INVESTMENT

- What is the return on investment (ROI) of a solar power plant?
  - Between 5 – 15 years.
    - Source:
      - What Is the Solar Farm Return on Investment? (angi.com)

- Are there tax incentives for solar energy?
  - Yes, the Inflation Reduction Act allows tax-exempt municipalities to have the equivalent of 30% a taxpayer would get back for a solar project. < confusing?
    - Source:
      - Inflation Reduction Act Guidebook | Clean Energy | The White House
        - Click the (Download the Inflation Reduction Act Guidebook).

- How much of the electricity bill would be paid by solar?
  - This depends on the size of the array, but it could offset close to 50% of the electrical usage.

- What happens to the value of my property?
  - A study conducted across Illinois determined that the value of properties within one mile increased by an average of 2 percent after the installation of a solar farm.
  - An examination of 5 counties in Indiana indicated that upon completion of a solar farm, properties within 2 miles were an average of 2 percent more valuable compared to their value prior to installation.
  - An appraisal study spanning from North Carolina to Tennessee shows that properties adjoining solar farms match the value of similar properties that do not adjoin solar farms within 1 percent.
    - Source:
      - Solar Property Value FactSheet 2019-PRINT_1.pdf (seia.org)

These questions did not have responses yet. If you plan to include them, you can add them into the areas above, as appropriate.

- What is the issue between the City of Wausau and the Village of Maine?
- What is the plan to address issues on Tierney? (Berm, fence, trees, etc.)
- If the land by Bugby/Tierney is not used for a solar array, what will the city do with it?
- What is the cost of a berm or other landscaping?
- What is the Task Force looking at doing?

Commented [SB5]: Is the return on investment of a solar array or the return on investment of a solar powered water treatment facility? These of the term "power plant" may be confusing if you have previously used the term "solar array".

Commented [SB6]: Do you mean: How much of the electricity bill for the Water Treatment Facility would be paid by the solar array?

Commented [SB7]: Consider: How are property values potentially impacted by the construction of a solar array?

Commented [SB8]: Use consistent terminology. Elsewhere solar array is used.

Frequently Asked Questions with Answers and Sources

- What can the city spend on the solar array?
- What is the new plant's electricity bill?
- Could a solar array go on the roof?
    - Was it designed for that?
- Can the panels be placed on a floating slab? Instead of setting foundations in the ground can they be mounted to a concrete slab? When panels are placed on an old closed landfill how do they mount the panels and foundations?
    - Yes, this is called a ballasted system. It does increase the overall cost of the array.
- Can an area be filled say with 3-4 feet of fill material and the panels and their foundations placed in the fill area?

Overall Task Force Feedback:

1. Make answers relatable (e.g., use residential comparisons for energy use).
2. Move to city/utility letterhead.
3. Make responses more robust and specific (local to Wausau).

Dept. of Public Works & Utilities

Eric Lindman, P.E.
Director of Public Works & Utilities

DATE: September 25, 2023

SUBJECT: DRAFT – City of Wausau's Objective and Feedback Request for Solar at City Facilities

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Solar Objective: As part of the ~~City's~~ city of Wausau's Strategic Plan to "s~~S~~upport and lead in green and eco-friendly efforts and initiatives for a cleaner, healthier and sustainable environment," ~~,~~ the ~~City~~ city is pursuing the planning and installation of solar ~~-~~at or nearby city owned facilities, including the Drinking Water Treatment Facility. The goal is to use any generated power directly, thereby reducing electric dependency and operational costs. The c~~C~~ity is pursuing the following objectives:

- r~~R~~educe reliance on fossil fuels and decrease greenhouse gas emissions;
- ~~I~~improve grid security and stability;
- ~~Reduce~~ reduce electricity bills and get paid for electricity generated;
- ~~Accelerate~~ accelerate the development and deployment of solar technology to support a decarbonized energy sector; and
- ~~Improve~~ improve the resilience and reliability of the Drinking Water Treatment Facility.

Background: City staff has been considering solar at its facilities since 2017. With new laws changing in the State of Wisconsin and at the federal level, municipalities are now eligible for direct federal tax credits which improves the return on investment (ROI) for solar arrays. Through previous investigation it has been determined to place solar array facilities to directly use the power generated by the facility and then sell back any excess power to the utility company. New legislation now allows non-taxable entities, such as municipalities, to take advantage of tax credits and offset capital costs for the installation of a solar array, making these facilities more affordable.

Solar was part of the planning and design of the new D~~d~~rinking W~~w~~ater Treatment F~~f~~acility. Land is available nearby to build the solar array and the ~~drinking water~~ facility may directly use the power generated, reducing energy costs and helping to mitigate future rate increases. ~~To look at a possible solar array for the new facility~~ T~~t~~he ~~City~~ city established a Solar Array Task Force to look at the feasibility and benefits of ~~the~~ a possibly solar array for the new Drinking Water Treatment Facility~~.~~

Request Resident/Business Feedback: The city would like feedback from residents on the use of solar arrays to help offset ongoing electrical costs at city facilities. There are capital costs for these solar arrays and the Solar Task Force has set a goal for a return on investment (ROI) to be about 10 years and the array's life expectancy is 30 years. The idea is to use the cost savings over the first ten years to pay back any loans for construction.

The ~~City~~ city will be preparing periodic educational materials which will be posted online for residents and businesses. ~~and the city~~In the near future, the ~~will~~city will also be requesting resident and business feedback through emails and surveys ~~in the near future~~ related to proposed solar

ideas/projects/concepts being considered by the city. Please stay tuned for future postings, information and requests for feedback.

DRAFT Solar Survey Questions

1. The new Drinking Water Treatment Facility currently has a monthly electric bill of about $48,000. Once the new Carbon Filtration Process is implemented in 2024, further increases in the monthly electric bill are expected. To help offset the increases in electric costs, the ~~City~~ city of Wausau is considering the construction of a solar array to generate electrical power and to reduce the amount of ~~electrical~~ electricity being used from the electric utility. Which of the following describes the extent to which you support the construction of a solar array or alternative energy generation to offset the electric costs of the Drinking Water Treatment Facility.

   1 – Strongly oppose
   2 – Somewhat oppose
   3 – Neutral
   4 – Somewhat favor
   5 – Strongly favor

2. The ~~City~~ city of Wausau is considering constructing a solar array as an alternative energy generation system. The Solar Array Task Force recommended that a solar array under consideration have a ~~Return-on-Investment~~return on investment of 10 years. Experts in the field have stated that a solar array generally has a life expectancy of 30 years. Which of the following ~~Return-on-Investment~~return on investment criteria do you think the city should consider when deciding to move forward with the project (choose only one):

   a. The anticipated return on investment should be ten years or less.
   b. The anticipated return on investment should be no more than ½ the life expectancy (i.e. if the life expectancy is 30 years, then the return on investment should be less than 15 years).
   c. The anticipated return on investment should be less than the expected life of the facility (i.e. if the life expectancy is 30 years, then the return on investment should be less than 30 years)
   d. I do not think the city should move forward with a solar array regardless of the anticipated return on investment.

3. The solar array may be constructed adjacent to an existing residential neighborhood. If the solar array were to be ~~contracted~~ constructed and landscaped to match the neighborhood and adjacent residents had the opportunity to provide feedback about how landscaping and improvements were to be completed, would you be in favor of the solar array~~facility~~?
   a. Yes
   b. No
   c. Maybe
   Provide comment?:

4. When considering the construction of a new solar array, please rank the following criteria from 1 to 4, with 1 being the criteria that is most important to you and 4 being the least important to you: (rank 1 to 4, with 1 = most important and 4 being least important)
   ___ the solar array will reduce the city's carbon footprint.
   ___ it will pay for itself within 10 years.

Commented [SB1]: Instead of "...should be no more than 1/2 the life expectancy…", do you mean to say, "The anticipated return on investment should be less than 1/2 the life expectancy…." This would make it more comparable to the wording of option "c."

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— it will reduce my taxes or utility bills.
— it will blends into the design of the neighborhood.

5. Would you like the ~~City~~ city to pursue building/owning/operating a solar array at other ~~C~~city ~~-~~owned facilities (City Hall, Municipal Airport, etc.) to reduce electrical dependency on the traditional power grid?
   a. Yes
   b. No
   c. Maybe
   ~~b.~~ Provide comment?:

6. Would you be in favor of constructing the solar array if: NEED A RESPONSE INSTRUCTION
   a. There was no water/sewer rate increase and no tax increase
   b. There was less than a $1.00 per month water/sewer rate increase
   c. There was less than a 1% property tax increase
   d. The electrical costs cover my tax or water/sewer rate increase over the life of the solar array

7. Please provide any additional comments.

_____

_____

_____

_____

If you have thoughts and want to get more involved, you can attend meetings of the Solar Array Task Force which are posted here. Add a link?

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Commented [SB2]: Do you want them to choose only one or choose any that they would be in favor of? Please include some instruction. Also, please double-check that these response options cover the possible scenarios/criteria that the public will care about and that you are most interested in. For example, what if there was a less than 1% property tax increase, but water/sewer rates went up $2.00 a month. Which option would they choose?

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