Joint Meeting of the Delta County Commission and the City of Escanaba City Council  
Escanaba City Hall – 410 Ludington Street – Room C101 – Escanaba MI 49829  
Wednesday, May 31, 2017, at 4:00 p.m.

CALL TO ORDER  
ROLL CALL  
INVOCATION/PLEDGE OF ALLEGIANCE  
APPROVAL/ADJUSTMENTS TO THE AGENDA  
CONFLICT OF INTEREST DECLARATION(S)  
BRIEF PUBLIC COMMENT(S)  
NEW BUSINESS

Explanation: A discussion will take place on a partnership concept for a potential Escanaba Solar Project to be located within the City limits.

Explanation: A discussion will take place on the possible partnership between Delta County and the City of Escanaba to prepare and release a request for proposal for the reuse and/or redevelopment of lakefront property that is owned and controlled by the County and the City between North 3rd Street and North 4th Street.

3. Discussion – Items of Mutual Interest and Concern.  
Explanation: Items of mutual interest and concern for the Delta County Commissioners and Escanaba City Council members will take place.

GENERAL PUBLIC COMMENT  
ADJOURNMENT

Respectfully Submitted

James V. O'Toole  
City Manager

Ryan Bergman  
Delta County Administrator
COUNTY OF DELTA
STATE OF MICHIGAN

NOTICE OF SPECIAL MEETING

PLEASE TAKE NOTICE that a special joint meeting will be conducted by the Escanaba City Council, and Delta County Commission, on May 31, 2017, at 4:00 p.m., City Hall, Room C101, 410 Ludington Street, Escanaba, Michigan. The purpose of said meeting is to discuss the creation and distribution of land development RFP for the jail property and the City property, the creation of a solar farm on airport property, and/or act on any other items to be brought up by Escanaba City Council and Delta County Commission.

May 31, 2017 4:00 p.m., City Hall, Room C101

This notice is given in accordance with Act 267 of the 1976 Public Acts of State of Michigan and Chapter II, Section 5, of the Escanaba City Charter. The City of Escanaba will provide necessary, reasonable auxiliary aids and services, such as signers for the hearing impaired and audio tapes of printed materials being considered at the meeting, to individuals with disabilities at the meeting/hearing upon five (5) days notice to the City of Escanaba. Individuals with disabilities requiring auxiliary aids or services should contact the City of Escanaba by writing or calling the below named City Clerk. Public notice will be given regarding any changes of the above meeting.

James V. O'Toole, City Manager
(906) 786-9402

or

Robert S. Richards, CMC
(906) 786-1194

TAW/bms

Posted 4/18/2017 10:14 AM
CITY OF ESCANABA AND DELTA COUNTY, MICHIGAN

REQUEST FOR PROPOSAL (RFP)

RE-USE/DEVELOPMENT OPPORTUNITY OF CITY-OWNED and COUNTY-OWNED PROPERTY

NEAR NORTHSHORE WATERFRONT PROPERTY
Sale of City of Escanaba Property
North of the Existing Delta County Sheriff Dept Prop

CITY OF ESCANABA
410 LUDINGTON ST. ESCANABA, MICH. 49829 (906) 786-9402

DATE: 05/2017
SCALE: NA
DRWG. NO.: 1 of 1
RFP Issue Date:
RFP Submittal Date:

I. Introduction:

The City of Escanaba ("City") in partnership with Delta County ("County") is seeking experienced individuals and/or firms ("developer(s)") to submit interest to prepare and implement a reuse and/or redevelopment plan which would be appropriate for the existing site on lakefront property that is owned and controlled by the various governmental agencies between North 3rd Street and North 4th Street, where the Delta County Jail (County owned) is currently located, including the waterfront property (City owned). The City and the County is desirous of partnering with developer(s) with a good track record, sound financial backing, and commitment in implementing creative and high-quality developments in a timely manner. As part of the initiative, the City seeks opportunities to reposition this site so that it continues to serve as a valuable asset to the community and boost the economic vitality of downtown Escanaba and the community overall.

The City and County will review the submitted letters of interest, developer qualifications, and conceptual renderings, resulting in a short list of preferred developers/users. These preferred developers/users will be asked to make a detailed presentation to the Council, Delta County Board, Escanaba Downtown Development Authority Board, Escanaba Planning Commission and Chamber Board, which may result in the designation of developer and/or users for each proposed tract, combination of tracts, or the entirety.

Following this designation, the intent is to enter into exclusive negotiations for the disposition and/or development of these properties.

The information set forth herein is provided for informational purposes only. Before submitting a proposal, the information in the proposal must be carefully read and the developer is expected to fully inform themselves as to all existing conditions and limitations at the site. Any doubt as to the true meaning of any part of the RFP may be submitted to the City of Escanaba for an interpretation or correction thereof. The City and the County makes no representation or warranties as to the accuracy or completeness of this information and all developers/users shall at all-time remain responsible for verifying any facts or circumstances upon which a proposal is based. Anyone submitting a proposal agrees to defend and hold the City and County harmless from any claims, actions, damages, losses and expenses of any sort arising out of or in connection with this RFP.

II. Use/Zoning/Property Description:

The City of Escanaba is located in the Delta County in Michigan’s Upper Peninsula. The City of Escanaba is also the County seat for Delta County. The City is a small, historic community bounded by Little Bay de Noc to the north and south. The City is located approximately 100 miles north of Green Bay, Wisconsin. The City has a population of more than 12,000 people.

The current zoning of the site(s) is a Light Manufacturing "F" District, a detailed listing of principal uses permitted by right and uses allowed by special land use permit can be found in Attachment 1. Uses outside those permitted by the current zoning designation will be considered by the City, and the City strongly encourages developers/users to submit new and innovative alternatives.
The subject properties are comprised of up to approximately 3.82 acres +/- (See Attachment 2) with water frontage along Little Bay de Noc of approximately 265 feet +/- . The 3.82 +/- acre parcels have access to Lake Michigan and is located on a Class "A" road which is the "Main" Street through downtown Escanaba. A full service airport located within 2 miles +/- . In addition, the parcel is surrounded by a mix of uses such as a shipping dock, shipping storage yard, loading and shipping facility and boat construction/repair, the Delta County Courthouse, a residential property, Escanaba City Hall, State of Michigan Administrative Building and a large publically owned park called the "Municipal Dock". The property is also an anchor to Escanaba's downtown business district.

The property is served by municipal water, sewer and electric.

The utility placement on the property can be found in Attachment 3.

A Phase 1 and Phase II Environmental site assessment has not been completed for the area as of yet.

III. Submission Requirements:

A. Developer Organization and Project Experience:
   1. Name, address, phone, fax and e-mail for primary point of contact.
   2. Provide information on at least one relevant-scale project undertaken and completed in the last five years by the developer. For each project, provide the following information:
      (a) Project name, type, location, project size, uses, and densities.
      (b) Development team members who were involved in the project who will also participate in the Escanaba project.
      (c) Provide a description of any unique challenges of each project and how the developer addressed them.
      (d) Public/private structure, current ownership and final transaction structure.
      (e) Project cost (budgeted and actual).
      (f) Capital and financing sources utilized.
      (g) Economic Performance – Project Profitability.
      (h) Developer timing (original and final schedule).
      (i) Estimated jobs to be created directly and indirectly.
      (j) Estimated water and power consumption needed by the development.
      (k) One client reference per project including contact name, address, telephone number and e-mail address.

B. Developer Financial Capacity and Capability:
   1. Identify if the developer is a subsidiary of, or affiliated with, any other corporations or firms.
   2. Indicate whether the developer, the Parent Corporation or subsidiary has been adjudged bankrupt, indicted or convicted of any felony within the past ten years.
   3. Composition of developer's current real estate portfolio.
   4. Developer's recent history (last three years) in obtaining financing commitments for real estate development projects, detailing the type of project, financing source and amounts committed.

C. Developer's Performance/Experience:
1. Name, address, phone number and e-mail address of at least three references from financial institutions, lenders or project sponsors who can attest to the developer's ability to complete projects in a timely manner and within established budgets; and three from clients who can attest to the timeliness of projects and success rate.

D. Vision and/or Strategy for Site Development:
1. The developer must articulate a vision and development strategy for this site. This section should be a narrative.
2. The vision and development narrative must be supported with conceptual design renderings and plans.
3. The conceptual design of all proposed buildings/uses.

IV. Developer Selection:

The selection of the successful firm will be made by the Escanaba City Council and the Delta County Board of Commissioners with input from the Escanaba Downtown Development Authority and the Escanaba Planning Commission and the Delta County Planning Commission where required by local ordinance, and will include, but not be limited to the following criteria:

1. The developers/users vision and strategy, including but not limited to:
   (a) Submitted narrative.
   (b) Conceptual design renderings and plans.
   (c) Exceptional architecture, including landscaping.
2. Financial capability, cash reserves available to the project.
3. Evidence of ability to meet terms and conditions of this RFP.
4. Creation of new sustainable jobs in the City of Escanaba and/or Delta County.
5. Prior development or business experience of developer.
6. Evidence of firm financing commitments.
7. Compliance with the Escanaba Community Master Plan.

Prior to the final selection of a developer/project and the subsequent execution of a contract agreement, the City and County intend to interview developers/users whose proposals appear to best address all factors set forth above.

The City and County reserve the right, in its sole and absolute discretion, to consider all factors and assign appropriate weight and credibility to each factor. The City and County will select the proposals, which in its judgment represent the optimal potential to all of the goals expressed herein in the shortest time reasonable.

V. Evaluation Criteria for RFP:

A. Developer Organization and Project Experience: The developer must demonstrate extensive organizational experience in the planning and implementation of development projects.

B. Developer Financial Capacity and Capability: The developer must be able to demonstrate financial capability and expertise to structure transactions that produce a successful project with minimal risk to the City and County.
C. Developer's Past Performance: The developer must demonstrate the capacity and availability of all key staff members assigned to the project. All team leaders must have a demonstrated track record in planning and implementing large development projects.

D. Developer's Vision to Develop the Property: The City and County is interested in hearing from developers/users about sustainable, innovative and exciting development possibilities for this site in keeping with the character of uses related to the Community Master Plan. The developer is given an opportunity to identify a vision of the highest and best use for this property. The current zoning is Light Manufacturing "F", but the City will consider the rezoning of the area based upon the preferred concept if the use will boost the economic vitality of the community.

VI. Proposal Schedule (subject to change):

1. City advertises and issues RFP: ______________
2. Proposals submitted: ______________
3. Qualified developers/users recommended: ______________
4. Developer(s) selected by the Council/Commission: ______________

VII. Submittal:

Proposals should be submitted by 4:00 p.m. E.S.T. on ______________.

Please submit eight (8) hard copies and one (1) digital copy on flash drive of your proposal to:

City Manager
Escanaba City Hall
410 Ludington Street
P.O. Box 948
Escanaba, MI 49829

Proposals shall be enclosed in a sealed envelope stating the name and address of the developer and labeled "RFP - Downtown Waterfront Development."

Please address any questions about the RFP to City Manager ______________,
(906) 786-9402 or citymanager@escanaba.org.
Chapter 12: Plan Implementation

Introduction

Throughout the preceding chapters of the plan, detailed information has been presented defining the historical trends and current situation in the City of Escanaba. This background information along with the public input has been used to develop the goals and strategies outlined below. Adherence to the implementation plan will result in progress towards the community's vision for the future (see Page 1). Changes to the community will be the incremental and should be integrated into annual capital improvement plans.

The role of the master plan has changed over the last half century. Land use regulations were initially utilized to mitigate conflicting land uses and improve urban sanitation. Shortly after federal legislation establishing the Housing and Home Financing Agency in 1947, the predecessor of the Department of Housing and Urban Development, the Housing Act of 1954 was adopted. This legislation stressed slum clearance and urban redevelopment. This act also stimulated general planning for cities under a population of 25,000 by providing funds under Section 701 of the act. The contents of many community master plans were focused on land use arrangements, future transportation corridors and street networks, and development of community facilities to handle growing population need associated with the post-war boom. Today, planning is less focused on future land use and more concerned with redevelopment and community enhancement strategies.

Plan implementation is focused on specific steps that will result in the City becoming more unified, economically viable, and regionally competitive. It should be emphasized, however, that these goals, objectives and actions are not set in stone. While the Planning Commission has developed this plan based on the best information available and the needs of the community at a point in time, changing needs and desires within the community, or changes in the local population or economy may mean that these goals, policies, and objectives will need to be re-evaluated. The plan must remain flexible enough to respond to changing needs and conditions, while still providing a strong guide for development. The Planning Commission, City Council, and City staff, together with community groups and individuals, can use this plan as a dynamic decision-making tool, and should assure that the plan is referred to frequently and updated periodically.

To assist in understanding the nature of the goals, policies, and objectives presented on the following pages, the following definitions are made:

- **Goal**: A broad statement of a desired future condition, the generalized end toward which all efforts are directed. Goals are often stated in terms of fulfilling broad public needs, or alleviating major problems.

- **Objective**: A statement of position or course of action which provides a means of obtaining a stated goal. Policies are factual in nature, and can be measured by the impact they have on existing conditions.

- **Action**: A specific attainable end derived from a related goal or policy to be accomplished within a specific time. When attained, they represent significant and measurable progress toward a goal, thus providing a means of evaluating progress.
Each strategy has an associated time frame, which serves as a benchmark for fiscal and planning purposes. The time frames for implementation are:

- Immediate (less than 2 years) - Projects and programs that usually require the effectuation of a zoning amendment, specific study, or new local legislation.
- Short Term (2-4 years) - Projects which require a greater degree of personnel commitment, local capital improvement funding, and the procurement of private or state and federal funding.
- Mid-Term (4-10 Years) - Projects or programs which have a greater degree of complexity and funding thresholds.

1. Local Economy
The economy of Escanaba and Delta County has long been dependent on natural resources, waterborne industry and manufacturing. However, these industries have shrunk and the region needs to broaden and diversify its economic base. Job growth in the region has been in sectors that offer lower wages than those in the manufacturing industry. In order to spark growth in new economy industries the region must attract and retain an educated workforce. The waterfront location and historic character of the City should be used as part of an asset-based strategy to attract visitors, residents, and businesses. In particular, the City needs to attract and retain young residents in order to sustain its economy.

**Goal: Build on the unique assets of the community to grow and diversify the local economy**

**Objective 1.1: North Shore Waterfront Redevelopment** - Diversify land uses along the industrial waterfront to accommodate public access, mixed-uses, and other waterfront related uses.

The north shore waterfront has been repeatedly identified by community members as a priority for enhanced development and redevelopment. Community members felt that measures should be taken to identify new north shore waterfront opportunities which accommodate a diversified mix of land uses that not only enhances and preserves an industrial working port but also enhances the public enjoyment of the Bay, exposure to the working waterfront and provides opportunities for public access, open space an expanded public use. Many expressed concern that the area is underutilized and that some portions of the north shore appear to be blighted in need of clean up and better integrated into the downtown.

In 2010, the City adopted a North Shore Redevelopment Plan for the waterfront in which it identified opportunities for enhanced maritime industrial development, potential land re-purposing, increased opportunities for waterfront public access, open space and expanded public use.

**Action E1: Compatible Maritime and Waterfront Uses** - Seek, encourage, and foster a balance of uses and activities on the waterfront that are compatible with a working port and the broader goals of the community. Opportunities for waterside public access, open space, and the expansion of public use of the waterfront include improvements such as viewing platforms, piers, street ends, and non-motorized trails where feasible, or other physical improvements to improve the character and
utilization of the waterfront should be explored. Develop form-base zoning standards that support waterfront redevelopment due to the irregular property line layouts.

**Action E2: North Shore Property Acquisition** - Should property within the near north shore zone within the downtown area become available, and the should the City have an opportunity to acquire it, steps should be taken to purchase or acquire the property and work with the community and the private sector on a development and infrastructure plan which will meet the needs of maritime and recreational water dependent activities that has the potential to increase the overall economic value of the community with new investment that will stimulate the revitalization of the waterfront, provide new jobs, revenues, public amenities and other benefits to the community.

**Action E3: Relocate Civic Buildings** - The evolution of the waterfront from its beginning to the present reflects Escanaba’s colorful history. The waterfront will always serve as a repository for memories of past events, but it must also continue to evolve so that a balance is maintained between continued maritime activities, public activities, and the unique history of the area. Over time, the Delta County Jail and Chamber of Commerce have become less than desirable uses on valuable downtown waterfront property. These facilities should be relocated to a site better suited to these uses and the two (2) properties should be repurposed for private development opportunities and new investment which has the potential to positively impact the revitalization of the downtown area, preserve the maritime water-dependent activities, provide new jobs, increase property values, and provide public amenities and other benefits to the City.

**Objective 1.2 Vibrant Public Spaces** - Develop and maintain places for the community to live, work, and play. Investing in public spaces to encourage greater interaction between residents and promote a healthier and more vibrant community is an approach to build communities around places which inspire people to collectively reimage and reinvent the public spaces they share.

**Action E4: “Placemaking” Asset Inventory and Assessment** - The community should establish placemaking concepts and standards that promote the positive use of public space which has the potential to attract a knowledge-based industry and a talented younger workforce. In recent years the placemaking strategy has been shown to be an effective tool that and catalyst for economic development. Develop an inventory of existing public spaces and assets that capitalizes on community assets, inspiration, and potential for expansion opportunities and improvement opportunities which will contribute to the people’s health, happiness, and well-being.

**Action E5: Community Festivals and Events** - Throughout the year, the City and Downtown Development Authority hold public events and festivals that attract residents and visitors into the downtown and waterfront area. Festivals are important because they can help the community to remember important events, bring family and friends together and educate the youth about the history and culture of the community. Continued community events which utilize City’s parks, including the Municipal Dock area, should be encouraged and built upon.

**Objective 1.3 Downtown/Waterfront Linkage** - Create strong visual and physical connections between downtown and the waterfront. The Downtown Waterfront area has the strongest potential for mixed use redevelopment which can work in harmony with a working waterfront. The working waterfront along with the public waterfront need to be better connected to the downtown area and surrounding neighborhoods. Development standards are needed which encourage more people to stay longer and visit more often in order to grow and thrive. New development in this area should be integrated into the
City of Escanaba
Northshore Redevelopment
Master Plan

January 2010
ESCANABA NORTHSORE AREA
Existing Utilities
Data Source: City of Escanaba 2004

- Water
- Sanitary Sewer
- Storm Sewer
- Storm Sewer Outlet to Bay
- Pipe Width (Inches)
- Storm Water Overflow Problem Area

Legend:
0 0.125 0.25 miles

City of Escanaba
Merchant Dock Park

Map Key: 9

Merchant Dock Park is proposed for where N. 3rd Street meets Little Bay De Noc. Currently, the site is occupied by the county jail. This park along with Waterfront Park, which will be described next, maintain public control of the waterfront between Sand Point and Merchant Dock Park. Descriptions here will focus on public access to the waterfront. Other aspects of both parks will be described more fully later in this section.

Consistent with its name, the shipyard to the west can be viewed from the park. Unlike other viewing opportunities from 1st Avenue N. and N. 9th Street, views from the park to the primary shipyard operations are over water and unobstructed. Clear views of the coal dock are also available. The new Merchant Dock Park master plan includes placement of a decommissioned tugboat and a Great Lakes freighter wheelhouse as features for visitors to explore. The tugboat is proposed to be set into the ground to be at a similar level as it would be in the water. The freighter wheelhouse is proposed at the shoreline facing the water. When standing on the bow or inside the wheelhouse, water will fill the outward views creating a sense of sailing in open water. Because of its height, the freighter’s bow will also serve as an overlook point for the shipyard and coal dock. As with other overlooks of the Working Waterfront, interpretive exhibits should be included in the tugboat and wheelhouse.

Key Considerations

- Amend 5-year Parks and Recreation Plan to include improvements.
- Coordinate with County for relocation of jail and exchange of property.
- Explore possibilities for placement of tugboat and freighter wheelhouse.
# Delta County Jail & Sheriff's Office Feasibility Study

## Statement of Probable Cost: Option 1 - Secure Transport and Holding Addition/Jail Mechanical to Remain

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<th>Component</th>
<th>Quantity</th>
<th>Units</th>
<th>Unit Cost</th>
<th>Total</th>
<th>Comments/Notes</th>
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<td></td>
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<td>e. Utilities</td>
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Escanaba Solar Project

1. Why Invest in Solar Generation Now?
2. Regional Solar Generation Activities
3. Escanaba Solar Project Description
4. 25 Year Levelized Cost of Solar Generation
5. Summary of Avoided Costs with Local Solar Generation
6. Delta County Airport Potential Site

Escanaba Solar Project - Updated 25 Year Levelized Cost of Solar Generation 4/11/2017 Revised

May 31, 2017 4 PM City Council Chamber
Joint Delta County Commissions and Escanaba City Council Meeting
Installation costs are predicted to fall further with continued growth.

Installation costs for utility scale projects, 1MW to 100MW, in 2016 averaged $1.60 per watt (DC) capacity.

Installation costs have dropped almost 60% in the past 10 years.

Solar generation in the US is booming largely due to falling prices.

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**Why Invest in Solar Generation Now?**

**Solar - Declining Prices and Increasing Installations**

**Nextera Energy Insight Report, April 4, 2017**

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**Annual Installed MWh (USA - Utility Scale - Non California)**

- Blended Average Solar PV Price ($/watt)
In the late afternoon when electric loads are peaking, single and dual-axis tracking systems are higher cost to install and maintain, but they increase generation output.

- Two-axis tracking
- One-axis tracking with axis oriented south
- Array facing south at fixed tilt

6% Dual Axis Tracking
47% Single Axis Tracking
47% Fixed Tilt Angle

In 2015, utility-scale solar projects used 3 types of mounting systems:

- For example, cost 2 to 3 times more than utility-scale projects with 3,000 or more panels.
- Installation cost for solar is very dependent on the scale of the project. Small residential systems with 15 panels, utility-scale solar generation accounted for 72% of the solar capacity installed in 2016.

- Natural gas and wind capacity.
- In 2016, for the first time ever, solar was the largest new source of electricity generation capacity, more than new
Note the slight accumulation of snow with these fixed tilt panels in December.

- prohibited the lower cost driven posts solar panel supports.
- required because of sedimentary rock formations close to the surface, which
-彼此
- higher cost mounting system was
- this beam rock blocks. This higher cost mounting system was
- each panel is 76.9" long by 38.7" wide
- 3,496 individual 315 watt solar panels

which supports their wind turbines.

The solar facility is located northeast of Gardner, MI, adjacent to the Heritage Electrical Substation.

- In late 2016, Heritage Sustainable Energy completed the construction of a 1.2 MW (DC) solar facility.

Regional Solar Generation Projects
Energy Standards.

- The facility will provide renewable energy to WPPI members to comply with Michigan's Renewable Energy (Crystal Falls), L'Anse, Negahna, and Norway.
- Wisconsin and Upper Michigan. WPPI members include: Gladstone, Alger-Delta Co-op, Baraga.
- WPPi is a public power energy supplier that serves 51 municipal utilities and co-operatives in a solar project to be completed in 2021.
- Power plant in Two Rivers, WI.
- Nextera and WPPI plan to build a 100 MW solar project adjacent to Nextera's Point Beach Nuclear Power Plant.

L'Anse has announced a Community Solar Program (Real-Feasibility Study - Community Electric Customers) which would purchase panels in the project. The feasibility study is being supported by grants and WPPI.

(Note, the eligibility is not guaranteed)

- Purchasing the solar panel(s) should be eligible to receive the 30% Federal Investment Tax Credit.
- MPLBP designed the solar license and management agreement so that residents or businesses MPP/MPP can lease the solar license and management agreement for 15 years at $1.25/watt or $499 per panel.
- Installation cost is $7.89/kWh for 25 years.
- Monthly electric bills at $0.063/kWh for 25 years.
- Panels to be sold to residential and business customers with the panel generation credited to their individual solar panels.
- 480 individual 315 watt solar panels.
- 0.15MW Community Solar Project adjacent to their office building on Wright Street.
- In the summer of 2017, the Marquette Board of Light and Power (MPLBP) plans to construct a
Security fence around the perimeter of the facility

Requires approximately 5.5 to 6 acres, a plot about 400’ x 600’

Project:

Expected annual average output of 1,206,000 KWh over the contracted 25-year life of the distribution system

480 volt AC wiring to a step-up transformer for connecting to the City of Escanaba Electric

Inverters to convert solar panel DC power to output 480 volts AC power

DC wiring connects the panels to their inverter

For a fixed tilt mounting system, approximately 635 hydraulic driven posts are required.

Panel dimensions are 38.7” wide by 76.9” long

3,175 individual 315 watt solar panels

A one Megawatt TDM (DC) capacity system would consist of:

Customers to purchase panels in the project

Commitments by Escanaba Electric Department Residents, businesses, and local government

Major portion of the project

Escanaba Electric Department budget has a surplus Renewable Energy Fund balance to pay for a installation cost in $/watt obtained in RFP response

Planned solar facility capacity up to 1 MW (DC). Final project size depends on:

3. Escanaba Solar Project Description
Public Visibility for Economic Development Benefits

- Minimal cost and time for Regulatory approvals (e.g., FAA) to Implement Project
- Close proximity to existing City electric distribution lines with adequate capacity
- Support of panels
- Ground soils depth and type suitable for low cost installation (driven posts for vertical)
- Low cost to use site (purchase, lease or rent)
- Flat site requiring minimal grading, bush or tree removal
- Unrestricted sun exposure for 30+ years – no trees or building shading the panels

Installation costs are:

Key Escanaba Solar Project Site Requirements for Good Performance and Low
3. The 7.28 kWh of annual electricity production per watt (DC) of solar generation capacity is an expected long term mean value. Actual year to year annual production may vary + or – 10% from this expected mean value.

2. Other key assumptions in the 0.84 conversion efficiency include:

- 0.84 conversion efficiency for DC to AC (98% inverter efficiency assumed)
- Panels tilted at a fixed 35° orientation
- Panels oriented to face due south
- No shading

This annual production estimate assumes the annual electricity production at 7.28 kWh per watt (DC) of solar generation capacity.

4. Updated 25 Year Levelized Cost of Solar Generation
electricity at a fixed cost of $0.0564/kWh for 25 years.

Another way of expressing solar Levelized cost is a one-time investment of $1.70/watt provides $0.0564/kWh for solar generation in Escanaba.

$1.70/watt (DC) Capacity, $0.15/kWh = $0.0564/kWh, yields a 25 year leveraged cost of $1.70/watt (DC) Capacity.  This same generation over a 25 year period, with an installed cost of the estimated cumulative KWHs of generation over 25 years, one can calculate a 7.206 annual average KWH/watt/year.

6. Assuming a more realistic 0.5% loss of first year of installation, 7.28 x 25 = 32.00.

PV Generation, 7.28 x 25 = 32.00 KWH over 25 years (1.28 x 25 = 32.00) Capacity will produce 32.00 KWH over 25 years.

5. With no degradation of Photovoltaic and December.

Highest production is in the months of November and July with the lowest production in the months of June and July. The NREL website's pv watts calculator also estimates the monthly electricity production.

4.
Generation is $0.010/KWh. 10. Assuming a 0.5% loss of generation capacity per year, the average O & M cost per KWh of solar be $0.02/000 per year.

analysis, using the $0.012/Watt O&M cost estimate, the annual O&M cost for a 1 MW DC facility would be $0.012/Watt O&M cost is considered a reasonable estimate for the Escanaba solar project economic locations, the airport and BP products, and conducting preliminary lease or purchase discussions, the O&M cost should range from $0.012 to 0.015/Watt. After evaluating the two leading local site year for large utility scale solar generation projects (i.e., 10 MW), a Nextera solar expert indicated the O&M costs averaged $0.016/Watt of capacity per year for large utility scale solar generation projects. A February, 2016 NREL publication indicated the O & M costs averaged $0.016/Watt of capacity per year for large utility scale solar generation projects.

9. A 20-year warranty have a 10-year warranty Replacement of defective components beyond the equipment warranty, e.g., inverters typically Cleaning exterior surface of the panels if necessary, e.g., bird droppings or accumulated dust and inverters Monitoring the performance of the solar generation facility components, such as individual panels Moving grass and weeds in areas under and surrounding the solar panel racks

Costs in addition to the initial installation cost. The following types of O&M costs should be expected:

8. An accurate 25-year levelized cost analysis should include:
Clearly, the expected 25-year lifecycle costs of electricity from solar generation is less than the current effective rate, $/kWh.

<table>
<thead>
<tr>
<th>Customer Type</th>
<th>Energy Rate, $/kWh</th>
<th>Charged Effective Rate Depending on Load Factor &amp; Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>0.9970</td>
<td>0.9728 to 1.550</td>
</tr>
<tr>
<td>Commercial</td>
<td>0.8925</td>
<td>0.9709</td>
</tr>
<tr>
<td>Municipal</td>
<td>0.9303</td>
<td>0.9709</td>
</tr>
<tr>
<td>Large Power</td>
<td>1.00</td>
<td>0.9709</td>
</tr>
</tbody>
</table>

Costs, $/kWh:
- Installation Facility Cost (1) of Solar Generation
- Operating & Maintenance Costs
- O&M $/kWh

The adjacent table provides the total levelized cost of electricity in $/kWh as a function of the installation cost in $/kWh. For comparison, the current, 2016-2017 Escanaba Electric Energy Rates are:

22. Combining the initial investment cost with the annual average O&M cost, the 25-year total levelized cost of electricity generated can be calculated.
Compared to much higher cost small private solar systems (e.g. residential or businesses), $/watt (DC) capacity offers dramatically lower 25 year levelized cost of electricity generated savings $/watt (DC) capacity, with significantly lower installation costs $/watt, a large utility scale solar project (e.g. 1MW (DC) capacity), with significant net savings.

A large utility scale solar project should lower the cost for all Escanaba electricity customers, based on the avoided costs.

The additional 5 years of generation reduces the levelized generation cost an additional $0.005 per kWh. Reductions in cost are significant, with the table showing up to $0.00 per kWh (i.e. 1Z to 14%).

<table>
<thead>
<tr>
<th>12.0%</th>
<th>7.0%</th>
<th>12.0%</th>
<th>0.6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2%</td>
<td>0.6%</td>
<td>1.2%</td>
<td>0.6%</td>
</tr>
<tr>
<td>1.4%</td>
<td>0.6%</td>
<td>1.4%</td>
<td>0.6%</td>
</tr>
<tr>
<td>1.6%</td>
<td>0.6%</td>
<td>1.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>1.8%</td>
<td>0.6%</td>
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<td>0.6%</td>
</tr>
<tr>
<td>2.0%</td>
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<td>2.0%</td>
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<td>0.4%</td>
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<td>0.4%</td>
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<tr>
<td>0.2%</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

12.0% includes $0.01/kWh (i.e. 1Z to 14%).

Levelized Generation Costs of Electricity costs.

Levelized Generation Costs of Electricity costs for 25+ years. The useful life of a well-designed and maintained quality solar generation system is expected to be more than 25 years. To illustrate this point, the adjacent Table 13 includes annualized energy costs for 25+ years.
Updated 5/16/2017

System maintenance:

(2) Includes $.00/kwh (2.7% higher income stream to cover more complex tracking)

(1) Includes $.00/kwh (8% M costs)

<table>
<thead>
<tr>
<th></th>
<th>0.7030</th>
<th>0.7633</th>
<th>2.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Axis</td>
<td>0.6727</td>
<td>0.7307</td>
<td>1.90</td>
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<tr>
<td>0.6427</td>
<td>0.6907</td>
<td>1.80</td>
<td></td>
</tr>
<tr>
<td>0.6126</td>
<td>0.6638</td>
<td>1.70</td>
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<td>0.5824</td>
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<td>0.5221</td>
<td>0.5643</td>
<td>1.40</td>
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<td>0.4920</td>
<td>0.5312</td>
<td>1.30</td>
<td></td>
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<tr>
<td>0.4629</td>
<td>0.4980</td>
<td>1.20</td>
<td></td>
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<tr>
<td>0.4317</td>
<td>0.4648</td>
<td>1.10</td>
<td></td>
</tr>
<tr>
<td>0.4015</td>
<td>0.4317</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solar Generation</th>
<th>0.01 Tilt Angle (2)</th>
<th>Fixed 35° Tilt Angle (1)</th>
</tr>
</thead>
</table>

25 Year Total Levelized Cost of Electricity Generation

<table>
<thead>
<tr>
<th></th>
<th>1.408</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10% Gain over the Fixed 35° Tilt System</td>
<td>1.280</td>
<td></td>
</tr>
<tr>
<td>Fixed 35° Tilt at 0.0° Azimuth</td>
<td>1.280</td>
<td></td>
</tr>
<tr>
<td>Annual Initial Energy Production, kWh/watt</td>
<td>1.280</td>
<td></td>
</tr>
</tbody>
</table>

Below:

1.6. The solar panel mounting system impacts the annual energy production and 25 year levelized costs as shown.
Comparison of Solar Generation as a Function of Time of Day for July

22nd, Using Escanaba (AWOS) Airport Average Weather Data

Trackinc with 0.0° Tilt

T7. Comparison of solar generation as a function of time of day for 35° Fixed Tilt Angle and Single Axis

Solar Generation, Watts (AC) Output per Watt (DC) Capacity (kW)
Costs for the entire system.

Expected to benefit all the electric customers, residential, commercial and large power. By lowering and $0.79 in 2023-2024. Thus, utility scale solar generation within the Escanaba electric system is factored avoided cost with solar generation for Escanaba. Escanaba avoided cost is $0.070 in 2016-2017.

20. Utility scale solar generation costs are less than a conservatively estimated (i.e., 50% capacity).

Future electric costs for 25+ years into the future.

\[
\text{A one-time investment in a utility scale solar generation capacity essentially stabilizes or fixes incentives (i.e., investment tax credits).}
\]

In the declining installation costs of utility scale solar generation facilities (i.e., $1.70/watt and lower), solar generation is a cost competitive electric generation source, even without federal incentives.

19. Key Levelized Cost Analysis Findings:

- To exceed $1.46/watt
- With an energy optimization rebate, $75 per 315 watt panel, the installation cost is exceeded not
- For a 1 MW size facility, the installation cost is exceeded not to exceed $1.70/watt.

to comply with Michigan's Renewable Energy Standards.

MIRECS: Reduction in Escanaba's purchased Michigan Renewable Energy Credits (MIRECS)

and 6PM. Year round:

An historical analysis of the monthly ATC system peak load data found that for the six months of the year from April through September, the monthly ATC peak load occurs between noon and 6 PM. August:

Historically, the annual Escanaba peak load occurs between 3 and 5 PM on a week day in July or because of the local solar generation occurring at the time of the peak load.

CAPACITY: Reduction of the Capacity Cost for the annual Escanaba peak electric load

ENERGY: The eliminated purchase of one KWH of energy from Escanaba's current contract supplier with each KWH of local solar generation.

Avoided Costs Include:

5. Summary of Avoided Costs with Local Solar Generation
that individual customer's electric bill in proportion to the number of solar panels owned by the customer. The solar credit will be applied to the monthly Residential or Business Costs.

Avoided Cost after Subtraction the Operating and Maintenance (O&M) The credit associated with each KWh of solar generation is based on the

\[
\text{Solar Generation Credit} = \text{Avoided Costs} - \text{O&M Costs}
\]

are not subsidizing the project costs. are NOT participating in the voluntary Escanaba Solar Project utilized so that the Residential, Commercial or Large Power customers who

The Avoided Cost approach for calculating the solar generation credit is
Visible from Airport Terminal to promote area economic development Image

Flat and open site requiring minimal improvements

Existing access road to reach the site

Shorter distance and resulting lower wiring costs, to connect to the existing City of Escanaba distribution system

Fewer trees on the south side of the road, which could shade the solar panels

Reasons for selecting the proposed site location:

6. Delta County Airport Potential Site
Joint Delta County and City of Escanaba Meeting – Escanaba Solar Project - May 16, 2017

The solar panels over the 30+ years for the project. Some tree removal may be required.

b. Shade analyses to determine whether or not trees on the south side of the airport road will shade

Manager Support and Involvement:

Manager support indicates minimal issues. This task and contacts with the FAA will require the Airport

proposed site indications minimal issues. This task and contacts with the FAA will require the Airport

Manager support indicates minimal issues. This task and contacts with the FAA will require the Airport

proposed solar facility for FAA review and approval. A preliminary SHARP assessment for the

a. File FAA Form 7400-1 along with a Solar glare Hazard Analysis Tool (SHARP) assessment of the

Implementing the final lease agreement:

A 2 year exclusive option to lease the property is required to complete the following tasks before

Airport, etc., and returning the site to the original condition.

Department is responsible for removing the solar panels, racking system, driven foundation poles,

When useful life of the solar generation facility is complete (i.e., 30+ years), the Escanaba Electric

(1) Payment:

$3,000 annual lease payment to use site ($16.36/acre payment over 30 years. $0.26 / sq. ft. lease

Airport staff continue to own leased property

30 year lease for approximately 5.5 acres with option to extend lease for multiple 5 year periods.

Proposed Lease Terms for the Delta County Airport Site

May 14, 2017
with awarding the construction contract, with Project completion in 2018-2019.

f. Based on the RFP responses, the City Council approving the Solar Generation project to proceed.

e. Electric Department customers.

With the solar panel costs defined by the RFP responses, promote Solar Panel Sales to Escanaba

d. Escanaba Electric Department obtaining City Administration and Council approval to issue an RFP.

The Geotechnical data is required to prepare a Project RFP.

- Driven pile or post load testing
- Soil Resistivity testing
- Boring holes (e.g., 5-9)
- Boring test pit trenches (e.g., 5)

Assessment is expected to include:

- Post Foundation construction option and the required depth for the driven posts. The Geotechnical
- Post Vertical and lateral load capacity. This testing is required to establish the feasibility of driven
- Conduct a Geotechnical site assessment to determine the soil type, water table level, soil corrosivity,
Joint Delta County and City of Escanaba Meeting – Escanaba Solar Project May 16, 2017

- Posts’ restoring in higher installation costs for the project.
- Cast in place concrete foundations for mounting the solar panels may be required instead of driven or poured on.
- Existing airport geotechnical data indicates shallow groundwater depths, less than 6’.

Requirements are met:
- Escanaba Solar Project, and probably the Airport Consulting Engineer, to ensure that all FAA requirements are met.
- The FAA application, submitted by the Airport Manager, will require support details from the FAA.

- Highest overall point of the project.
- A separate aeronautical study is submitted for each corner of the solar project site and the solar panel mounting system (fixed tilt or single axis tracking).
- Exact location for the solar panels (development of detailed project layout plan).
- To conduct the Solar glare Hazard Tool (SGHAT) assessment report defines:
  - The location and design require FAA review and approval.

Concerns with Delta County Airport Site

The FAA Review requires approximately 45 days.