



APPLICATION FOR SOLAR FARM PERMIT

**DTE ELECTRIC COMPANY**

FISH CREEK SOLAR PARK  
EVERGREEN TOWNSHIP, MICHIGAN

November 21, 2023

Evergreen Township Hall  
3044 E. Sidney Rd.  
Sheridan, MI 48884

Township Clerk  
PO Box 147  
Sheridan, MI 48884  
989-831-4073

**EVERGREEN TOWNSHIP  
APPLICATION FOR SOLAR FARM PERMIT / MODIFICATION**

**I. Applicant Information.**

Applicant Name: DTE Electric Company  
Applicant Address: One Energy Plaza, Detroit, Michigan 48226  
Authorized Representatives: Matthew Wagner, Manager, Renewable Energy Development  
Telephone # \_\_\_\_\_ Email: matthew.j.wagner@dteenergy.com

**II. Operator Information (if known).**

Operator Name: DTE Electric Company  
Operator Address: One Energy Plaza, Detroit, Michigan 48226  
Authorized Representative: Jeffrey Haines, Site Manager  
Telephone # (404) 477-7738 Email: jeffrey.haines@dteenergy.com

**III. Project Property.**

Parcel No.	Property Owner
59-009-034-006-00	ONRUST LAND, LLC
59-009-034-007-00	ONRUST LAND, LLC
59-009-027-007-00	ONRUST LAND, LLC
59-009-034-009-00	ONRUST LAND, LLC
59-009-034-010-00	ONRUST LAND, LLC
59-009-034-012-00	ONRUST LAND, LLC
59-009-034-011-00	ONRUST LAND, LLC
59-009-035-012-00	MEADOW ROCK DAIRY, LLC

(Utilize additional sheets if needed)

For additional information, please also see **Appendix A**. Per the requirement of Section 4.A. of Ordinance No. 2022-1, none of the parcels included in Project will be less than 20 acres in size.

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**IV. Required Attachments.**

- (a) Project description identifying the planned capacity in megawatts; construction sequence and timeline; development phases if any; rated useful life of solar panels, transformers, and inverters; and possible future expansions.

The project consists of photovoltaic (PV) solar panels, with a total generating capacity of approximately 132 megawatts ac (MW) located on land in Sections 34 and 35 of Evergreen Township (the "Project"). Construction is anticipated to start in the fourth quarter of 2023 with the installation of access roads and fencing, followed by the racking system, solar panels and inverters and complete with ground cover planting in the second quarter of 2025. The Project is anticipated to be completed in one phase with no additional development phases anticipated at this time. DTE's easement rights run for a term of 35 years beginning at the start of commercial operation.

The following describes the facility components shown on the site plan attached as **Appendix B**.

**1. Solar Array Equipment**

DTE proposes to use a single axis tilt photovoltaic solar panel array mounted on racking systems in rows aligned north to south that tilt from east to west slowly during daylight hours, tracking the movement of the sun. The solar arrays are no more than 14 feet in height and are surrounded by a seven-foot high perimeter fence to restrict unauthorized access and to prevent individuals from tampering with the electrical equipment and risking injury, as required by federal regulation. The rated useful life of the solar panels may be 30 years if properly maintained.

**2. Electrical Collection System**

The power generated by the solar array is collected and conveyed to the substation by an underground electrical power collection system. The collection system includes buried cables and fiber-optic communication lines, above ground pad-mounted transformers, and junction boxes. Generally, the solar modules produce Direct Current (DC) electricity which travels to the pad-mounted inverter transformers where the DC electricity is converted into Alternating Current (AC). The inverters then step-up the AC electrical voltage, often referred to as medium voltage, and the power flows to the substation the underground collection lines. The rated useful life of inverters may exceed 30 years with proper maintenance.

**3. Substation**

A fenced substation collects the electrical current generated by the solar array transformers and steps up the voltage of the electricity delivered to the point of interconnection with the transmission system, typically at 115 kilovolt (kV) or 345 kV. No substation construction is proposed in Evergreen Township.

**4. Internal Access Roads**

DTE proposes to install twelve-foot wide gravel access roads with four-foot wide shoulders if approved by the local fire department. The access roads are designed to accommodate emergency vehicles and DTE's routine maintenance of the facility.

- (b) An affidavit or evidence of an agreement establishing that the applicant has the permission of the property owner to apply for the necessary permits for the construction and operation of the solar farm.

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Please see **Appendix A**, which contains copies of the Memorandums of Solar Energy Easement showing that DTE has each landowner's consent to seek a permit to construct and operate the proposed Project.

- (c) Scaled renderings depicting the three typical views of the solar farm, including one view from the public right-of-way.

Please see **Appendix C**, which contains three typical rendered views of the Project, including two views from the public right-of-way.

- (d) Site plan showing the size and location of all proposed structures and equipment including but not limited to transformers by type, inverters by type, and photovoltaic panels by type; required setbacks; parcel lines; signage; fences; greenbelts, vegetation, and screening; drainage systems; easements; rights-of-way; roads; floodplains; bodies of water; lighting; proposed access routes; distribution, transmission, gen-tie, and collection lines; and land elevations. The site plan must be drawn to scale and must indicate how the solar farm will be connected to substations.

The Project site plan is attached as **Appendix B**. It is drawn at a scale of 1" = 250'.

The site plan is overlaid on high resolution aerial photography that shows existing conditions and references an ALTA survey for parcel lines, easements, and road right-of-way boundaries. The site plan depicts the location of all proposed solar panel arrays and inverters and the collection lines connecting them together, proposed greenbelts screening, access roads, and perimeter fencing, and all required setbacks.

No signs are proposed. The point of interconnection to the transmission system lies outside Evergreen Township, as does the gen-tie line and substation. No distribution lines are proposed.

- (e) Noise impact study and noise level map.

Please see **Appendix D**, which contains a sound modeling study of the Project that contains a sound contour mapping showing that sound pressure levels at the perimeter of the Project (where participating and non-participating parcels abut) will not exceed 45 dBA as required by Section 4.F of Ordinance No. 2022-1.

- (f) Glare study and glare map.

Please see **Appendix E**, which contains a glare study with illustrative figures showing that Project will not cause glare.

- (g) Lighting design and map.

No lighting is proposed as a part of this Project.

- (h) Electromagnetic and communications interference study and mitigation plan.

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Please see **Appendix F**, which contains studies of the potential of the Project to cause electromagnetic or communication interferences. The studies specifically examined the potential impact on AM and FM Radio, Land Mobile and Emergency Services, Mobile Phone Carriers, Over-the-air TV, and Microwave bands. The studies show that the Project will not interfere with any of these systems because either (i) all Project components are located at a sufficient distance from communication signal transmitters and signal transmission paths or (ii) solar energy facilities do not present a risk of interference with the transmission of a specific type of signal. In the unlikely event that Project inverters interfered with over-the-air TV signals, high-gain directional antennae may be employed to mitigate the impact.

- (i) Study showing estimated temporary and permanent job creation and tax impact associated with the solar farm.

The construction contractor estimates the number of temporary construction jobs associated with the Project to be 300-400. No permanent on-site jobs are expected; the facility will be monitored remotely on a round-the-clock basis by a SCADA system located at DTE's operations and maintenance center in Breckenridge, Michigan. Maintenance personnel will visit the site periodically.

The Project will have a positive tax revenue impact. The land will continue to be subject to real property tax; the Project will be subject to the industrial personal property tax, which flattens after ten years due to the structure of the depreciation schedule adopted by the State Tax Commission. A new payment in lieu of taxes (PILT) program is available, which requires tax payments based on project size at a uniform annual per megawatt (ac) rate. DTE leaves the choice to the township.

- (j) Environmental and ecological impact studies detailing the effect the construction and operation of the solar farm will have on the parcels comprising the solar farm as well as the surrounding area and a plan for mitigating the negative environmental and ecological impact the construction and operation of the solar farm will have on parcels comprising the solar farm as well as the surrounding area. The impact study and mitigation plan must address water resources, air quality, wildlife, floodplains, wetlands, unique farmlands or soils, erosion and sediment control, areas of aesthetic or historic importance, archeological or cultural concerns, neighboring properties, utilities and infrastructure, noise, glare, light, waste disposal, and any other relevant factors.

The required environmental and ecological impact studies are attached as **Appendix G**. The analysis shows that the Project will have minimal impact on the environment and surrounding utilities and infrastructure, and will maintain compliance with applicable environmental regulations.

- (k) Proof of environmental compliance, including compliance with Part 31 - Water Resources Protection, of the Natural Resources and Environmental Protection Act, Part 91- Soil Erosion and Sedimentation Control, Part 301 - Inland Lakes and Streams, Part 303 - Wetlands, Part 365 – Endangered Species Protection, and any other applicable laws and rules in force at the time the application is considered by the Township Board.

Environmental permits that may be necessary for the Project include a Part 91 Soil Erosion and Sedimentation Control permit, and a Parts 31, 301, and 303 Joint Permit Application.

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- (l) Access plan for construction and operation phases. The plan must show the proposed project service road ingress and egress access onto primary and secondary routes and the layout of the solar farm service road system. Due to infrequent access to the solar farm after its completion, paving or curbing the solar farm access drives is not required. However, driveways and parking lots used for occupied offices located on-site must be paved.

The construction phases of a solar farm do not require intersection improvements to accommodate the delivery of oversized loads. Road surface wear is also substantially less of a concern as concrete deliveries are generally limited to pads for inverters and transformers.

All significant deliveries of equipment and materials will be via Condensery Road. The Project will have a road use agreement in place with the Montcalm County Road Commission prior to the start of construction.

The access roads that will serve the arrays are shown on the site plan attached as **Appendix B**. The access roads are proposed to have a width of 12 feet with 4 feet of clear shoulder on either side of the driving lane. No paved parking areas or access roads are shown on the site plan because no occupied offices are proposed.

- (m) Decommissioning and final land reclamation plan following the anticipated useful life, abandonment, or termination of the project. The plan must include evidence of an agreement with the property owner ensuring proper and environmentally safe final removal of power-generating equipment within one year of decommissioning. At a minimum, the decommissioning plan must address the required provisions for removal of all structures (including equipment, fences, and roads), foundations, and the restoration of soil and vegetation to the condition prior to development.

A proposed decommissioning and land reclamation plan following termination of the Project is attached as **Appendix H**. The proposed form of the decommissioning bond is attached as **Appendix I**. DTE proposes to enter into a decommissioning agreement and deliver a decommissioning bond to the township prior to the start of construction. As required by Section 6.A.1, the decommissioning bond amount is \$5,037,000 (calculated as the average of two independent estimates plus 20%). DTE further proposes that the decommissioning agreement include a provision providing for periodic review and adjustment of the decommission bond amount.

- (n) Additional information requested by the Township:

Section 4.E. of Ordinance No. 2022-1 requires the site to be secured with locked Knox boxes with keys at gated entrances. The National Electrical Code no longer permits this. Because Ordinance 2022-1 requires the Project to comply with all applicable laws, including all codes adopted by the state of Michigan, this requirement should no longer apply.

Section L.9 of Ordinance No. 2022-1 requires consideration of DTE's emergency and normal shutdown procedures, and identification of potential hazards to adjacent properties, public roadways, and to the community in general that may be created. The environmental and ecologic impact, electromagnetic and communication interference, glare, and sound studies show that the Project will not create any hazards to adjacent properties, public roadways, or the community in

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general. DTE's emergency protocols are described in **Appendix J**. Normal operations are controlled and monitored through SCADA systems located at DTE's operations and maintenance center in Breckenridge, Michigan. DTE proposes to meet with the Sheridan Community Fire Department prior to the start of commercial operations to coordinate emergency response procedures.

**V. Financial Requirements.**

- (a) Application fee in the amount of \$250.
- (b) Escrow deposit in the amount of \$5,000.

**VI. Attestation.**

I Matt Wagner on behalf of the applicant attest to the following:

- The information provided in this application is accurate and complete.
- I have read and agree to comply with the requirements of Ordinance No. 2022-1.
- I understand that the decommissioning financial security, insurance, and bonding requirements of Section 10 of Ordinance No. 2022-1 must be met prior to the issuance of any permit.
- I understand that increasing the area of a solar farm by more than 10% of the original footprint or changing the solar panel type requires Township Board approval and issuance of a new permit.
- I understand, to the extent permitted by Michigan law, that permits shall be for a term not to exceed ten (10) years and may thereafter be renewed upon written application for additional ten (10) year periods.
- I understand and agree that, to the extent permitted by Michigan law, a Township permit is a revocable privilege granted by the Township and that the application for or granting of a Township permit does not create or vest any right, title, franchise, or other property interest.

Applicant's signature Matthew J Wagner Date as amended on November 17, 2023  
Title Renewable Energy Development Manager

\* ONLY COMPLETE APPLICATIONS WILL BE ACCEPTED\*  
\*APPLICATIONS SHOULD BE RETURNED TO THE TOWNSHIP CLERK\*

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(For office use only)

Date application filed: \_\_\_\_\_  
Date application fee paid: \_\_\_\_\_  
Escrow deposit date: \_\_\_\_\_  
Date presented to the Township Board: \_\_\_\_\_  
Date of public hearing: \_\_\_\_\_  
Date of permit determination: \_\_\_\_\_  
    Approved: \_\_\_\_\_  
    Denied: \_\_\_\_\_  
Date decommissioning financial security filed: \_\_\_\_\_  
Date insurance documents filed: \_\_\_\_\_  
Date road bonds filed: \_\_\_\_\_  
Date permit issued: \_\_\_\_\_

Notes:



**APPENDIX A -**  
**MEMORANDUMS OF SOLAR ENERGY EASEMENT**



**List of Participating Landowners - Fish Creek Solar Project**  
**Evergreen Township**

<b>PIN</b>	<b>Owner</b>
59-009-034-006-00	ONRUST LAND, LLC
59-009-034-007-00	ONRUST LAND, LLC
59-009-027-007-00	ONRUST LAND, LLC
59-009-034-009-00	ONRUST LAND, LLC
59-009-034-010-00	ONRUST LAND, LLC
59-009-034-012-00	ONRUST LAND, LLC
59-009-034-011-00	ONRUST LAND, LLC
59-009-035-012-00	MEADOW ROCK DAIRY, LLC

8124120  
Tx: 4088378

2021R-12735  
MONTCALM COUNTY MI  
LORI WILSON  
REGISTER OF DEEDS

## RECEIVED AND RECORDED

Instrument Number: 2021R-12735

Document Type: EASEMENT DOCUMENT

Number of Pages: 11

Arrival Date and Time: 9/8/2021 11:57:38AM

Recording Date and Time: 9/8/2021 12:03:25PM

I hereby certify that this instrument was RECEIVED and RECORDED on the date and times stamped above in the OFFICIAL PUBLIC RECORDS of the REGISTER OF DEEDS, Montcalm County, Michigan.



*Lori A. Wilson*

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Lori A. Wilson, Register  
Register of Deeds  
Montcalm County Michigan

**This cover page is PAGE 1 of your document and is part of the Official Public Record.**

**MEMORANDUM OF SOLAR POWER EASEMENT AGREEMENT**

**THIS MEMORANDUM OF SOLAR POWER EASEMENT AGREEMENT (this "Memorandum")** is made and entered into as of August 25, 2021, by and between **Onrust Land, LLC**, a Michigan limited liability company, whose address is 588 3 Mile Rd NW, Ste 203, Grand Rapids, MI 49544, **Rocking dD, LLC**, a Michigan limited liability company, whose address is 588 3 Mile Rd NW, Ste 203, Grand Rapids, MI 49544, **Fieldstone Ag Holdings, LLC**, a Michigan limited liability company, whose address is 588 3 Mile Rd NW, Ste 203, Grand Rapids, MI 49544, and **Prime Country, LLC, a Michigan limited liability company**, whose address is 69110 County Road 687, Hartford, MI 49057 ("Grantor"), and **DTE ELECTRIC COMPANY**, a Michigan corporation, whose principal address is One Energy Plaza, Detroit, Michigan 48226 ("Grantee"). (Grantor and Grantee are referred to collectively herein as the "Parties".)

**WITNESSETH:**

A. On the date hereof, the Parties have entered into a Solar Power Easement Agreement (the "Agreement") pursuant to which Grantor grants to Grantee an exclusive easement for ingress and egress over, and the installation, maintenance, operation, inspection, repair and replacement of certain photovoltaic systems and related cables, electrical lines, ducts, transformers and other equipment and roadways on, the land described in Exhibit A attached hereto and incorporated herein by reference (the "Easement Area"), as described in the Agreement.

B. The term of the Agreement commences on the Effective Date and will continue in full force and effect until its termination or expiration as provided in the Agreement.

C. The Parties desire to execute this Memorandum, which is to be recorded in order that third parties may have notice of the interests of Grantee in the Easement Area and of the existence of the Agreement and of certain easement rights granted to Grantee in the Easement Area as part of the Agreement.

**NOW, THEREFORE**, in consideration of the payments and covenants provided in the Agreement to be paid and performed by Grantee, Grantor hereby grants to Grantee the easements as described in the Agreement, on, over, under and across the Easement Area all on the terms and conditions set forth in the Agreement. The Agreement runs with the land and binds and benefits Grantor's and Grantee's successors and assigns. Grantee may assign all or any portion of its interest under this Agreement to a third party without Grantor's consent. All of the terms, conditions, provisions and covenants of the Agreement are hereby incorporated into this Memorandum by reference as though fully set forth herein, and the Agreement and this Memorandum shall be deemed to constitute a single instrument or document.

Should there be any inconsistency between the terms of this Memorandum and the Agreement, the terms of the Agreement shall prevail. The Agreement contains the entire agreement of the Parties with respect to the subject matter thereof, and any prior or contemporaneous agreements, discussions or understandings, written or oral (including, without limitation, any options or agreements for easements previously entered into by the Parties with respect to the Easement Area), are superseded by the Agreement and shall be and hereby are released, revoked and terminated.

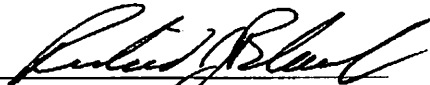
This instrument is exempt from transfer taxes pursuant to MCL 207.505(f), MCL 207.526(f), and MCL 211.8(g).

IN WITNESS WHEREOF, Grantor and Grantee have executed this Memorandum as of the day and year first above written

**GRANTOR**

**Onrust Land, LLC, a Michigan limited liability company, Rocking dD, LLC, a Michigan limited liability company, Fieldstone Ag Holdings, LLC, a Michigan limited liability company, and Prime Country, LLC, a Michigan limited liability company**

BY:


  
NAME: Richard J. Blauw, Jr.  
TITLE: Authorized Agent

STATE OF MICHIGAN )

COUNTY OF Kent ) ) SS

Acknowledged before me in Kent County, Michigan, this 8<sup>th</sup> day of July, 2021, by Richard J. Blauw, Jr. as Authorized Agent of **Onrust Land, LLC**, a Michigan limited liability company.

Notary's  
Seal

  
Lisa K. Crider, Notary Public  
Kent County, MI  
My Commission Expires: 6-15-2026  
Acting in Kent County, MI

**GRANTOR**

Onrust Land, LLC, a Michigan limited liability company, **Rocking dD, LLC, a Michigan limited liability company**, Fieldstone Ag Holdings, LLC, a Michigan limited liability company, and Prime Country, LLC, a Michigan limited liability company

BY: *Richard J. Blauw, Jr.*  
NAME: Richard J. Blauw, Jr.  
TITLE: Authorized Agent

STATE OF MI )  
 ) SS  
COUNTY OF Kent )

Acknowledged before me in Kent County, Michigan, this 8<sup>th</sup> day of July, 2021, by Richard J. Blauw, Jr. as Authorized Agent of **Rocking dD, LLC**, a Michigan limited liability company.

Notary's  
Seal

*Lisa K Crider*  
Lisa K Crider, Notary Public  
Kent County, MI  
My Commission Expires: 6-15-2026  
Acting in Kent County, MI

**GRANTOR**

Onrust Land, LLC, a Michigan limited liability company, Rocking dD, LLC, a Michigan limited liability company, **Fieldstone Ag Holdings, LLC, a Michigan limited liability company**, and Prime Country, LLC, a Michigan limited liability company

BY: *Richard J. Blauw*  
NAME: Richard J. Blauw, Jr.  
TITLE: Authorized Agent

STATE OF MI )  
 ) SS  
COUNTY OF Kent )

Acknowledged before me in Kent County, Michigan, this 8<sup>th</sup> day of July, 2021, by Richard J. Blauw, Jr. as Authorized Agent of **Fieldstone Ag Holdings, LLC**, a Michigan limited liability company.

Notary's  
Seal

*Lisa K Crider*  
Lisa K Crider, Notary Public  
Kent County, MI  
My Commission Expires: 6-15-2026  
Acting in Kent County, MI





**GRANTEE**

DTE ELECTRIC COMPANY  
a Michigan Corporation

BY:

NAME: ANTHONY TOMCZAK  
ITS: VP CORP SERVICES } CPO

STATE OF MICHIGAN )

COUNTY OF Oakland ) SS

Acknowledged before me in Oakland County, Michigan, this 25<sup>th</sup> day of August,  
2021, by Anthony J. Tomczak of DTE ELECTRIC COMPANY, a  
Michigan corporation. Anthony J. Tomczak

Notary's  
Seal

Michelle A. Riley  
Michelle A. Riley Notary Public  
Oakland County, Michigan  
My Commission Expires: 9-9-2024  
Acting in Oakland County, Michigan

Prepared by and when recorded return to:  
Heather A. Betts,  
One Energy Plaza, 1635 WCB,  
Detroit, Michigan 48226

MICHELLE A. RILEY  
NOTARY PUBLIC - STATE OF MICHIGAN  
COUNTY OF OAKLAND  
My Commission Expires September 9, 2024  
Acting in the County of Oakland

**EXHIBIT A**  
**Legal Description of Property**

The following described property located in Bushnell and Evergreen Township, Montcalm County, Michigan:

**Parcel 1:**

The following described property located in Bushnell Township, Montcalm County, Michigan:

**Land situated in the Township of Bushnell, County of Montcalm, Michigan, described as:**

**The East fractional half of the Northeast quarter of Section 3, Town 9 North, Range 6 West.**

**EXCEPT the North 250 feet of the Southeast quarter of the Northeast quarter of said Section 3.**

**Tax Identification Number: 003-003-001-00**

**Parcel 2:**

The following described property located in Bushnell Township, Montcalm County, Michigan:

**Land situated in the Township of Bushnell, County of Montcalm, Michigan, described as:**

**The Northwest quarter of the Northeast quarter of Section 3, Town 9 North, Range 6 West.**

**EXCEPT 2 acres commencing at the Northwest corner of the Northwest quarter of the Northeast quarter; thence East 8 rods; thence South 40 rods; thence West 8 rods; thence North 40 rods to the place of beginning.**

**Tax Identification Number: 003-003-002-00**

**Parcel 3:**

The following described property located in Bushnell Township, Montcalm County, Michigan:

**Land situated in the Township of Bushnell, County of Montcalm, Michigan, described as:**

**The Southwest quarter of the Northeast quarter of Section 3, Town 9 North, Range 6 West.**

**EXCEPT the North 250 feet thereof.**

**Tax Identification Number: 003-003-004-00**

**Parcel 4:**

The following described property located in Bushnell Township, Montcalm County, Michigan:

**Land situated in the Township of Bushnell, County of Montcalm, Michigan, described as:**

**The North half of the Northeast quarter of the Northeast quarter of the Northwest quarter of Section 3, Town 9 North, Range 6 West.**

**Tax Identification Number: 003-003-006-00**

**Parcel 5:**

The following described property located in Bushnell Township, Montcalm County, Michigan:

Land situated in the Township of Bushnell, County of Montcalm, Michigan, described as:

The Southeast quarter of the Northwest quarter of Section 3, Town 9 North, Range 6 West.

EXCEPT commencing at the North quarter post of said Section; thence South 00 degrees 14 minutes 45 seconds West along the North-South quarter line of said Section 1,267.77 feet to the North eighth line and the place of beginning; thence continuing South 00 degrees 14 minutes 45 seconds West 250 feet; thence North 89 degrees 48 minutes 45 seconds West 2.55 feet; thence North 88 degrees 31 minutes 30 seconds West 1,301.07 feet to the West eighth line of said Section; thence North 00 degrees 00 minutes 45 seconds West along said eighth line of said Section 220.77 feet to the North eighth line of said Section; thence South 89 degrees 48 minutes 45 seconds East along said eighth line 1,304.33 feet to the place of beginning.

ALSO EXCEPT the South 362 feet of the North 822 feet of the West 362 feet of said Southeast quarter of the Northwest quarter of said Section 3.

**Tax Identification Number:** 003-003-012-10

**Parcel 6:**

The following described property located in Bushnell Township, Montcalm County, Michigan:

Land situated in the Township of Bushnell, County of Montcalm, Michigan, described as:

The South 362 feet of the North 822 feet of the West 362 feet of the Southeast quarter of the Northwest quarter of Section 3, Town 9 North, Range 6 West.

**Tax Identification Number:** 003-003-012-20

**Parcel 7:**

The following described property located in Bushnell Township, Montcalm County, Michigan:

Land situated in Bushnell Township, County of Montcalm, Michigan, described as:

The Northwest quarter of the Southeast quarter of Section 3, Town 9 North, Range 6 West.

**Tax Identification Number:** 003-003-023-00

**Parcel 8:**

The following described property located in Evergreen Township, Montcalm County, Michigan:

Land situated in the Township of Evergreen, County of Montcalm, Michigan, described as:

All that part of the South half of the Southeast quarter of Section 27, Town 10 North, Range 6 West, lying Southerly of the centerline of the existing drainage ditch running from the Southeast corner of said Southeast 1/4 to a point on the West line of said Southeast 1/4 which is approximately 10 rods North of the Southwest corner of said Southeast quarter.

**Tax Identification Number:** 009-027-007-00

**Parcel 9:**

The following described property located in Evergreen Township, Montcalm County, Michigan:

**Land situated in the Township of Evergreen, County of Montcalm, Michigan, described as:**

**The Southeast quarter of the Southwest quarter of the Southeast quarter of Section 34, Town 10 North, Range 6 West.**

**Tax Identification Number:** 009-034-006-00

**Parcel 10:**

The following described property located in Evergreen Township, Montcalm County, Michigan:

**Land situated in the Township of Evergreen, County of Montcalm, Michigan, described as:**

**The Southeast quarter of Section 34, Town 10 North, Range 6 West.**

**EXCEPT the South quarter of the West half thereof.**

**Tax Identification Number:** PIN: 009-034-007-00

**Parcel 11:**

The following described property located in Evergreen Township, Montcalm County, Michigan:

**Land situated in the Township of Evergreen, County of Montcalm, Michigan, described as:**

**The Southeast quarter of the Southwest quarter of the Southeast quarter of Section 34, Town 10 North, Range 6 West.**

**Tax Identification Number:** 009-034-008-00

**Parcel 12:**

The following described property located in Evergreen Township, Montcalm County, Michigan:

**Land situated in the Township of Evergreen, County of Montcalm, Michigan, described as:**

**The East half of the Southwest quarter of Section 34, Town 10 North, Range 6 West.**

**Tax Identification Number:** 009-034-009-00

**Parcel 13:**

The following described property located in Evergreen Township, Montcalm County, Michigan:

**Land situated in the Township of Evergreen, County of Montcalm, Michigan, described as:**

**The West half of the Northeast quarter and the East half of the Southeast quarter of the Northwest quarter of Section 34, Town 10 North, Range 6 West.**

**Tax Identification Number: 009-034-010-00**

**Parcel 14:**

The following described property located in Evergreen Township, Montcalm County, Michigan:

**Land situated in the Township of Evergreen, County of Montcalm, Michigan, described as:**

**The Northeast quarter of the Northeast quarter of Section 34, Town 10 North, Range 6 West.**

**Tax Identification Number: 009-034-011-00**

**Parcel 15:**

The following described property located in Evergreen Township, Montcalm County, Michigan:

**Land situated in the Township of Evergreen, County of Montcalm, Michigan, described as:**

**The East 20 acres of the North half of the Northwest quarter of Section 34, Town 10 North, Range 6 West.**

**Tax Identification Number: 009-034-012-00**

**Parcel 16:**

The following described property located in Evergreen Township, Montcalm County, Michigan:

**Land situated in the Township of Evergreen, County of Montcalm, Michigan, described as:**

**The East half of the Southwest quarter of the Northwest quarter, and the West half of the Southeast quarter of the Northwest quarter, Section 34, Town 10 North, Range 6 West.**

**Tax Identification Number: 009-034-014-00**

8130585  
Tx: 4093065

**2022R-00387**  
**MONTCALM COUNTY MI**  
**LORI WILSON**  
**REGISTER OF DEEDS**

## RECEIVED AND RECORDED

Instrument Number: 2022R-00387

Document Type: EASEMENT DOCUMENT

Number of Pages: 5

Arrival Date and Time: 1/7/2022 1:24:16PM

Recording Date and Time: 1/7/2022 1:44:09PM

I hereby certify that this instrument was RECEIVED and RECORDED on the date and times stamped above in the OFFICIAL PUBLIC RECORDS of the REGISTER OF DEEDS, Montcalm County, Michigan.



*Lori A. Wilson*

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**Lori A. Wilson, Register**  
**Register of Deeds**  
**Montcalm County Michigan**

**This cover page is PAGE 1 of your document and is part of the Official Public Record.**

**MEMORANDUM OF SOLAR POWER EASEMENT AGREEMENT**

**THIS MEMORANDUM OF SOLAR POWER EASEMENT AGREEMENT (this "Memorandum")** is made and entered into as of January 04, 2022 by and between Meadow Rock Dairy, LLC, a Michigan limited liability company, whose address is 588 3 Mile Road NW, Ste 203, Grand Rapids, Michigan 49544 ("Grantor"), and DTE ELECTRIC COMPANY, a Michigan corporation, whose principal address is One Energy Plaza, Detroit, Michigan 48226 ("Grantee"). (Grantor and Grantee are referred to collectively herein as the "Parties".)

**WITNESSETH:**

A. On the date hereof, the Parties have entered into a Solar Power Easement Agreement (the "Agreement") pursuant to which Grantor grants to Grantee an exclusive easement for ingress and egress over, and the installation, maintenance, operation, inspection, repair and replacement of certain photovoltaic systems and related cables, electrical lines, ducts, transformers and other equipment and roadways on, the land described in Exhibit A attached hereto and incorporated herein by reference (the "Easement Area"), as described in the Agreement.

B. The term of the Agreement commences on the Effective Date and will continue in full force and effect until its termination or expiration as provided in the Agreement.

C. The Parties desire to execute this Memorandum, which is to be recorded in order that third parties may have notice of the interests of Grantee in the Easement Area and of the existence of the Agreement and of certain easement rights granted to Grantee in the Easement Area as part of the Agreement.

**NOW, THEREFORE**, in consideration of the payments and covenants provided in the Agreement to be paid and performed by Grantee, Grantor hereby grants to Grantee the easements as described in the Agreement, on, over, under and across the Easement Area, all on the terms and conditions set forth in the Agreement. The Agreement runs with the land and binds and benefits Grantor's and Grantee's successors and assigns. Grantee may assign all or any portion of its interest under this Agreement to a third party without Grantor's consent. All of the terms, conditions, provisions and covenants of the Agreement are hereby incorporated into this Memorandum by reference as though fully set forth herein, and the Agreement and this Memorandum shall be deemed to constitute a single instrument or document.

Should there be any inconsistency between the terms of this Memorandum and the Agreement, the terms of the Agreement shall prevail. The Agreement contains the entire agreement of the Parties with respect to the subject matter thereof, and any prior or contemporaneous agreements, discussions or understandings, written or oral (including, without limitation, any options or agreements for easements previously entered into by the Parties with respect to the Easement Area), are superseded by the Agreement and shall be and hereby are released, revoked and terminated.

This instrument is exempt from transfer taxes pursuant to MCL 207.505(f), MCL 207.526(f), and MCL 211.8(g).

IN WITNESS WHEREOF, Grantor and Grantee have executed this Memorandum as of the day and year first above written

**GRANTOR**

**Meadow Rock Dairy, LLC, a Michigan limited liability company**

BY: *Richard J. Blauw, Jr.*

NAME: Richard J. Blauw, Jr.

TITLE: Authorized Agent

STATE OF MI )

) SS

COUNTY OF Kent )

Acknowledged before me in Kent County, Michigan, this 17<sup>th</sup> day of December, 2021, by **Richard J. Blauw, Jr.**, as Authorized Agent of Meadow Rock Dairy, LLC, a Michigan limited liability company.

Notary's

Seal

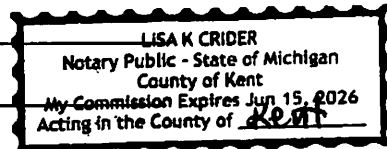
*Lisa K Crider*

\_\_\_\_\_, Notary Public

\_\_\_\_\_, County, \_\_\_\_\_

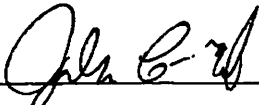
My Commission Expires: \_\_\_\_\_

Acting in \_\_\_\_\_ County, \_\_\_\_\_





**GRANTEE**  
**DTE ELECTRIC COMPANY**  
a Michigan Corporation

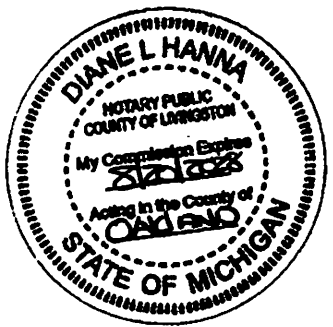
BY:   
NAME: John C. Erb  
ITS: Manager of Corporate Real Estate


STATE OF MICHIGAN     )  
  ) SS  
COUNTY OF OAKLAND    )

Acknowledged before me in Oakland County, Michigan this 4th day of JANUARY, 2008 by  
John C. Erb as Manager of Corporate Real Estate

of **DTE ELECTRIC COMPANY**, a Michigan corporation.

Notary's Seal



  
Diane L. Hanna, Notary Public  
Livingston County, Michigan  
My Commission Expires: 08/20/2028  
Acting in Oakland County, Michigan

Prepared by and when recorded return to:  
Heather A. Betts,  
One Energy Plaza, 1635 WCB, Detroit,  
Michigan 48226

**EXHIBIT A**  
**Legal Description of Property**

The following described property located in Evergreen Township, Montcalm County, Michigan:

**Parcel 1:**

The following described land located in Evergreen Township, Montcalm County, Michigan:

**THE NORTH ¼ OF THE NORTHWEST ¼ OF SECTION 35, EXCEPTING THEREFROM THE SOUTH ¼ OF THE  
NORTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 35. IN T10N, R6W, EVERGREEN TOWNSHIP, MONTCALM  
COUNTY, MICHIGAN.**

**Tax Identification Number: 009-035-012-00**

APPENDIX B -  
SITE PLANS





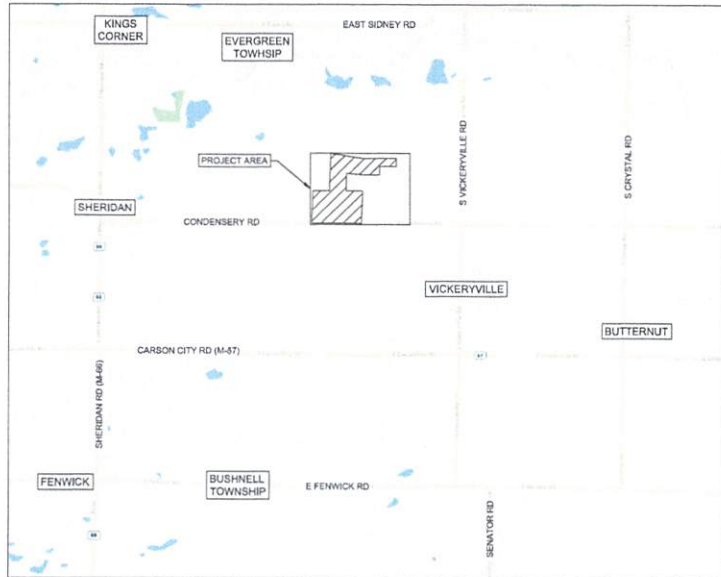
# FISH CREEK SOLAR PARK (FSCSP)

## APPLICATION FOR SITE PLAN APPROVAL

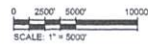
BEING PORTIONS OF SECTIONS 34 AND 35 OF EVERGREEN TOWNSHIP  
COUNTY OF MONTCALM, STATE OF MICHIGAN



COUNTY LOCATION  
SCALE: NTS



PROJECT LOCATION  
SCALE: 1" = 500'



DRAWING INDEX	
SHEET NUMBER	SHEET TITLE
C-001	COVER SHEET
C-002	KEY PLAN
C-101	AREAS 1 AND 2
C-102	AREAS 3 AND 4
C-103	AREA 5
C-501	ROAD AND FENCE DETAILS
C-502	SOIL EROSION DETAILS
C-503	LANDSCAPING DETAIL
C-504	TRACKER AND INVERTER DETAILS

**EVERGREEN TOWNSHIP**  
ANDY ROSS  
SUPERVISOR  
PH: 989-291-3630

**OWNER (DTE ELECTRIC)**  
MAIN CONTACT: JEFF HAINES  
PH: 440-477-7738  
ONE ENERGY PLAZA  
DETROIT, MICHIGAN 48226+1279

**CIVIL ENGINEER (TETRA TECH)**  
JERI DECATOR  
815 GRISWOLD STREET, SUITE 1000B  
DETROIT, MICHIGAN 48226  
PH: 313-864-0790

**PROJECT LOCATION**  
LONGITUDE 85° 0' 11.72"  
LATITUDE 43° 12' 16.53"

**EPC CONTRACTOR (RONCELLI, INC.)**  
MIKE HERBON  
6471 METRO PARKWAY  
STERLING HEIGHTS, MICHIGAN 48312  
PH: 588-264-2060

**NOTES**

- THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.
- BUSHNELL AND EVERGREEN TOWNSHIPS ARE DIVIDED BY CONDENSARY RD.

**LEGEND**

PROJECT LOCATIONS

**PRELIMINARY**  
NOT FOR CONSTRUCTION

**DTE**

**TETRA TECH**

**RONCELLI**

**KEY PLAN:**

**REVISIONS:**

NO.	DATE	DESCRIPTION
A	09/16/2023	ISSUE FOR SITE APPROVAL
B	09/02/2023	ISSUED FOR SITE APPROVAL
C	09/02/2023	ISSUED FOR SITE APPROVAL
D	09/12/2023	ISSUED FOR SITE APPROVAL
E	09/14/2023	ISSUED FOR SITE APPROVAL
F	09/20/2023	ISSUED FOR SITE APPROVAL
G	11/16/2023	ISSUED FOR SITE APPROVAL

**PROJECT TITLE:**

FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 175 MWdc

**PROJECT LOCATION:**

MONTCALM COUNTY, MI

**SHEET TITLE & DESCRIPTION:**

COVER SHEET

**PROJ NUM:** 213-165756-23001

**DES:**

**DWN:**

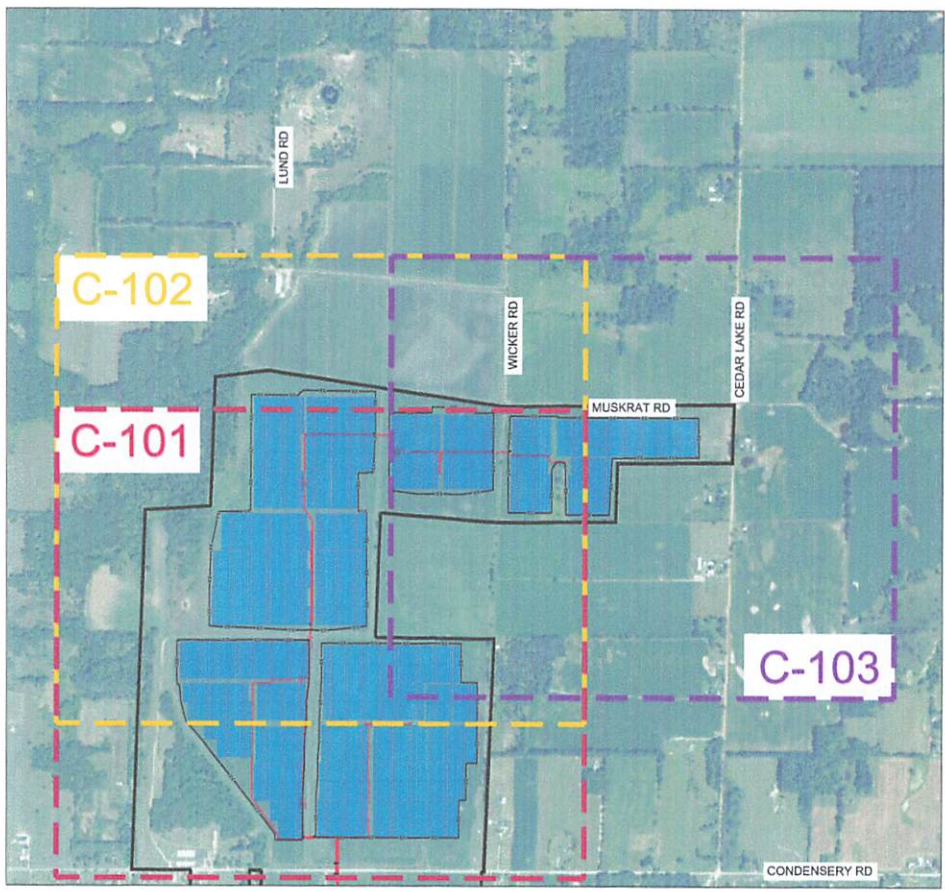
**CHK:**

**APP:**

**DATE:** 11/16/2023  
**SCALE AT SHEET SIZE:** 22" x 34"

**NTS**

**SHEET NO.:** C-001 **REV.:** G



**NOTES**

1. THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.

**LEGEND**

- PROJECT BOUNDARY
- - - PERIMETER FENCE
- - - UNDERGROUND COLLECTION SYSTEM
- SOLAR PANELS

**DTE**

**TETRA TECH**

**RONCELLI**

**KEY PLAN:**

**REVISIONS:**

NO.	DATE	DESCRIPTION
A.	05/16/2023	ISSUE FOR SITE APPROVAL
B.	06/02/2023	ISSUE FOR SITE APPROVAL
C.	06/02/2023	ISSUE FOR SITE APPROVAL
D.	06/12/2023	ISSUE FOR SITE APPROVAL
E.	06/14/2023	ISSUE FOR SITE APPROVAL
F.	06/20/2023	ISSUE FOR SITE APPROVAL
G.	11/16/2023	ISSUE FOR SITE APPROVAL

**PROJECT TITLE:**

FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 175 MWdc

**PROJECT LOCATION:**

MONTCALM COUNTY, MI

**SHEET TITLE & DESCRIPTION:**

KEY PLAN

**PROJ. NO.:** 213-165756-23001

**DES.:**

**DWN.:**

**CHK.:**

**APV.:**

**DATE:** 11/16/2023

**SCALE AT SHEET SIZE: 22" x 34":**

0 350' 700' 1400'

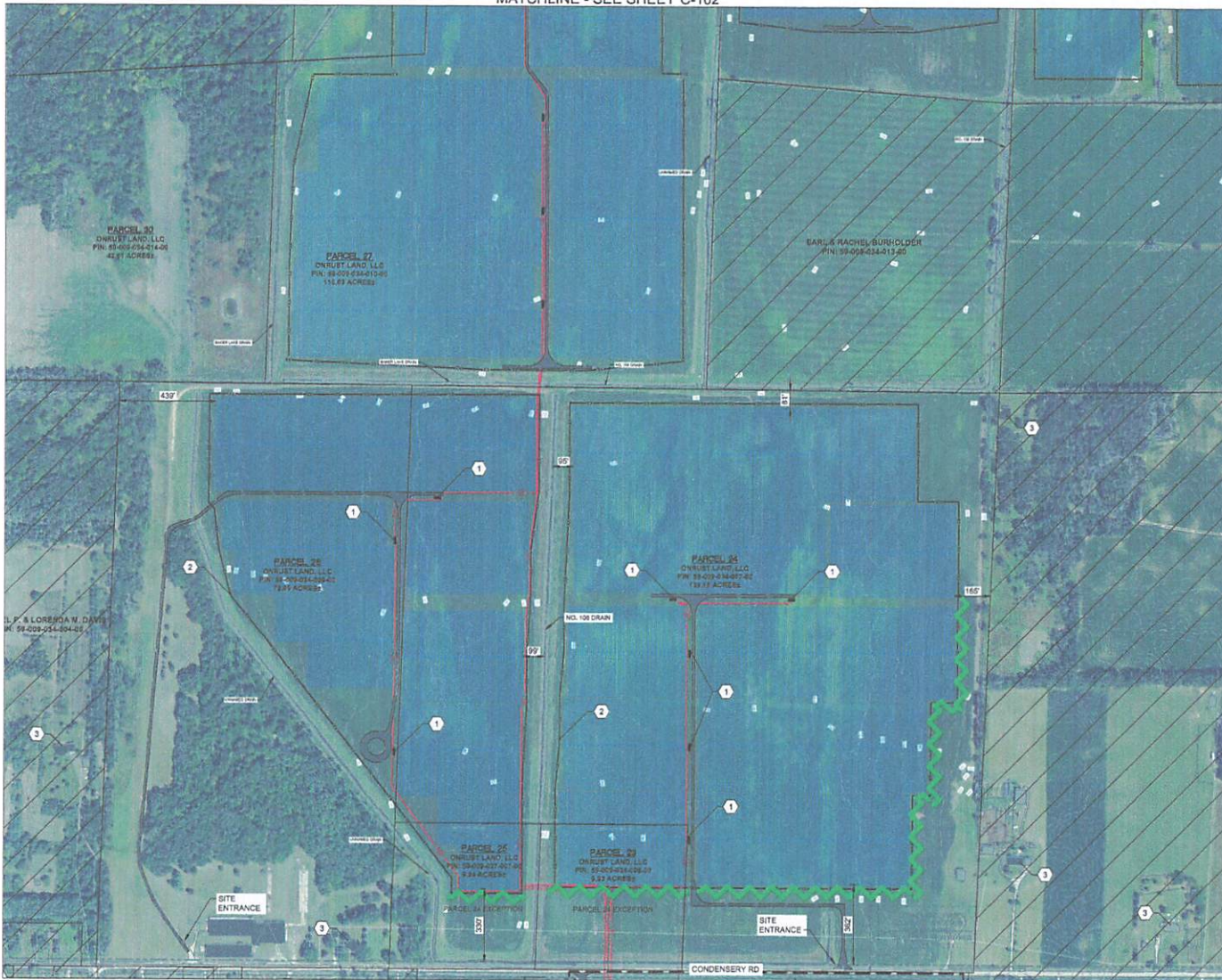
**SCALE: 1" = 700'**

**SHEET NO.:** C-002 **REV.:** G

**PRELIMINARY**  
NOT FOR CONSTRUCTION



MATCHLINE - SEE SHEET C-102



**PRELIMINARY**  
NOT FOR CONSTRUCTION

**NOTES**

1. THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.
2. CONSTRAINTS ARE FROM THE ORIGIN NOTED IN THE SETBACKS TABLE BELOW.
3. BEST MANAGEMENT PRACTICES FOR SOIL EROSION TO BE DESIGNED AND MAINTAINED IN ACCORDANCE WITH MICHIGAN SOILS REQUIREMENTS. FINAL LOCATIONS AND SIZES TO BE DETERMINED AT FINAL DESIGN.
4. PROPOSED LANDSCAPING WILL CONSIST OF TWO STAGGERED ROWS OF EVERGREEN TREES THAT ARE AT LEAST SIX FEET TALL AT THE TIME OF PLANTING. TREES WILL BE SPACED IN A MANNER THAT FACILITATES HEALTHY GROWTH AND MAXIMIZES VISUAL SCREENING.
5. STRUCTURE OFFSETS ARE AS FOLLOWS:
  - 5.1. MINIMUM 8 FT OFFSET FROM PERMETER FENCE TO ACCESS ROAD
  - 5.2. MINIMUM 15 FT OFFSET FROM ACCESS ROAD TO SOLAR PANELS
  - 5.3. MINIMUM 12 FT NORTH AND SOUTH BETWEEN ARRAYS
  - 5.4. MINIMUM 8 FT OFFSET FROM ACCESS ROAD TO INVERTER
  - 5.5. MINIMUM 25 FT BETWEEN PANELS AND PERMETER FENCE

**LEGEND**

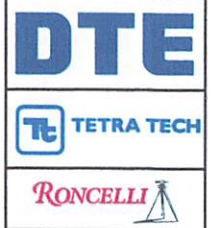
- xx — PERMETER FENCE
- SOLAR PANEL ARRAY
- PROPERTY BOUNDARY
- - - EXISTING EASEMENT
- - - EXISTING RIGHT-OF-WAY
- - - EXISTING CONTOUR
- ~ ~ ~ EXISTING VEGETATION
- ~ ~ ~ PROPOSED LANDSCAPING
- UNDERGROUND COLLECTION SYSTEM
- POWER CONDITIONING SYSTEM (INVERTER)
- ACCESS ROAD
- NON-PARTICIPATING AREAS
- WETLAND AREA

**KEY NOTES**

- ① POWER CONDITIONING SYSTEM (INVERTER)
- ② PERMETER FENCE SEE DETAIL SHEET C-601
- ③ OCCUPIED RESIDENCES

**SETBACKS TABLE**

Constraint	Township Setback
Property Line - Non-Participating	80 ft
Occupied Dwelling	300 ft
Sound Contours	< 45 dBA at property boundary
Glare Impact / Flight Paths	Refer to Glare Study
State-Regulated Floodplains	N/A
Public Road ROW - Highway	N/A
Transmission Line	50ft
Public Road ROW - Other (eg County)	50 ft
Railroads ROW	150 ft
Private Road ROW	50 ft



**REVISIONS**

NO.	DATE	DESCRIPTION
A	06/16/2023	ISSUE FOR SITE APPROVAL
B	08/02/2023	ISSUED FOR SITE APPROVAL
C	08/02/2023	ISSUED FOR SITE APPROVAL
D	08/31/2023	ISSUED FOR SITE APPROVAL
E	08/14/2023	ISSUED FOR SITE APPROVAL
F	08/20/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

**PROJECT TITLE:**  
FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 172 MWdc

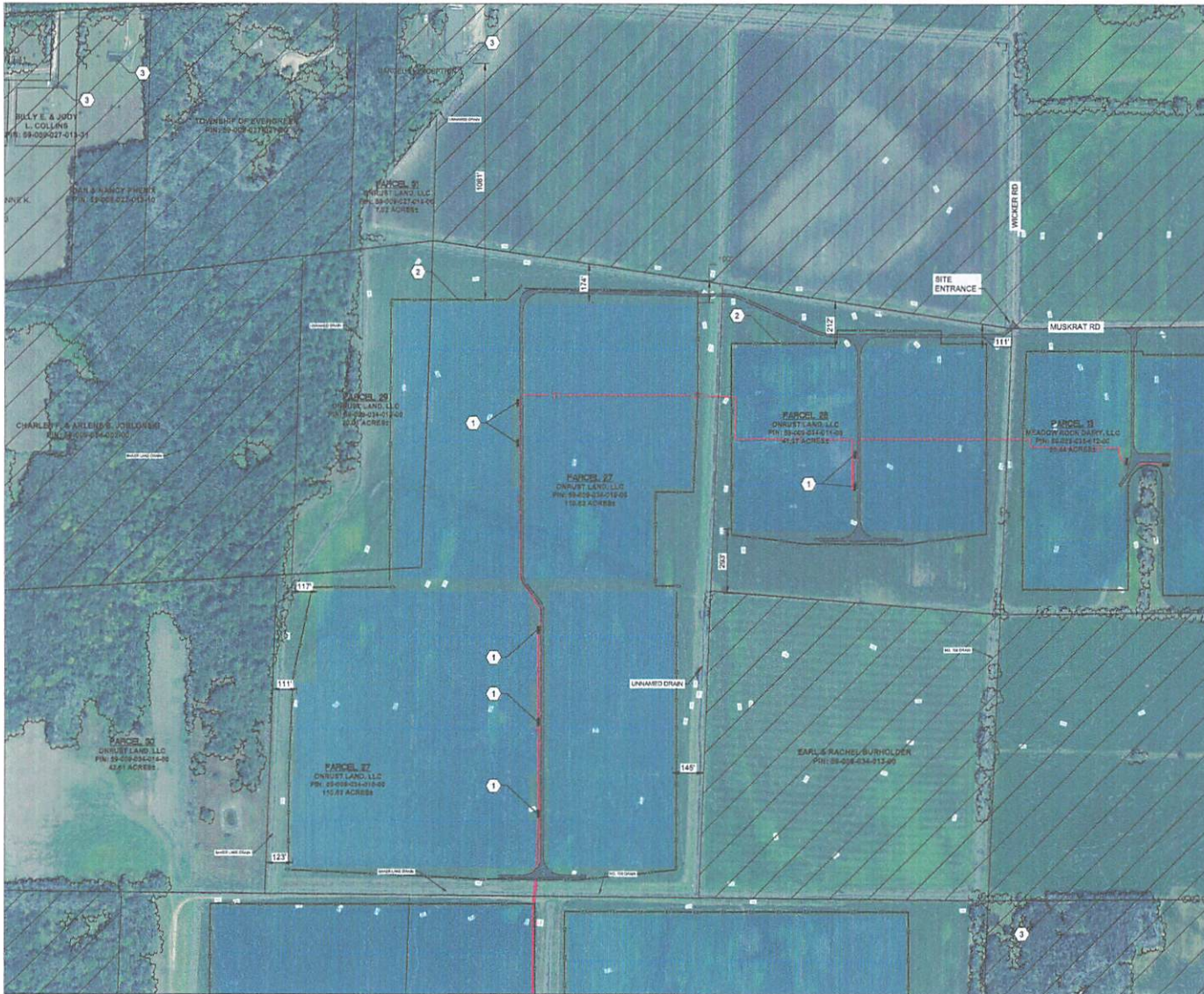
**PROJECT LOCATION:**  
MONTCALM COUNTY, MI

**SHEET TITLE & DESCRIPTION:**  
AREAS 1 AND 2

**SITE PLAN**

PROJ NO:	213-165756-23001
DES:	
DWN:	
CHK:	
APV:	
DATE:	11/08/2023
SCALE AT SHEET SIZE 22" x 34":	0 125' 250' 500'
SCALE:	1" = 250'

SHEET NO: **C-101** REV: **G**



MATCHLINE - SEE SHEET C-103

MATCHLINE - SEE SHEET C-101

**PRELIMINARY**  
NOT FOR CONSTRUCTION

**NOTES**

1. THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.
2. CONSTRAINTS ARE FROM THE ORIGIN NOTED IN THE SETBACKS TABLE BELOW.
3. BEST MANAGEMENT PRACTICES FOR SOIL EROSION TO BE DESIGNED AND MAINTAINED IN ACCORDANCE WITH MICHIGAN EGLE REQUIREMENTS. FINAL LOCATIONS AND SIZES TO BE DETERMINED AT FINAL DESIGN.
4. PROPOSED LANDSCAPING WILL CONSIST OF TWO STAGGERED ROWS OF EVERGREEN TREES THAT ARE AT LEAST SIX FEET TALL AT THE TIME OF PLANTING. TREES WILL BE SPACED IN A MANNER THAT FACILITATES HEALTHY GROWTH AND MAXIMIZES VISUAL SCREENING.
5. STRUCTURE OFFSETS ARE AS FOLLOWS:
  - 5.1. MINIMUM 5 FT OFFSET FROM PERIMETER FENCE TO ACCESS ROAD
  - 5.2. MINIMUM 15 FT OFFSET FROM ACCESS ROAD TO SOLAR PANELS
  - 5.3. MINIMUM 12 FT NORTH AND SOUTH BETWEEN ARRAYS
  - 5.4. MINIMUM 8 FT OFFSET FROM ACCESS ROAD TO INVERTER
  - 5.5. MINIMUM 20 FT BETWEEN PANELS AND PERIMETER FENCE

**LEGEND**

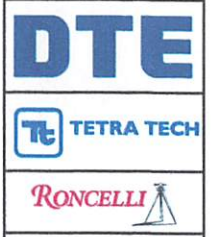
- PERIMETER FENCE
- SOLAR PANEL ARRAY
- PROPERTY BOUNDARY
- EXISTING EASEMENT
- EXISTING RIGHT-OF-WAY
- EXISTING CONTOUR
- EXISTING VEGETATION
- PROPOSED LANDSCAPING
- UNDERGROUND COLLECTION SYSTEM
- POWER CONDITIONING SYSTEM (INVERTER)
- ACCESS ROAD
- NON-PARTICIPATING AREAS
- WETLAND AREA

**KEY NOTES**

- POWER CONDITIONING SYSTEM (INVERTER)
- PERIMETER FENCE SEE DETAIL, SHEET C-501
- OCCUPIED RESIDENCES

**SETBACKS TABLE**

Constraint	Township Setback
Property Line - Non-Participating	80 ft
Occupied Dwelling	300 ft
Sound Contours	< 45 dBA at property boundary
Glare Impact / Flight Paths	Refer to Glare Study
State-Regulated Floodplains	N/A
Public Road ROW - Highway (Inverter)	N/A
Transmission Line	50 ft
Public Road ROW - Other (eg County)	50 ft
Railroads ROW	150 ft
Private Road ROW	50 ft



**KEY PLAN:**



**REVISIONS:**

NO.	DATE	DESCRIPTION
A	05/16/2023	ISSUED FOR SITE APPROVAL
B	08/02/2023	ISSUED FOR SITE APPROVAL
C	08/02/2023	ISSUED FOR SITE APPROVAL
D	08/31/2023	ISSUED FOR SITE APPROVAL
E	09/14/2023	ISSUED FOR SITE APPROVAL
F	09/20/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

**PROJECT TITLE:**

**FISH CREEK SOLAR PARK (FSCSP)**  
132 MWac / 172 MWdc

**PROJECT LOCATION:**

MONTCALM COUNTY, MI

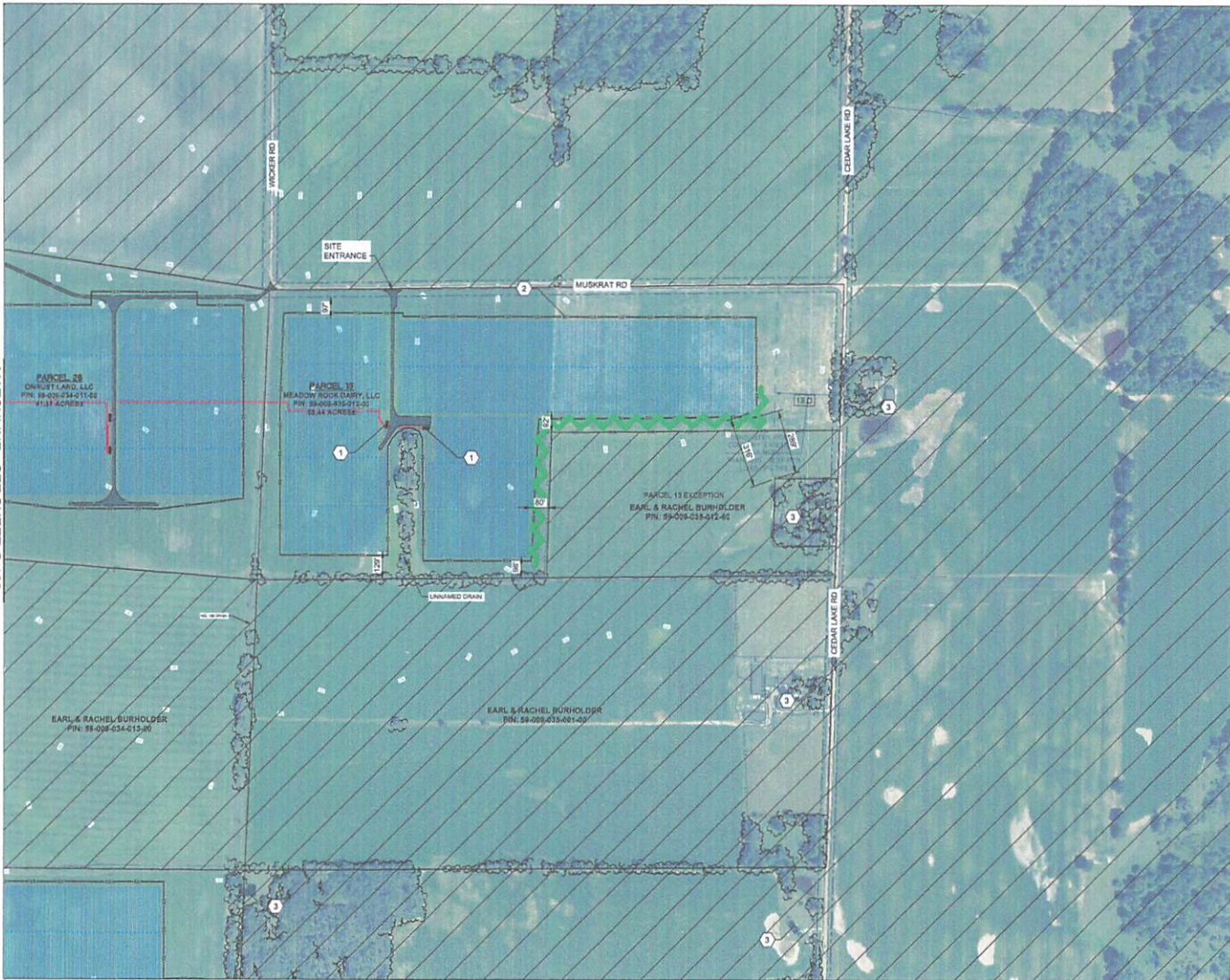
**SHEET TITLE & DESCRIPTION:**

AREAS 3 AND 4

**SITE PLAN**

PROJ NUM:	213-165756-23001
DES:	
DWN:	
CHK:	
APP:	
DATE:	11/08/2023
SCALE AT SHEET SIZE 22" x 34":	
SCALE: 1" = 250'	

SHEET NO:	C-102	REV:	G
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MATCHLINE - SEE SHEET C-102

**PRELIMINARY**  
NOT FOR CONSTRUCTION

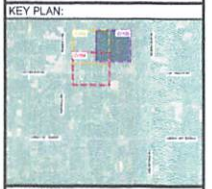
- NOTES**
1. THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.
  2. CONSTRAINTS ARE FROM THE ORIGIN NOTED IN THE SETBACKS TABLE BELOW.
  3. BEST MANAGEMENT PRACTICES FOR SOIL EROSION TO BE DESIGNED AND MAINTAINED IN ACCORDANCE WITH MICHIGAN ERIE REQUIREMENTS. FINAL LOCATIONS AND SIZES TO BE DETERMINED AT FINAL DESIGN.
  4. PROPOSED LANDSCAPING WILL CONSIST OF TWO STAGGERED ROWS OF EVERGREEN TREES THAT ARE AT LEAST SIX FEET TALL AT THE TIME OF PLANTING. TREES WILL BE SPACED IN A MANNER THAT FACILITATES HEALTHY GROWTH AND MAXIMIZES VISUAL SCREENING.
  5. STRUCTURE OFFSETS ARE AS FOLLOWS:
    - 5.1. MINIMUM 5 FT OFFSET FROM PERMETER FENCE TO ACCESS ROAD
    - 5.2. MINIMUM 15 FT OFFSET FROM ACCESS ROAD TO SOLAR PANELS
    - 5.3. MINIMUM 12 FT NORTH AND SOUTH BETWEEN ARRAYS
    - 5.4. MINIMUM 8 FT OFFSET FROM ACCESS ROAD TO INVERTER
    - 5.5. MINIMUM 20 FT BETWEEN PANELS AND PERMETER FENCE

- LEGEND**
- PERMETER FENCE
  - SOLAR PANEL ARRAY
  - PROPERTY BOUNDARY
  - EXISTING EASEMENT
  - EXISTING RIGHT-OF-WAY
  - EXISTING CONTOUR
  - EXISTING VEGETATION
  - PROPOSED LANDSCAPING
  - UNDERGROUND COLLECTION SYSTEM
  - POWER CONDITIONING SYSTEM (INVERTER)
  - ACCESS ROAD
  - NON-PARTICIPATING AREAS
  - WETLAND AREA

- KEY NOTES**
- ① POWER CONDITIONING SYSTEM (INVERTER)
  - ② PERMETER FENCE SEE DETAIL, SHEET C-001
  - ③ OCCUPIED RESIDENCES

**SETBACKS TABLE**

Constraint	Township Setback
Property Line - Non-Participating	80 ft
Occupied Dwelling	300 ft
Sound Contours	< 45 cBA at property boundary
Glare Impact / Flight Paths	Refer to Glare Study
State-Regulated Floodplains	N/A
Public Road ROW - Highway (Inverter)	N/A
Transmission Line	50ft
Public Road ROW - Other (eg County)	80 ft
Railroads ROW	150 ft
Private Road ROW	80 ft



**REVISIONS:**

NO.	DATE	DESCRIPTION
A	06/16/2023	ISSUE FOR SITE APPROVAL
B	08/02/2023	ISSUED FOR SITE APPROVAL
C	08/02/2023	ISSUED FOR SITE APPROVAL
D	08/31/2023	ISSUED FOR SITE APPROVAL
E	08/14/2023	ISSUED FOR SITE APPROVAL
F	08/20/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

**PROJECT TITLE:**  
FISH CREEK SOLAR PARK (FCSPP)  
132 MWac / 172 MWdc

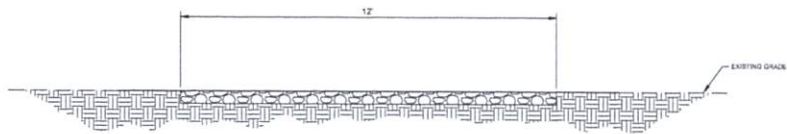
**PROJECT LOCATION:**  
MONTCALM COUNTY, MI

**SHEET TITLE & DESCRIPTION:**  
AREA 5  
SITE PLAN

PROJ. NUM: 213-165756-23001  
 DES:  
 DWN:  
 CHK:  
 APY:  
 DATE: 11/08/2023  
 SCALE AT SHEET SIZE 22" x 34":  
 0 125' 250' 500'  
 SCALE: 1" = 250'

SHEET NO: C-103 REV: G



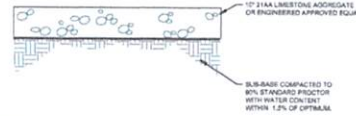


**FENCE NOTES:**

1. DRIVEWAYS WILL BE SLOPED TO MATCH EXISTING GRADE.

**TYPICAL ACCESS ROAD SECTION**

SCALE: NONE



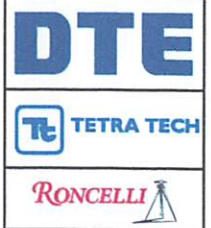
- NOTES:**
1. REMOVE ORGANIC MATERIAL AND TOPSOIL, WITHIN THE INFLUENCE OF THE PAVEMENT SECTION, BACKFILL TO SUB-BASE ELEVATION WITH CLASS 8 DRUMFLAK SAND.

**TYPICAL ACCESS ROAD DETAIL**

SCALE: NONE

**NOTES**

1. THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.



KEY PLAN:

**REVISIONS**

NO.	DATE	DESCRIPTION
A	06/16/2023	ISSUED FOR SITE APPROVAL
B	08/02/2023	ISSUED FOR SITE APPROVAL
C	08/02/2023	ISSUED FOR SITE APPROVAL
D	08/01/2023	ISSUED FOR SITE APPROVAL
E	08/14/2023	ISSUED FOR SITE APPROVAL
F	09/02/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

**PROJECT TITLE:**

FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 172 MWdc

**PROJECT LOCATION:**

MONTCALM COUNTY, MI

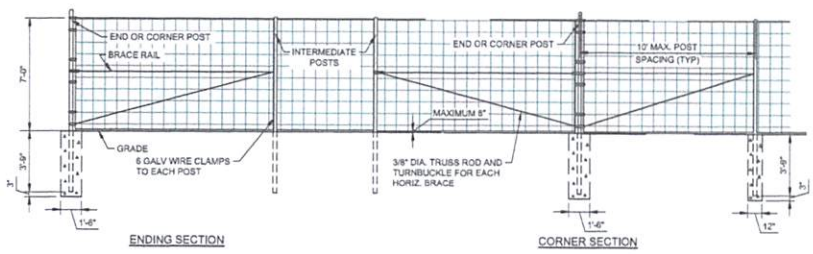
**SHEET TITLE & DESCRIPTION:**

ROAD AND FENCE DETAILS

PRJ NUMBER: 213-165756-23001

DES:  
OWN:  
CHK:  
APV:  
DATE: 11/08/2023  
SCALE AT SHEET SIZE: 22" x 34"

SHEET NO: C-501 REV: G

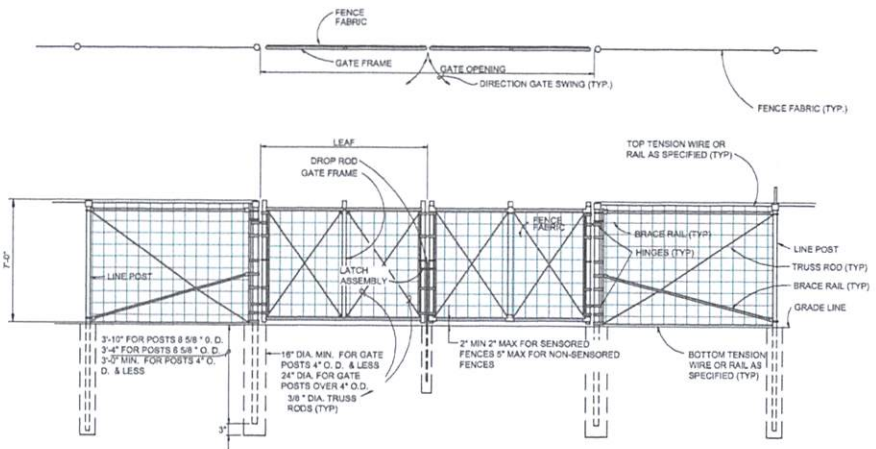


**FENCE NOTES:**

1. INTERMEDIATE BRACED POSTS SHALL BE PLACED AT 600' INTERVALS OR MIDWAY BETWEEN END OR CORNER POSTS WHEN DISTANCE IS LESS THAN 1320' AND MORE THAN 600'.
2. FENCE FABRIC SHALL BE SECURELY FASTENED TO TOP TENSION WIRE WITH FASTENERS SPACED NOT MORE THAN 1'-3" APART. IF HOG RINGS ARE USED FOR FABRIC FASTENERS, THEY SHALL BE 12-GAUGE TIGHTLY CRIMPED ABOUT BOTH THE TENSION WIRE AND THE FABRIC WIRE OR 11-GAUGE IF UNCRIMPED. FENCE FABRIC SHALL BE FASTENED TO THE POSTS USING METAL BANDS OR WIRES SPACED NOT MORE THAN 1'-0" APART. THE WIRE SHALL NOT BE LESS THAN 12-GAUGE.
3. TENSION WIRE SHALL BE STRETCHED TAUT.
4. ALTERNATE POST SECTIONS MAY BE SUBMITTED FOR APPROVAL BY THE CONTRACTING OFFICER.
5. INTERMEDIATE LENGTHS OF FENCING LESS THAN (600') WITH VARIABLE HEIGHTS SHOULD BE AVOIDED IF POSSIBLE.
6. POSTS AND GATE FRAMES SHALL MEET THE SPECIFIED NOMINAL WEIGHTS PER LFT AND CORRESPONDING A.S.T.M. SPECIFICATIONS SHOWN IN THE CURRENT STANDARD SPECIFICATIONS.

**TYPICAL PERIMETER FENCE DETAIL**

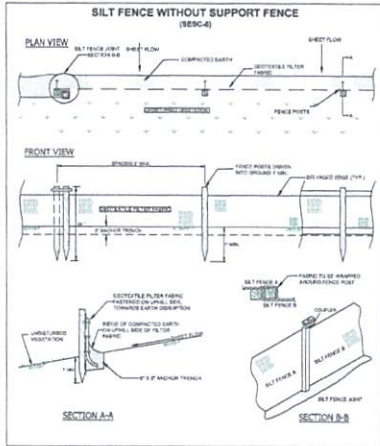
SCALE: NONE



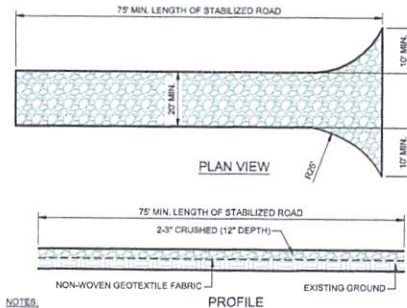
**TYPICAL GATE DETAIL**

SCALE: NONE

**PRELIMINARY**  
NOT FOR CONSTRUCTION



51 SILT FENCE



- NOTES:**
1. ESTABLISH STABILIZED CONSTRUCTION ENTRANCE PRIOR TO THE INITIATION OF SITE CONSTRUCTION ACTIVITIES.
  2. CARE SHOULD BE TAKEN TO PREVENT MATERIAL MOVEMENT INTO ADJACENT WETLANDS/WATERBODIES.
  3. CARE SHOULD BE TAKEN TO MAINTAIN EXISTING ROADSIDE DRAINAGE VIA CULVERT INSTALLATION, WITH SEDIMENT SUMP PLACED DOWNFLOW OF CULVERT.
  4. CONSTRUCTION ENTRANCE SHALL COMPLY WITH IDEM STORMWATER MANUAL, DATED OCT. 2007, INGRESS / EGRESS PAD FOR LARGE SITES.

53 STABILIZED CONSTRUCTION ACCESS

**NOTES**

1. BEST MANAGEMENT PRACTICES FOR SOIL EROSION TO BE DESIGNED AND MAINTAINED IN ACCORDANCE WITH MICHIGAN EGLE REQUIREMENTS. FINAL LOCATIONS AND SIZES TO BE DETERMINED AT FINAL DESIGN.

**DTE**

**TETRA TECH**

**RONCELLI**

**KEY PLAN:**

**REVISIONS:**

NO.	DATE	DESCRIPTION
A	08/14/2023	ISSUED FOR SITE APPROVAL
B	08/02/2023	ISSUED FOR SITE APPROVAL
C	08/02/2023	ISSUED FOR SITE APPROVAL
D	08/14/2023	ISSUED FOR SITE APPROVAL
E	08/14/2023	ISSUED FOR SITE APPROVAL
F	08/20/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

**PROJECT TITLE:**

FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 172 MWdc

**PROJECT LOCATION:**

MONTCALM COUNTY, MI

**SHEET TITLE & DESCRIPTION:**

SOIL EROSION DETAILS

**PROJ. NO.:** 213-165756-23001

**DES.:**

**DWN.:**

**CHK.:**

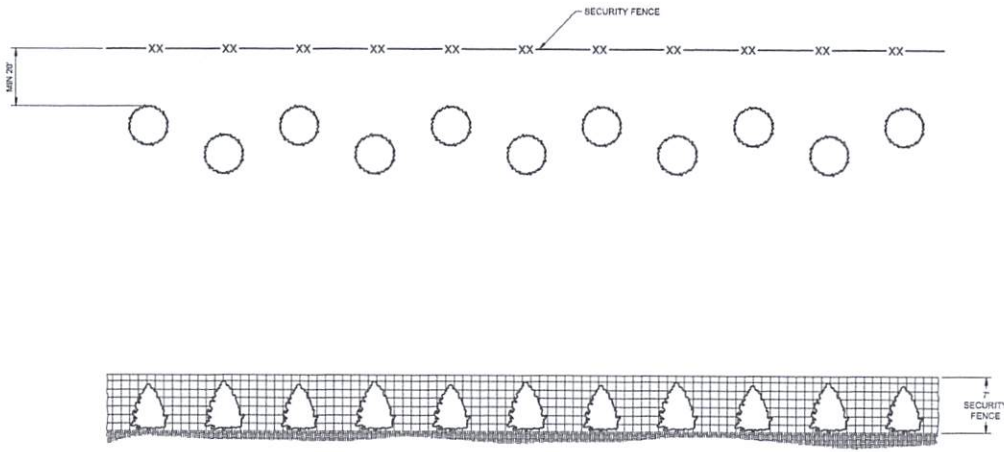
**APP.:**

**DATE:** 11/08/2023

**SCALE AT SHEET SIZE:** 22" x 34"


**SHEET NO.:** C-502 **REV.:** G

**PRELIMINARY**  
NOT FOR CONSTRUCTION



TYPICAL LANDSCAPE SCREENING DETAIL  
SCALE: NOT TO SCALE

- NOTES
1. THE SUBCONTRACTOR MUST PROVIDE THE CONSTRUCTION COORDINATOR DOCUMENTATION FROM THE SUPPLIER THAT LANDSCAPE VEGETATION MEETS OR EXCEEDS THE SPECIFIED STANDARD.
  2. FIRE MITIGATION, THERE SHALL BE A THREE FOOT WIDE FIRE BREAK ON EITHER SIDE OF THE FENCE LINE.
  3. THE GROUND SURFACE AND EQUIPMENT SHALL BE KEPT FREE OF VEGETATION AND BRUSH IN A VEED FREE ENVIRONMENT TO A DISTANCE OF 5 FEET.
  4. LOCATE UTILITIES PRIOR TO COMMENCING LANDSCAPE OPERATIONS. ALL TREES SHALL BE FIELD POSITIONED AS TO AVOID CONFLICTS WITH EXISTING AND PROPOSED UTILITIES. NOTIFY OWNER REPRESENTATIVE OF ANY CONFLICTS OR OBSTRUCTIONS.
  5. CONTRACTOR SHALL STAKE ALL PLANTING AREAS IN THE FIELD PRIOR TO PLANTING FOR APPROVAL OF THE OWNER OR THEIR REPRESENTATIVE.
  6. ALL PLANT MATERIAL SHALL BE SPECIMEN QUALITY AND SHALL COMPLY WITH RECOMMENDATIONS AND REQUIREMENTS OF ANSI Z603.1 THE AMERICAN STANDARD FOR NURSERY STOCK.
  7. THE OWNER REPRESENTATIVE SHALL APPROVE GRADES AND CONDITION OF SITE PRIOR TO PLANTING AND SEEDING OPERATIONS.
  8. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT DESIGNATED FOR OTHER PLANTINGS SHALL BE SEED.
  9. ALL PLANT MATERIAL MUST MEET THE REQUIREMENTS OF THE EVERGREEN TOWNSHIP AS A MINIMUM.


KEY PLAN:

REVISIONS:		
NO.	DATE	DESCRIPTION
A	09/12/2023	ISSUED FOR SITE APPROVAL
B	09/02/2023	ISSUED FOR SITE APPROVAL
C	08/02/2023	ISSUED FOR SITE APPROVAL
D	08/01/2023	ISSUED FOR SITE APPROVAL
E	09/14/2023	ISSUED FOR SITE APPROVAL
F	09/20/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

PROJECT TITLE:

FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 172 MWdc

PROJECT LOCATION:

MONTCALM COUNTY, MI

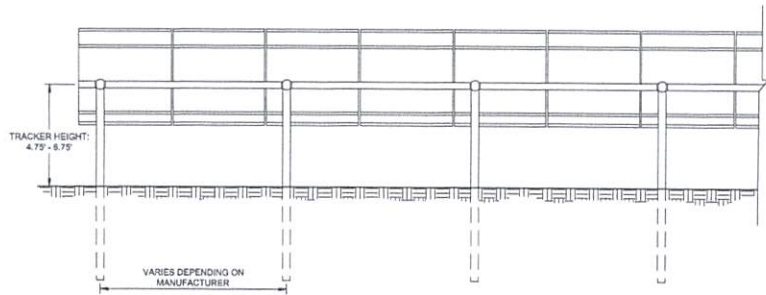
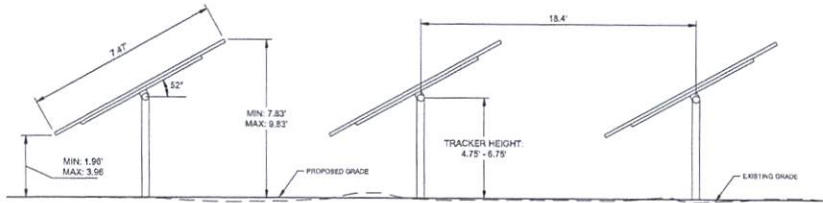
SHEET TITLE & DESCRIPTION:

LANDSCAPING DETAILS

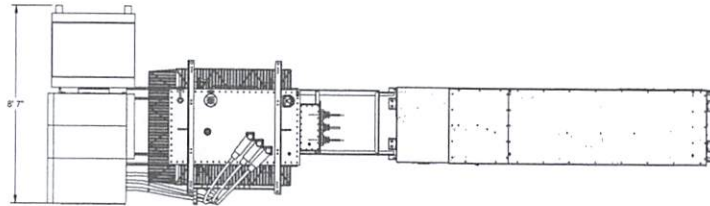
PROJ NUM:	213-165756-23001
DES:	
DWN:	
CHK:	
APV:	
DATE:	11/09/2023
SCALE AT SHEET SIZE 22" x 34"	

SHEET NO. C-503      REV. G

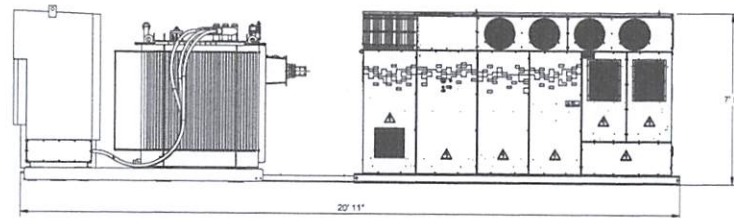
PRELIMINARY  
NOT FOR CONSTRUCTION



**TYPICAL SOLAR TRACKER DETAIL**  
SCALE: NONE



PLAN VIEW



ELEVATION VIEW

**INVERTER DETAIL**  
SCALE: NONE

**NOTES**

1. THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.



KEY PLAN:

REVISIONS:

NO	DATE	DESCRIPTION
A.	09/16/2023	ISSUED FOR SITE APPROVAL
B.	09/19/2023	ISSUED FOR SITE APPROVAL
C.	09/22/2023	ISSUED FOR SITE APPROVAL
D.	09/23/2023	ISSUED FOR SITE APPROVAL
E.	09/14/2023	ISSUED FOR SITE APPROVAL
F.	09/20/2023	ISSUED FOR SITE APPROVAL
G.	11/08/2023	ISSUED FOR SITE APPROVAL

PROJECT TITLE:

FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 172 MWdc

PROJECT LOCATION:

MONTCALM COUNTY, MI

SHEET TITLE & DESCRIPTION:

TRACKER AND INVERTER DETAILS

PROJ. NUM:	213-165756-23001
DES:	
DWN:	
CHK:	
APV:	
DATE:	11/08/2023
SCALE AT SHEET SIZE 22" x 34"	

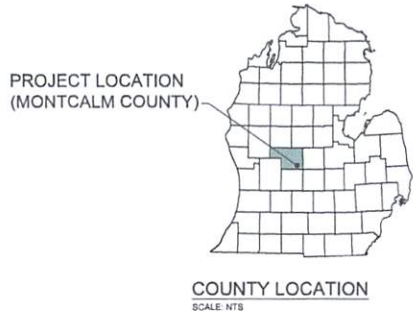
**PRELIMINARY**  
NOT FOR CONSTRUCTION

SHEET NO:	C-504	REV:	G
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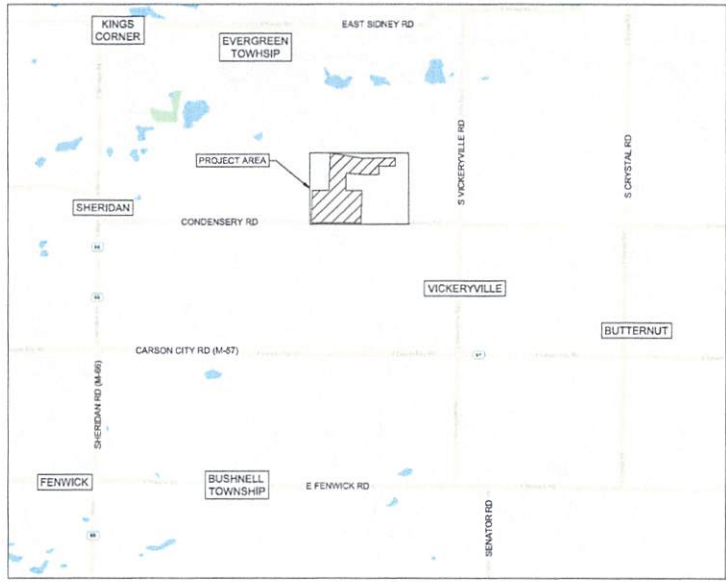


# FISH CREEK SOLAR PARK (FSCSP)

APPLICATION FOR SITE PLAN APPROVAL  
 BEING PORTIONS OF SECTIONS 34 AND 35 OF EVERGREEN TOWNSHIP  
 COUNTY OF MONTCALM, STATE OF MICHIGAN



DRAWING INDEX	
SHEET NUMBER	SHEET TITLE
C-001	COVER SHEET
C-002	KEY PLAN
C-101	AREAS 1 AND 2
C-102	AREAS 3 AND 4
C-103	AREA 5
C-501	ROAD AND FENCE DETAILS
C-502	SOIL EROSION DETAILS
C-503	LANDSCAPING DETAIL
C-504	TRACKER AND INVERTER DETAILS



**NOTES**

- THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.
- BUSHNELL AND EVERGREEN TOWNSHIPS ARE DIVIDED BY CONDENSARY RD.

**LEGEND**

▨ PROJECT LOCATIONS

**EVERGREEN TOWNSHIP**  
 ANDY ROSS  
 SUPERVISOR  
 PH: 989-291-3630

**PROJECT LOCATION**  
 LONGITUDE 85° 0' 11.72"  
 LATITUDE 43° 12' 16.53"

**OWNER (DTE ELECTRIC)**  
 MAIN CONTACT: JEFF HAINES  
 PH: 440-477-7738  
 ONE ENERGY PLAZA  
 DETROIT, MICHIGAN 48226+1279

**EPC CONTRACTOR (RONCELLI, INC.)**  
 MIKE HERBON  
 6471 METRO PARKWAY  
 STERLING HEIGHTS, MICHIGAN 48312  
 PH: 586-264-2060

**CIVIL ENGINEER (TETRA TECH)**  
 JERI DECATOR  
 815 GRISWOLD STREET, SUITE 1000B  
 DETROIT, MICHIGAN 48226  
 PH: 313-964-0790

**KEY PLAN:**

REVISIONS:		
NO.	DATE	DESCRIPTION
A	06/16/2023	ISSUED FOR SITE APPROVAL
B	08/02/2023	ISSUED FOR SITE APPROVAL
C	08/02/2023	ISSUED FOR SITE APPROVAL
D	08/01/2023	ISSUED FOR SITE APPROVAL
E	08/14/2023	ISSUED FOR SITE APPROVAL
F	09/20/2023	ISSUED FOR SITE APPROVAL
G	11/16/2023	ISSUED FOR SITE APPROVAL

**PROJECT TITLE:**  
 FISH CREEK SOLAR PARK (FSCSP)  
 132 MWac / 175 MWdc

**PROJECT LOCATION:**  
 MONTCALM COUNTY, MI

**SHEET TITLE & DESCRIPTION:**  
 COVER SHEET

**PROJ. NUM:** 213-165756-23001

**DES:**

**DWN:**

**CHK:**

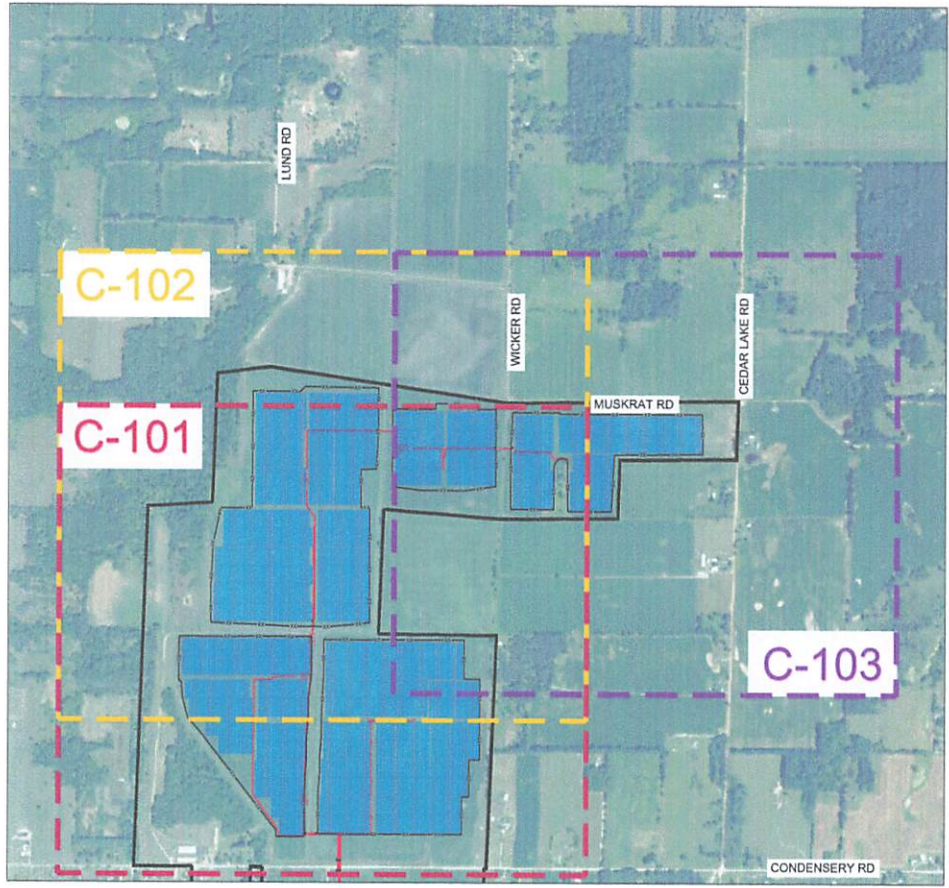
**APV:**

**DATE:** 11/16/2023  
 SCALE AT SHEET SIZE: 22" x 34"

**NTS**

**SHEET NO:** C-001 **REV:** G

**PRELIMINARY**  
 NOT FOR CONSTRUCTION






**NOTES**

1. THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.

**LEGEND**

- PROJECT BOUNDARY
- - - PERIMETER FENCE
- - - UNDERGROUND COLLECTION SYSTEM
- SOLAR PANELS

**KEY PLAN:**

REVISIONS:		
NO.	DATE	DESCRIPTION
A.	05/16/2023	ISSUE FOR SITE APPROVAL
B.	08/02/2023	ISSUE FOR SITE APPROVAL
C.	08/02/2023	ISSUE FOR SITE APPROVAL
D.	08/31/2023	ISSUE FOR SITE APPROVAL
E.	08/14/2023	ISSUE FOR SITE APPROVAL
F.	08/20/2023	ISSUE FOR SITE APPROVAL
G.	11/16/2023	ISSUE FOR SITE APPROVAL

**PROJECT TITLE:**  
FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 175 MWdc

**PROJECT LOCATION:**  
MONTCALM COUNTY, MI

**SHEET TITLE & DESCRIPTION:**  
KEY PLAN

PROJ. NO.: 213-165756-23001  
 DES.:  
 DWN.:  
 CHK.:  
 APV.:  
 DATE: 11/16/2023

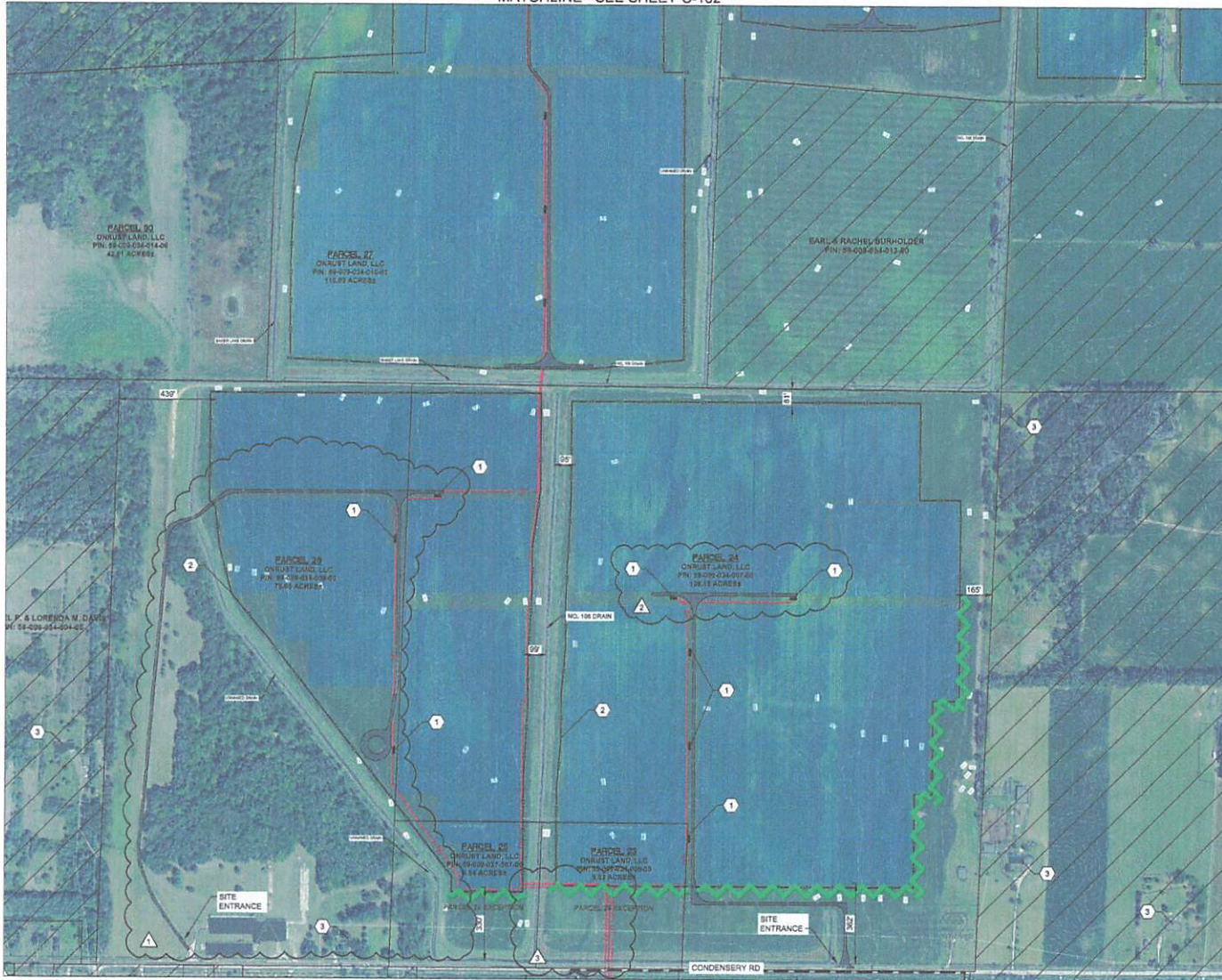
SCALE AT SHEET SIZE: 22" x 34"  
 0 350' 700' 1400'  
 SCALE: 1" = 700'

SHEET NO.: C-002	REV.: G
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**PRELIMINARY**  
NOT FOR CONSTRUCTION



MATCHLINE - SEE SHEET C-102



- REVISION CLOUDS**
1. REROUTED ROAD FOR PV AREA TO USE EXISTING ACCESS DRIVE. REMOVED ACCESS DRIVE THAT WOULD HAVE CROSSED DRAIN.
  2. REDUCED ACCESS ROAD LENGTH.
  3. ADJUSTED UNDERGROUND COLLECTION ROUTING.

**PRELIMINARY**  
NOT FOR CONSTRUCTION

**NOTES**

1. THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.
2. CONSTRAINTS ARE FROM THE ORIGIN NOTED IN THE SETBACKS TABLE BELOW.
3. BEST MANAGEMENT PRACTICES FOR SOIL EROSION TO BE DESIGNED AND MAINTAINED IN ACCORDANCE WITH MICHIGAN SOIL REQUIREMENTS. FINAL LOCATIONS AND SIZES TO BE DETERMINED AT FINAL DESIGN.
4. PROPOSED LANDSCAPING WILL CONSIST OF TWO STAGGERED ROWS OF EVERGREEN TREES THAT ARE AT LEAST SIX FEET TALL AT THE TIME OF PLANTING. TREES WILL BE SPACED IN A MANNER THAT FACILITATES HEALTHY GROWTH AND MAXIMIZES VISUAL SCREENING.
5. STRUCTURE OFFSETS ARE AS FOLLOWS
  - 5.1. MINIMUM 15 FT OFFSET FROM PERIMETER FENCE TO ACCESS ROAD
  - 5.2. MINIMUM 10 FT OFFSET FROM ACCESS ROAD TO SOLAR PANELS
  - 5.3. MINIMUM 12 FT NORTH AND SOUTH BETWEEN ARRAY'S
  - 5.4. MINIMUM 8 FT OFFSET FROM ACCESS ROAD TO INVERTER
  - 5.5. MINIMUM 20 FT BETWEEN PANELS AND PERIMETER FENCE

**LEGEND**

- PERIMETER FENCE
- SOLAR PANEL ARRAY
- PROPERTY BOUNDARY
- EXISTING EASEMENT
- EXISTING RIGHT-OF-WAY
- EXISTING CONTOUR
- EXISTING VEGETATION
- PROPOSED LANDSCAPING
- UNDERGROUND COLLECTION SYSTEM
- POWER CONDITIONING SYSTEM (INVERTER)
- ACCESS ROAD
- NON-PARTICIPATING AREAS
- WETLAND AREA

**KEY NOTES**

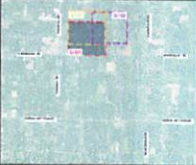
- POWER CONDITIONING SYSTEM (INVERTER)
- PERIMETER FENCE (SEE DETAIL, SHEET C-501)
- OCCUPIED RESIDENCES

**SETBACKS TABLE**

Constraint	Township Setback
Property Line - Non-Participating	80 ft
Occupied Dwelling	300 ft
Sound Contours	< 45 dBA at property boundary
Glare Impact / Flight Paths	Refer to Glare Study
State-Regulated Floodplains	N/A
Public Road ROW - Highway (Interst)	N/A
Transmission Line	50ft
Public Road ROW - Other (eg County)	50 ft
Railroads ROW	150 ft
Private Road ROW	50 ft



**KEY PLAN:**



**REVISIONS:**

NO.	DATE	DESCRIPTION
A	05/16/2023	ISSUED FOR SITE APPROVAL
B	08/02/2023	ISSUED FOR SITE APPROVAL
C	08/02/2023	ISSUED FOR SITE APPROVAL
D	09/12/2023	ISSUED FOR SITE APPROVAL
E	09/12/2023	ISSUED FOR SITE APPROVAL
F	09/20/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

**PROJECT TITLE:**

FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 172 MWdc

**PROJECT LOCATION:**

MONTCALM COUNTY, MI

**SHEET TITLE & DESCRIPTION:**

AREAS 1 AND 2

SITE PLAN

PROJ NO: 213-165756-23001

DES:

DWN:

CHK:

APV:

DATE: 11/08/2023

SCALE AT SHEET SIZE 22" x 34":

0 125' 250' 500'

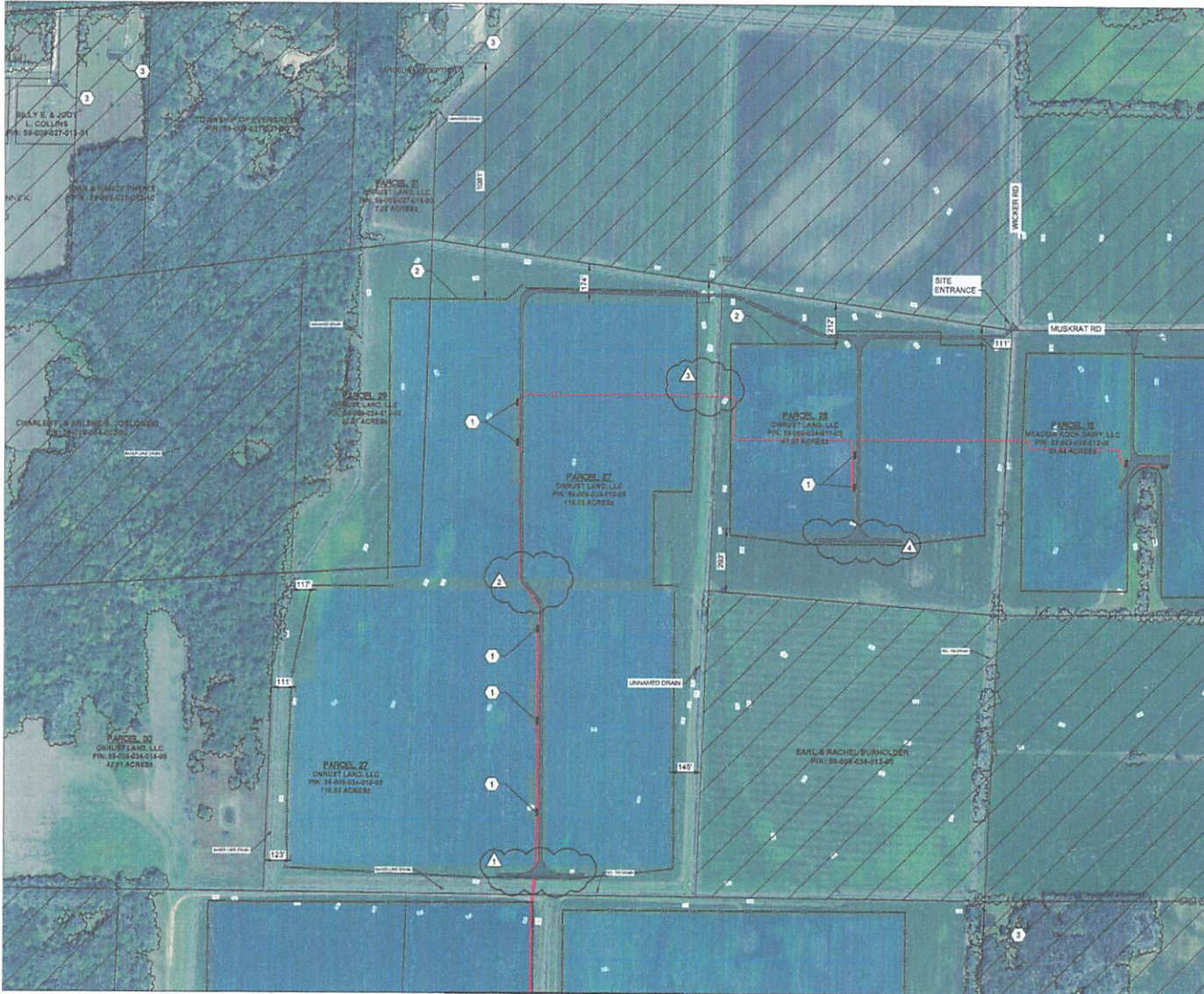
SCALE: 1" = 250'

SHEET NO:

C-101

REV:

G



MATCHLINE - SEE SHEET C-103

MATCHLINE - SEE SHEET C-101

- REVISION CLOUDS**
1. EXTENDED TURNAROUND AREAS.
  2. REMOVED ACCESS ROAD TURNAROUNDS
  3. REROUTED UNDERGROUND COLLECTION SO THAT IT IS PERPENDICULAR TO DRAIN.
  4. EXTENDED TURNAROUND AREAS.

**PRELIMINARY**  
NOT FOR CONSTRUCTION

**NOTES**

1. THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.
2. CONSTRAINTS ARE FROM THE ORIGIN NOTED IN THE SETBACKS TABLE BELOW.
3. BEST MANAGEMENT PRACTICES FOR SOIL EROSION TO BE DESIGNED AND MAINTAINED IN ACCORDANCE WITH MICHIGAN EDE REQUIREMENTS. FINAL LOCATIONS AND SIZES TO BE DETERMINED AT FINAL DESIGN.
4. PROPOSED LANDSCAPING WILL CONSIST OF TWO STAGGERED ROWS OF EVERGREEN TREES THAT ARE AT LEAST SIX FEET TALL AT THE TIME OF PLANTING. TREES WILL BE SPACED IN A MANNER THAT FACILITATES HEALTHY GROWTH AND MAXIMIZES VISUAL SCREENING. STRUCTURE OFFSETS ARE AS FOLLOWS
  - 5.1. MINIMUM 8 FT OFFSET FROM PERIMETER FENCE TO ACCESS ROAD
  - 5.2. MINIMUM 10 FT OFFSET FROM ACCESS ROAD TO SOLAR PANELS
  - 5.3. MINIMUM 12 FT NORTH AND SOUTH BETWEEN ROWS
  - 5.4. MINIMUM 8 FT OFFSET FROM ACCESS ROAD TO INVERTER
  - 5.5. MINIMUM 20 FT BETWEEN PANELS AND PERIMETER FENCE

**LEGEND**

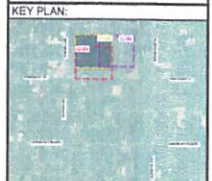
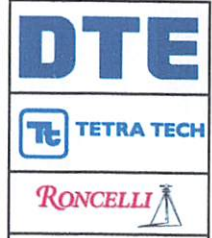
- PERIMETER FENCE
- SOLAR PANEL ARRAY
- PROPERTY BOUNDARY
- EXISTING EASEMENT
- EXISTING RIGHT-OF-WAY
- EXISTING CONTOUR
- EXISTING VEGETATION
- PROPOSED LANDSCAPING
- UNDERGROUND COLLECTION SYSTEM
- POWER CONDITIONING SYSTEM (INVERTER)
- ACCESS ROAD
- NON-PARTICIPATING AREAS
- WETLAND AREA

**KEY NOTES**

- ① POWER CONDITIONING SYSTEM (INVERTER)
- ② PERIMETER FENCE SEE DETAIL, SHEET C-601
- ③ OCCUPIED RESIDENCES

**SETBACKS TABLE**

Constraint	Township Setback
Property Line - Non-Participating	80 ft
Occupied Dwelling	300 ft
Sound Contours	< 45 dBA at property boundary
Glare Impact / Flight Paths	Refer to Glare Study
State-Regulated Floodplain	N/A
Public Road ROW - Highway (Inverter)	N/A
Transmission Line	50ft
Public Road ROW - Other (eg County)	50 ft
Railroads ROW	150 ft
Private Road ROW	50 ft



**REVISIONS:**

NO.	DATE	DESCRIPTION
A	06/14/2023	ISSUE FOR SITE APPROVAL
B	08/02/2023	ISSUED FOR SITE APPROVAL
C	08/02/2023	ISSUED FOR SITE APPROVAL
D	08/14/2023	ISSUED FOR SITE APPROVAL
E	08/14/2023	ISSUED FOR SITE APPROVAL
F	08/20/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

**PROJECT TITLE:**

FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 172 MWdc

**PROJECT LOCATION:**

MONTCALM COUNTY, MI

**SHEET TITLE & DESCRIPTION:**

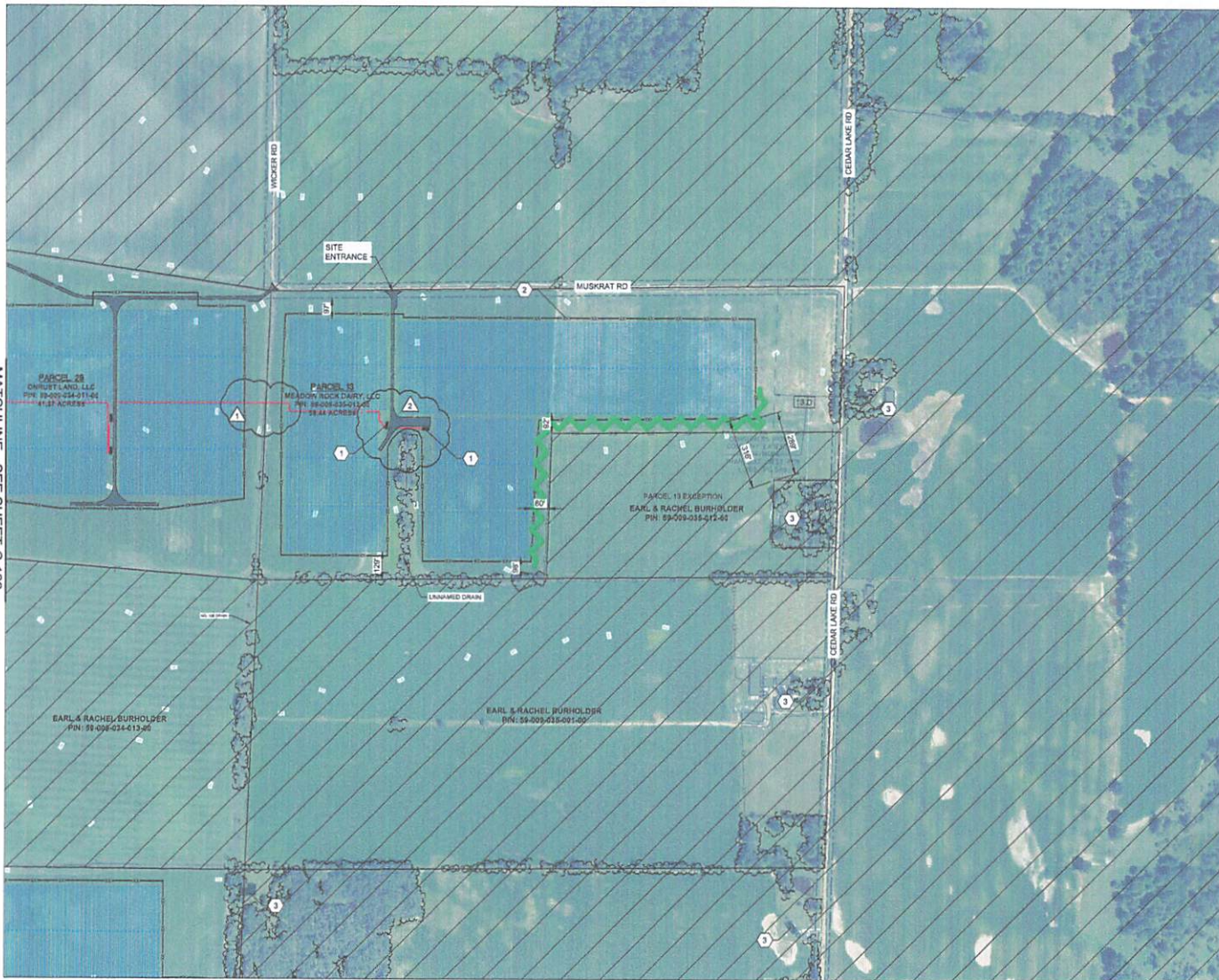
AREAS 3 AND 4

**SITE PLAN**

PROJ NO:	213-165756-23001
DES:	
DWN:	
CHK:	
APV:	
DATE:	11/08/2023
SCALE AT SHEET SIZE 22" x 34":	SCALE: 1" = 250'

SHEET NO:	C-102	REV:	G
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MATCHLINE - SEE SHEET C-102

- REVISION CLOUDS**
1. REROUTED UNDERGROUND COLLECTION SO THAT IT CROSSES PERPENDICULAR TO DRAIN.
  2. ADDED LARGER TURNAROUND AREA.

**PRELIMINARY**  
NOT FOR CONSTRUCTION

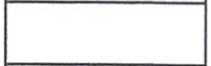
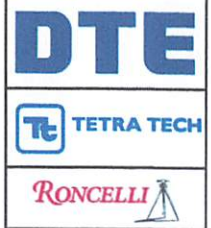
- NOTES**
1. THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.
  2. CONSTRAINTS ARE FROM THE ORIGIN NOTED IN THE SETBACKS TABLE BELOW.
  3. BEST MANAGEMENT PRACTICES FOR SOIL EROSION TO BE DESIGNED AND MAINTAINED IN ACCORDANCE WITH MICHIGAN EOE & REQUIREMENTS. FINAL LOCATIONS AND SIZES TO BE DETERMINED AT FINAL DESIGN.
  4. PROPOSED LANDSCAPING WILL CONSIST OF TWO STAGGERED ROWS OF EVERGREEN TREES THAT ARE AT LEAST SIX FEET TALL AT THE TIME OF PLANTING. TREES WILL BE SPACED IN A MANNER THAT FACILITATES HEALTHY GROWTH AND MAXIMIZES VISUAL SCREENING.
  5. STRUCTURE OFFSETS ARE AS FOLLOWS:
    - 5.1. MINIMUM 5 FT OFFSET FROM PERIMETER FENCE TO ACCESS ROAD
    - 5.2. MINIMUM 10 FT OFFSET FROM ACCESS ROAD TO SOLAR PANELS
    - 5.3. MINIMUM 12 FT NORTH AND SOUTH BETWEEN ARRAY'S
    - 5.4. MINIMUM 8 FT OFFSET FROM ACCESS ROAD TO INVERTER
    - 5.5. MINIMUM 20 FT BETWEEN PANELS AND PERIMETER FENCE

- LEGEND**
- xx— PERIMETER FENCE
  - SOLAR PANEL ARRAY
  - PROPERTY BOUNDARY
  - - - EXISTING EASEMENT
  - - - EXISTING RIGHT-OF-WAY
  - - - EXISTING CONTOUR
  - ~ ~ ~ EXISTING VEGETATION
  - ~ ~ ~ PROPOSED LANDSCAPING
  - UNDERGROUND COLLECTION SYSTEM
  - POWER CONDITIONING SYSTEM (INVERTER)
  - ACCESS ROAD
  - NON-PARTICIPATING AREAS
  - WETLAND AREA

- KEY NOTES**
- ① POWER CONDITIONING SYSTEM (INVERTER)
  - ② PERIMETER FENCE SEE DETAIL, SHEET C-501
  - ③ OCCUPIED RESIDENCES

**SETBACKS TABLE**

Constraint	Township Setback
Property Line - Non-Participating	80 ft
Occupied Dwelling	300 ft
Sound Contours	< 45 dBA at property boundary
Glare Impact / Flight Paths	Refer to Glare Study
State-Regulated Floodplains	N/A
Public Road ROW - Highway (Invertor)	N/A
Transmission Line	50ft
Public Road ROW - Other (eg County)	50 ft
Railroads ROW	150 ft
Private Road ROW	50 ft



**REVISIONS:**

NO.	DATE	DESCRIPTION
A	06/16/2023	ISSUED FOR SITE APPROVAL
B	08/02/2023	ISSUED FOR SITE APPROVAL
C	08/02/2023	ISSUED FOR SITE APPROVAL
D	09/12/2023	ISSUED FOR SITE APPROVAL
E	09/14/2023	ISSUED FOR SITE APPROVAL
F	09/20/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

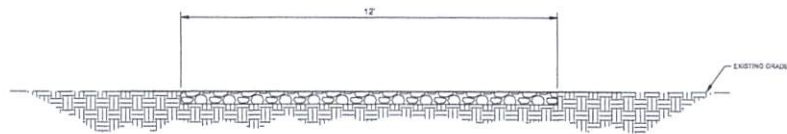
**PROJECT TITLE:**  
FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 172 MWdc

**PROJECT LOCATION:**  
MONTCALM COUNTY, MI

**SHEET TITLE & DESCRIPTION:**  
AREA 5  
SITE PLAN

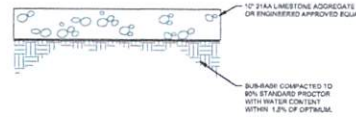
PROJ. NO.:	213-165756-23001
DES:	
DWN:	
CHK:	
APV:	
DATE:	11/08/2023
SCALE AT SHEET SIZE 22" x 34":	0 120' 250' 500'
SCALE:	1" = 250'

SHEET NO: **C-103** REV: **G**



**FENCE NOTES:**  
1. DRIVEWAYS WILL BE SLOPED TO MATCH EXISTING GRADE.

**TYPICAL ACCESS ROAD SECTION**  
SCALE: NONE

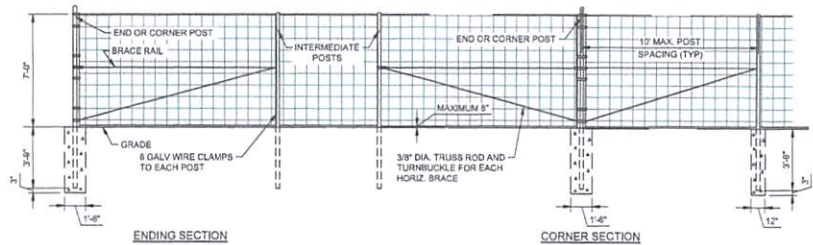


**NOTES:**  
1. REMOVE ORGANIC MATERIAL AND TOPSOIL WITHIN THE INFLUENCE OF THE PAVEMENT SECTION BACKFILL TO SUB-BASE ELEVATION WITH CLASS 8 GRANULAR SAND.

**TYPICAL ACCESS ROAD DETAIL**  
SCALE: NONE

**NOTES**

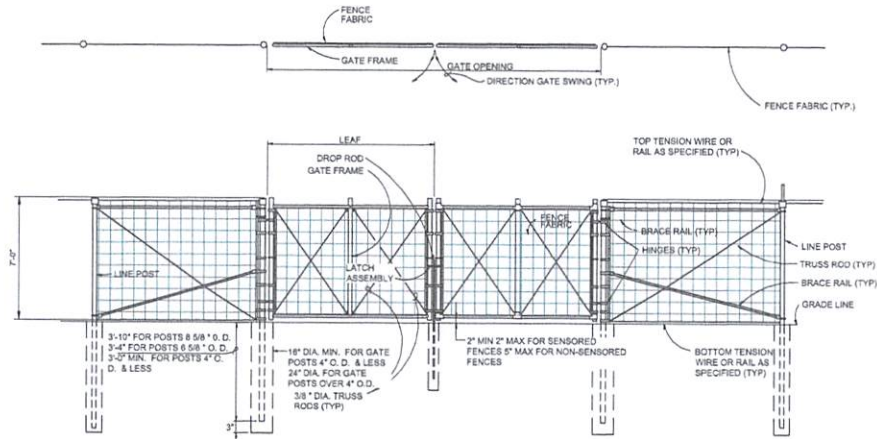
1. THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.



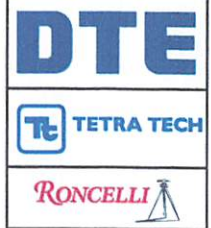
**FENCE NOTES:**

- INTERMEDIATE BRACED POSTS SHALL BE PLACED AT 660' INTERVALS OR MIDWAY BETWEEN END OR CORNER POSTS WHEN DISTANCE IS LESS THAN 1320' AND MORE THAN 660'.
- FENCE FABRIC SHALL BE SECURELY FASTENED TO TOP TENSION WIRE WITH FASTENERS SPACED NOT MORE THAN 1'-3" APART. IF HOE RINGS ARE USED FOR FABRIC FASTENERS, THEY SHALL BE 12-GAUGE TIGHTLY CRIMPED ABOUT BOTH THE TENSION WIRE AND THE FABRIC WIRE OR 11-GAUGE IF UNCRIMPED. FENCE FABRIC SHALL BE FASTENED TO THE POSTS USING METAL BANDS OR WIRES SPACED NOT MORE THAN 1'-0" APART. THE WIRE SHALL NOT BE LESS THAN 12-GAUGE.
- TENSION WIRE SHALL BE STRETCHED TAUT.
- ALTERNATE POST SECTIONS MAY BE SUBMITTED FOR APPROVAL BY THE CONTRACTING OFFICER.
- INTERMEDIATE LENGTHS OF FENCING LESS THAN (660') WITH VARIABLE HEIGHTS SHOULD BE AVOIDED IF POSSIBLE.
- POSTS AND GATE FRAMES SHALL MEET THE SPECIFIED NOMINAL WEIGHTS PER LFT AND CORRESPONDING A.S.T.M. SPECIFICATIONS SHOWN IN THE CURRENT STANDARD SPECIFICATIONS.

**TYPICAL PERIMETER FENCE DETAIL**  
SCALE: NONE



**TYPICAL GATE DETAIL**  
SCALE: NONE



KEY PLAN:

**REVISIONS:**

NO.	DATE	DESCRIPTION
A	06/16/2023	ISSUED FOR SITE APPROVAL
B	08/03/2023	ISSUED FOR SITE APPROVAL
C	08/03/2023	ISSUED FOR SITE APPROVAL
D	08/12/2023	ISSUED FOR SITE APPROVAL
E	08/14/2023	ISSUED FOR SITE APPROVAL
F	09/20/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

**PROJECT TITLE:**  
FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 172 MWdc

**PROJECT LOCATION:**  
MONTCALM COUNTY, MI

**SHEET TITLE & DESCRIPTION:**  
ROAD AND FENCE DETAILS

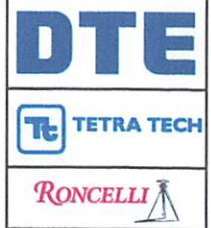
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DES:  
DWN:  
CHK:  
APV:  
DATE: 11/08/2023  
SCALE AT SHEET SIZE 22" x 34"

**PRELIMINARY**  
NOT FOR CONSTRUCTION

SHEET NO: C-501 REV: G

NOTES

- BEST MANAGEMENT PRACTICES FOR SOIL EROSION TO BE DESIGNED AND MAINTAINED IN ACCORDANCE WITH MICHIGAN EGE REQUIREMENTS. FINAL LOCATIONS AND SIZES TO BE DETERMINED AT FINAL DESIGN.



KEY PLAN:

REVISIONS:

NO.	DATE	DESCRIPTION
A	06/16/2023	ISSUE FOR SITE APPROVAL
B	06/02/2023	ISSUED FOR SITE APPROVAL
C	06/02/2023	ISSUED FOR SITE APPROVAL
D	06/12/2023	ISSUED FOR SITE APPROVAL
E	06/14/2023	ISSUED FOR SITE APPROVAL
F	06/20/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

PROJECT TITLE:

FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 172 MWdc

PROJECT LOCATION:

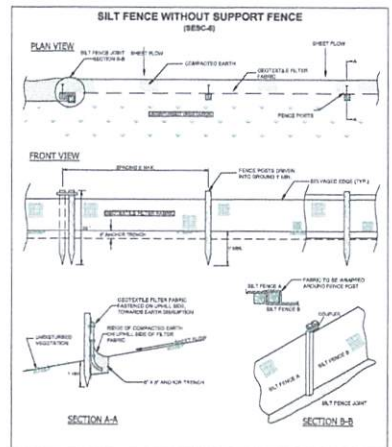
MONTCALM COUNTY, MI

SHEET TITLE & DESCRIPTION:

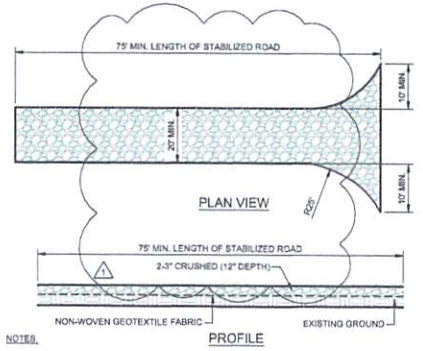
SOIL EROSION DETAILS

PROJ: 213-165756-23001  
 DES:  
 DWN:  
 CHK:  
 APV:  
 DATE: 11/08/2023  
 SCALE AT SHEET SIZE 22" x 34":

SHEET NO: C-502 REV: G



51 SILT FENCE

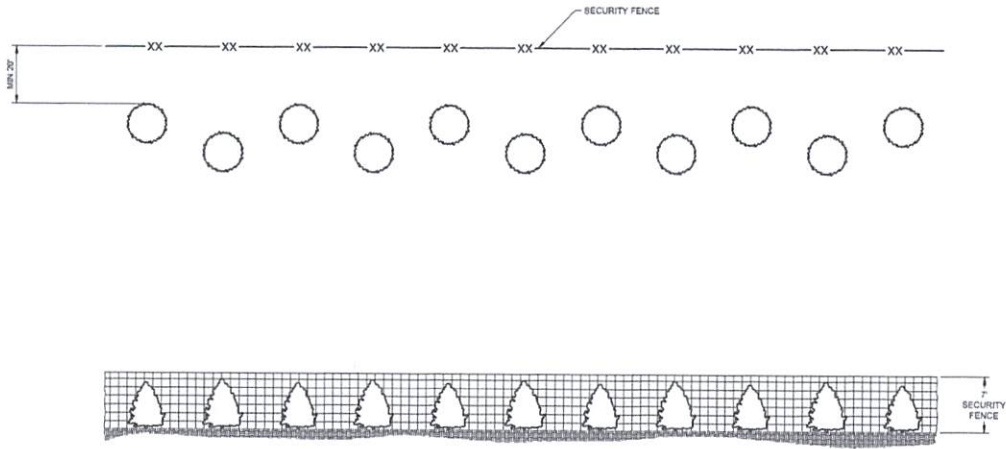


- NOTES:**
- ESTABLISH STABILIZED CONSTRUCTION ENTRANCE PRIOR TO THE INITIATION OF SITE CONSTRUCTION ACTIVITIES.
  - CARE SHOULD BE TAKEN TO PREVENT MATERIAL MOVEMENT INTO ADJACENT WETLANDS/WATERBODIES.
  - CARE SHOULD BE TAKEN TO MAINTAIN EXISTING ROADSIDE DRAINAGE VIA CULVERT INSTALLATION, WITH SEDIMENT SUMP PLACED DOWNFLOW OF CULVERT.
  - CONSTRUCTION ENTRANCES SHALL COMPLY WITH IDEM STORMWATER MANUAL, DATED OCT. 2007, INGRESS / EGRESS PAD FOR LARGE SITES.

53 STABILIZED CONSTRUCTION ACCESS

REVISION CLOUDS  
1. CORRECTED DIMENSIONS TO REFLECT COUNTY SEEC STANDARDS.

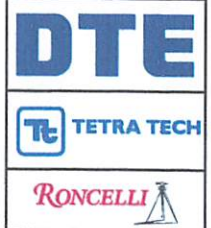
**PRELIMINARY**  
NOT FOR CONSTRUCTION



**TYPICAL LANDSCAPE SCREENING DETAIL**  
SCALE: NOT TO SCALE

- NOTES**
1. THE SUBCONTRACTOR MUST PROVIDE THE CONSTRUCTION COORDINATOR DOCUMENTATION FROM THE SUPPLIER THAT LANDSCAPE VEGETATION MEETS OR EXCEEDS THE SPECIFIED STANDARD.
  2. FIRE MITIGATION: THERE SHALL BE A THREE FOOT WIDE FIRE BREAK ON EITHER SIDE OF THE FENCE LINE.
  3. THE GROUND SURFACE AROUND EQUIPMENT SHALL BE KEPT FREE OF VEGETATION AND BRUSH IN A WEED FREE ENVIRONMENT TO A DISTANCE OF 5 FEET.
  4. LOCATE UTILITIES PRIOR TO COMMENCING LANDSCAPE OPERATIONS. ALL TREES SHALL BE FIELD POSITIONED AS TO AVOID CONFLICTS WITH EXISTING AND PROPOSED UTILITIES. NOTIFY OWNER REPRESENTATIVE OF ANY CONFLICTS OR OBSTRUCTIONS.
  5. CONTRACTOR SHALL STAKE ALL PLANTING AREAS IN THE FIELD PRIOR TO PLANTING FOR APPROVAL OF THE OWNER OR THEIR REPRESENTATIVE.
  6. ALL PLANT MATERIAL SHALL BE SPECIMEN QUALITY AND SHALL COMPLY WITH RECOMMENDATIONS AND REQUIREMENTS OF ANSI Z601 THE AMERICAN STANDARD FOR NURSERY STOCK.
  7. THE OWNER REPRESENTATIVE SHALL APPROVE GRADES AND CONDITION OF SITE PRIOR TO PLANTING AND SEEDING OPERATIONS.
  8. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT DESIGNATED FOR OTHER PLANTINGS SHALL BE SEED.
  9. ALL PLANT MATERIAL MUST MEET THE REQUIREMENTS OF THE EVERGREEN TOWNSHIP AS A MINIMUM.

**PRELIMINARY**  
NOT FOR CONSTRUCTION



KEY PLAN:

REVISIONS:

NO.	DATE	DESCRIPTION
A	06/16/2023	ISSUED FOR SITE APPROVAL
B	08/23/2023	ISSUED FOR SITE APPROVAL
C	08/23/2023	ISSUED FOR SITE APPROVAL
D	08/31/2023	ISSUED FOR SITE APPROVAL
E	08/14/2023	ISSUED FOR SITE APPROVAL
F	08/20/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

PROJECT TITLE:

FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 172 MWdc

PROJECT LOCATION:

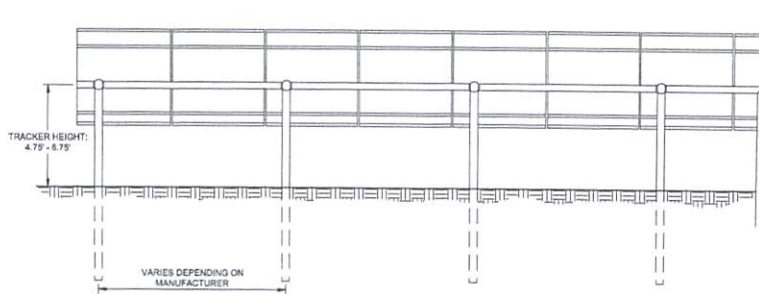
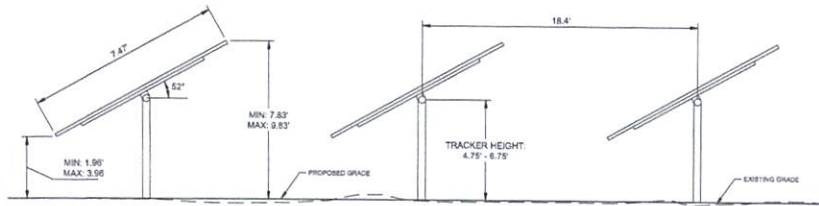
MONTCALM COUNTY, MI

SHEET TITLE & DESCRIPTION:

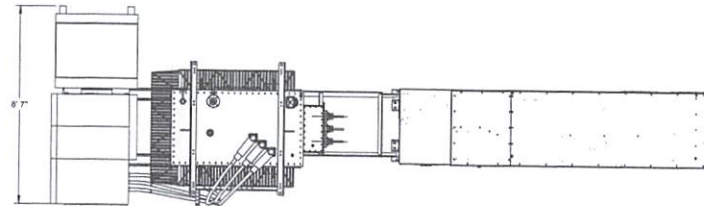
LANDSCAPING DETAILS

PROJ. NO.:	213-165756-23001
DES.:	
DWN.:	
CHK.:	
APP.:	
DATE:	11/08/2023
SCALE AT SHEET SIZE:	22' x 34'

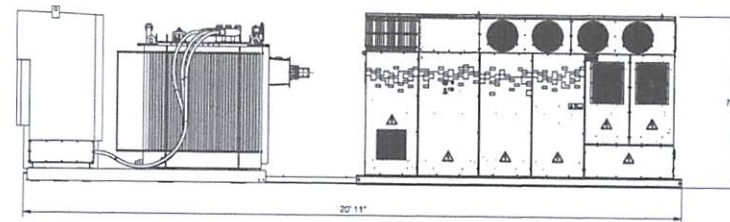
SHEET NO.:	C-503	REV.:	G
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**TYPICAL SOLAR TRACKER DETAIL**  
SCALE: NONE



PLAN VIEW



ELEVATION VIEW

**INVERTER DETAIL**  
SCALE: NONE

**NOTES**

1. THESE DRAWINGS ARE INTENDED FOR SITE PLAN APPROVAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.

**KEY PLAN:**

**REVISIONS:**

NO.	DATE	DESCRIPTION
A	06/16/2023	ISSUE FOR SITE APPROVAL
B	08/02/2023	ISSUED FOR SITE APPROVAL
C	08/02/2023	ISSUED FOR SITE APPROVAL
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E	08/14/2023	ISSUED FOR SITE APPROVAL
F	08/25/2023	ISSUED FOR SITE APPROVAL
G	11/08/2023	ISSUED FOR SITE APPROVAL

**PROJECT TITLE:**  
FISH CREEK SOLAR PARK (FSCSP)  
132 MWac / 172 MWdc

**PROJECT LOCATION:**  
MONTCALM COUNTY, MI

**SHEET TITLE & DESCRIPTION:**  
TRACKER AND INVERTER DETAILS

PRJ NUM: 213-165756-23001  
DES:  
DWN:  
CHK:  
APP:  
DATE: 11/08/2023  
SCALE AT SHEET SIZE 22" x 34"

**SHEET NO.:** C-504 **REV.:** G

**PRELIMINARY**  
 NOT FOR CONSTRUCTION

APPENDIX C -  
VISUALIZATIONS





EXISTING CONDITIONS



○ ○ ○ ○ ○ ○ ○ ○ ○ ○  
*Rows of staggered evergreen trees  
6-feet in height at planting*

PROPOSED SCREENING CONDITION INITIAL PLANTING



PROPOSED SCREENING CONDITION YEAR 5



PROPOSED SCREENING CONDITION YEAR 10





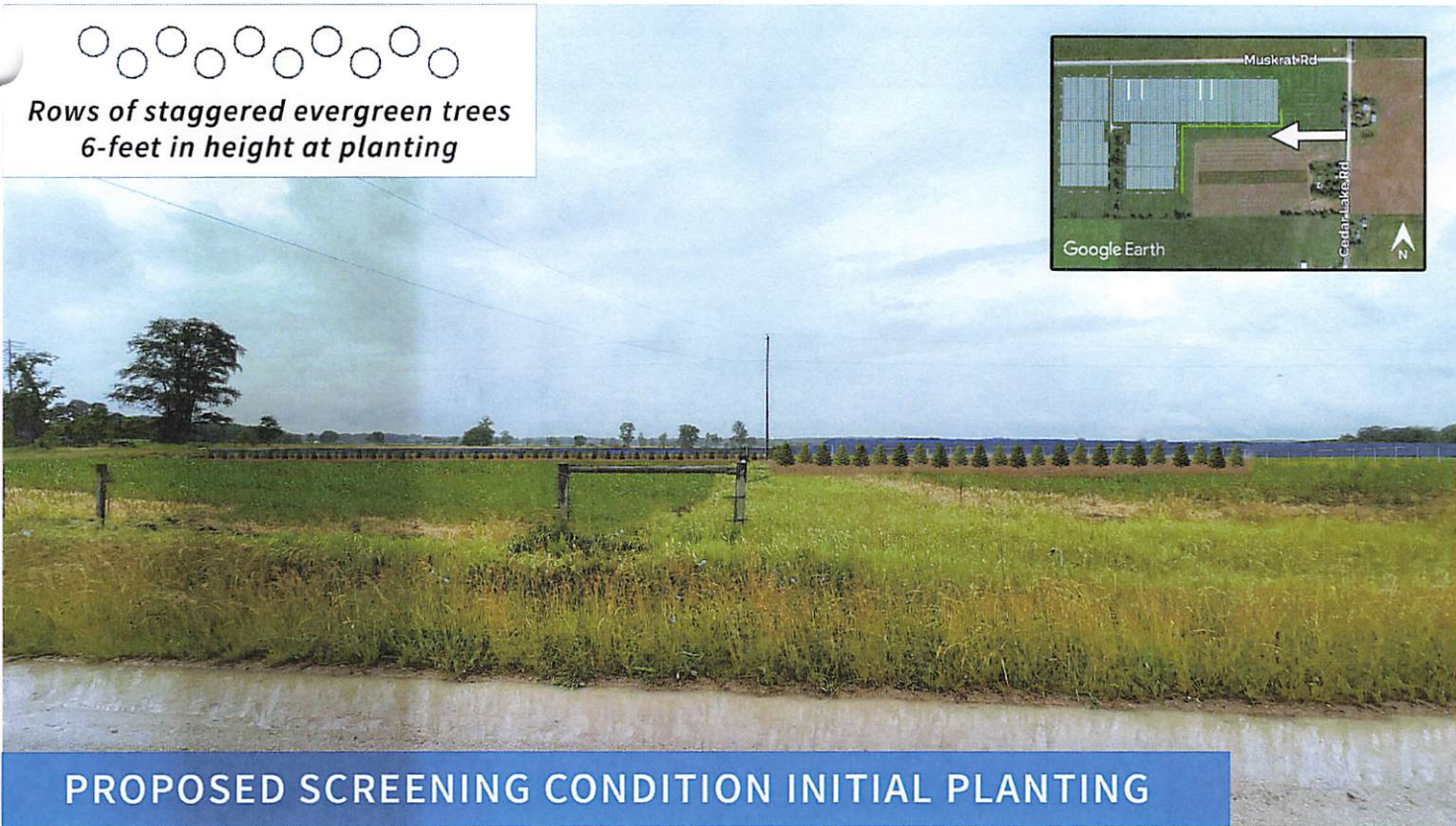
EXISTING CONDITIONS



PROPOSED



**EXISTING CONDITIONS**

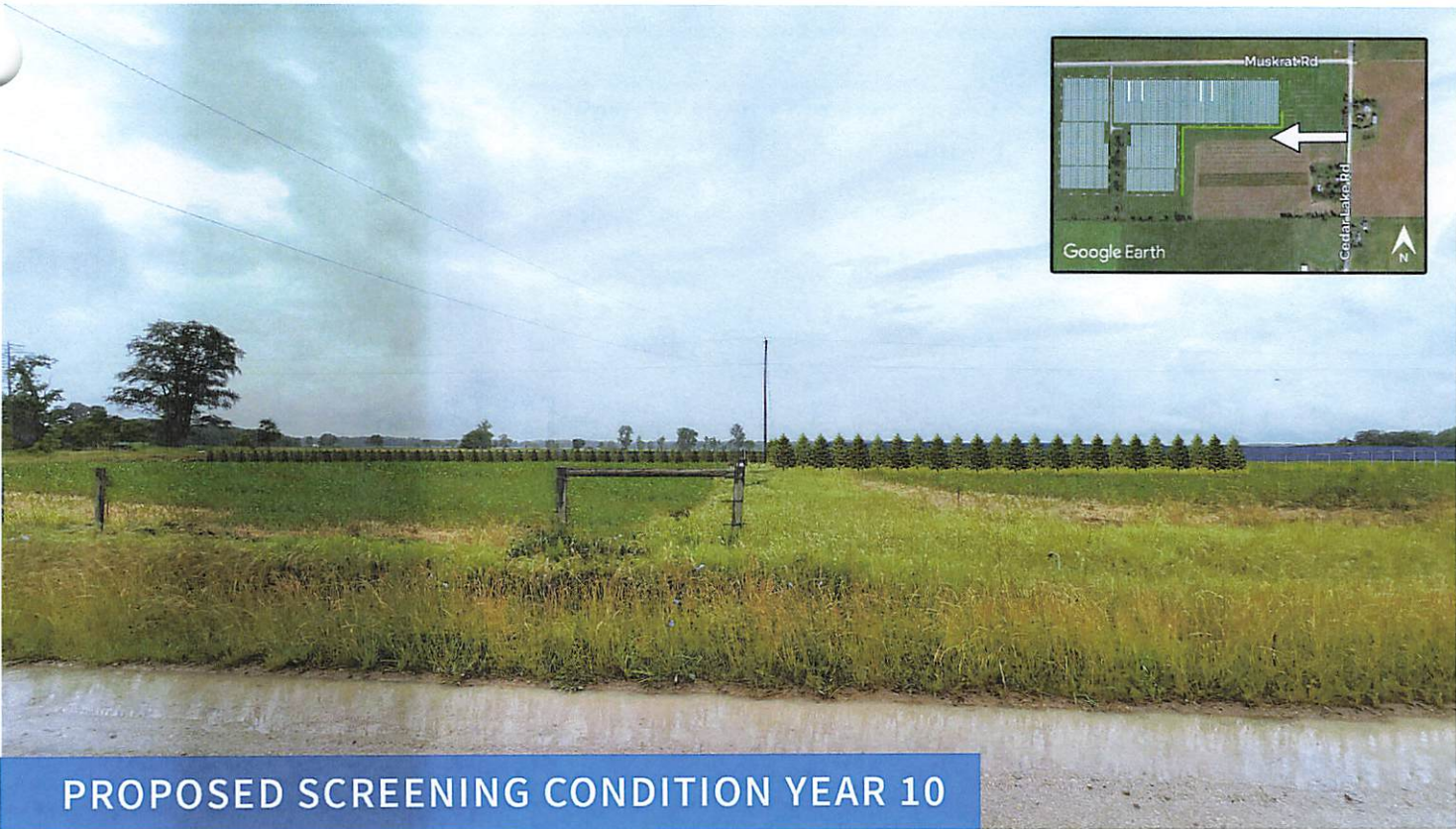


○ ○ ○ ○ ○ ○ ○ ○ ○ ○  
*Rows of staggered evergreen trees  
 6-feet in height at planting*

**PROPOSED SCREENING CONDITION INITIAL PLANTING**



PROPOSED SCREENING CONDITION YEAR 5



PROPOSED SCREENING CONDITION YEAR 10

APPENDIX D -  
SOUND MODELING STUDY





# TETRA TECH

**To:** DTE Electric Company  
**From:** Tetra Tech  
**Subject:** Fish Creek Solar Park – Evergreen Township – Acoustic Modeling Results  
**Date:** September 19, 2023

---

## **Executive Summary:**

Tetra Tech was contracted to analyze sound emissions associated with commercial operations of the Fish Creek Solar Park (Project) located in Bushnell and Evergreen Townships, Montcalm County, Michigan. This report summarizes the acoustical modeling results for the portion of the project in Evergreen Township.

Evergreen Township has adopted Solar Farm Ordinance No. 2021-2, as amended, that requires noise generated by a solar farm to not exceed 45 dB(A)  $L_{eq(1-min)}$  at the solar farm perimeter or any public right-of-way. For the purposes of this acoustic assessment, facility compliance was evaluated relative to the 45 dBA limit at the Project solar farm perimeter – defined as the parcel lines of all adjacent non-participating parcels and abutting public road rights-of-way.

Tetra Tech analyzed the noise produced by each of the 35 power conversion stations (also referred to as “inverters”) and, based on their noise characteristics, compliance is successfully demonstrated with the applicable 45 dBA limit along the Project perimeter line.

## **Regulatory Overview:**

Evergreen Township has adopted Solar Farm Ordinance, Ordinance No. 2021-2, as amended, which requires a noise impact study and noise level map. Section 4.F, pertains to noise and states the following:

*Noise: The noise pressure level generated by solar panels, inverters, and transformers must be shown to dissipate to 45 dB(A)  $L_{eq(1-min)}$  at the solar farm perimeter or any public right-of-way.*

The  $L_{eq}$  metric is one of the most common metrics used in acoustic assessments. It is the energy-averaged, A-weighted sound level for the complete time period. It is defined as the steady, continuous sound level over a specified time, which has the same total sound energy as the actual varying sound levels over the specified period. For the purposes of this acoustic assessment, facility compliance was evaluated relative to the 45 dBA limit at the Project solar farm perimeter.

## **Acoustic Modeling Approach and Results:**

The latest Fish Creek Solar Park site layout, dated August 31, 2023, was modeled using DataKustic GmbH’s CadnaA (version 2023) for the acoustic modeling analysis. CadnaA is a comprehensive software model that conforms to the International Organization for Standardization (ISO) standard ISO 9613-2, Attenuation of Sound During Propagation Outdoors. The engineering methods specified in this standard consist of full (1/1) octave band algorithms that incorporate geometric spreading due to wave divergence, reflection from surfaces, atmospheric absorption, screening by topography and obstacles, ground effects,

source directivity, heights of both sources and receptors, seasonal foliage effects, and meteorological conditions.

Terrain conditions, vegetation type, ground cover, and the density and height of foliage can influence the absorption that takes place when sound waves travel over land. The ISO 9613-2 standard accounts for ground absorption rates by assigning a numerical coefficient of ground  $G=0$  for acoustically hard, reflective surfaces and  $G=1$  for absorptive surfaces and soft ground. If the ground is hard-packed dirt, typically found in industrial complexes, pavement, bare rock or for sound traveling over bodies of water, the absorption coefficient is defined as  $G=0$  to account for reduced sound attenuation and higher reflectivity. In contrast, ground covered in vegetation, including suburban lawns, livestock and agricultural fields would be acoustically absorptive and aid in sound attenuation, i.e.,  $G=1.0$ . For the acoustic modeling analysis, a conservative ground absorption rate was selected, accounting for a semi-reflective ground surface off-site with a fully reflective surface assumed onsite due to the coverage of the solar panels. Topographical information was imported into the acoustic model using the official United States Geological Survey (USGS) digital elevation dataset to accurately represent terrain in three dimensions. Sound attenuation through foliage and diffraction around and over existing anthropogenic structures such as buildings were conservatively disregarded.

The Project's general arrangement was reviewed and directly imported into the acoustic model so that on-site equipment could be easily identified, buildings and structures could be added, and sound emission data could be assigned to sources as appropriate. The primary sound sources during operations are the cooling fans on the inverters, and transformers, and the electrical components of the inverters. Electronic noise from inverters can be audible but is often reduced by a combination of shielding, noise cancellation, filtering, and noise suppression. The Project layout includes 35 inverter skids distributed throughout the solar array areas, 16 of which are in Evergreen Township. Tracking motors are not typically modeled when evaluating solar facility sound levels because the sound associated with the trackers are low and would not contribute to offsite sound levels in a material way when compared to other onsite sound sources like inverters. Solar panels do not generate any sound.

Reference sound power levels input to CadnaA were provided by the equipment manufacturer. The source levels used in the predictive modeling are generally deemed to be conservative. Table 1 summarizes the equipment sound power level data used as inputs to the acoustic modeling analysis. For the purpose of the analysis, it was assumed that all equipment would potentially operate at full load during daytime and nighttime hours.

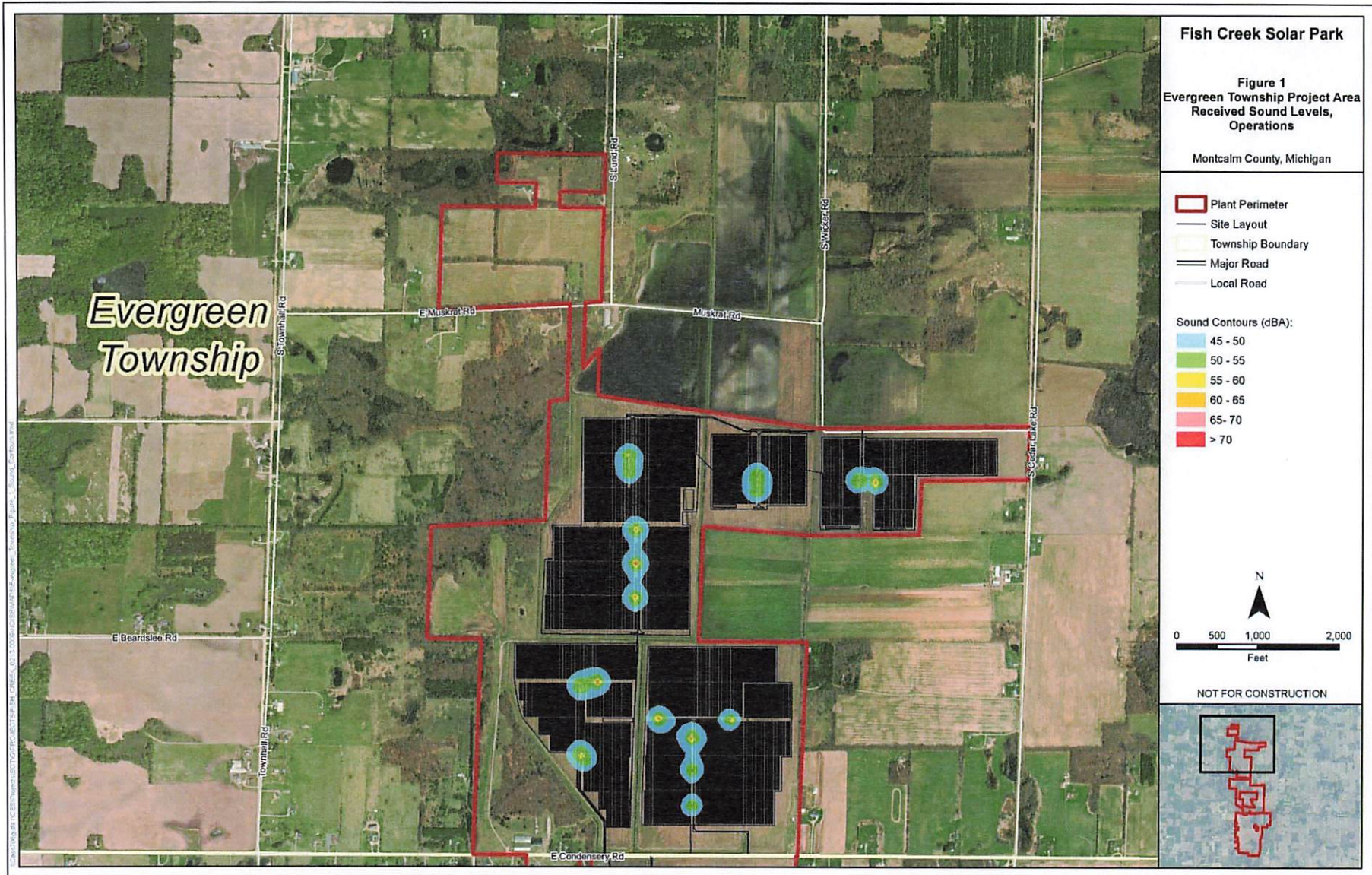
**Table 1. Modeled Octave Band Sound Power Level for Major Pieces of Project Equipment**

Sound Source	Sound Power Level ( $L_w$ ) by Octave Band Frequency								Broadband Level Sound Power
	63	125	250	500	1k	2k	4k	8k	dBA
Inverter	73	73	75	71	69	66	63	58	83

Broadband (dBA) sound pressure levels were calculated for expected normal Project operation assuming that all components identified previously are operating continuously and concurrently at the representative manufacturer-rated sound power level. After calculation, the sound energy was then summed to determine the equivalent continuous A-weighted downwind sound pressure level at a point of reception.

A sound contour plot displaying broadband (dBA) operational sound levels presented as color-coded isopleths are provided in Figure 1. The sound contours are graphical representations of the cumulative sound levels associated with operation of the equipment and show how operational noise would be distributed over the surrounding area of the Project site. The contour lines shown are analogous to elevation contours on a topographic map (i.e., the sound contours are continuous lines of equal sound level around some source, or sources, of sound). Furthermore, the contours are independent of the existing acoustic environment and are representative of expected Project sound levels only.

As shown on Figure 1, compliance is successfully demonstrated with the applicable 45 dBA limit along the solar farm perimeter and any abutting public right-of-way.





APPENDIX E -  
GLARE STUDY



**To:** DTE Electric Company  
**From:** Tetra Tech, Inc.  
**Date:** September 19, 2023  
**Subject:** Fish Creek Solar Park Glare Analysis –Evergreen Township

---

## EXECUTIVE SUMMARY

Tetra Tech, Inc. (Tetra Tech) performed a ForgeSolar<sup>1</sup> glare analysis to evaluate the possible negative effects of coincident glare from the proposed photovoltaic (PV) arrays on the surrounding residences, establishments, or other points of interest or observation perspective points (OPs) located around DTE Electric Company's (DTE) proposed Fish Creek Solar Park (FCSP) project.

Part of the project is located in Evergreen Township, Montcalm County, MI. Observation points, which are used to determine the severity of the glare, were identified at residences, roads, and other points-of-interest in a one-mile area surrounding the solar arrays. Two scenarios were performed to better illustrate the glare impacts in the surrounding region. Scenario 1 includes a comprehensive study with the exclusion of all obstructions. Scenario 2 is the same comprehensive study with the inclusion of all obstructions.

Obstructions are defined as any object that is not the array. However, for the purposes of this analysis, only trees within the vicinity of the arrays were included.

The results are as follows:

1. Scenario 1
  - a. No glare is present in scenario 1 when excluding obstructions.
2. Scenario 2
  - a. No glare is present in scenario 2 when including obstructions.

## INTRODUCTION

Tetra Tech Inc. (Tetra Tech) performed a glare analysis of the proposed DTE FCSP Project located in the Evergreen Township of Montcalm County, Michigan. The glare analysis was performed to model and identify any instances where coincident glare from the proposed PV Arrays negatively impacts the surrounding residences, establishments, or other Points of Interest.

The Evergreen Township component of FSCSP consists of 5 discrete PV Arrays identified by their respective Construction Work Area (CWA) numbers for the project. The Evergreen Township PV Arrays included in this study are "CWA-1" to "CWA-5". Each of the CWA's are independently modeled to accurately identify any areas of concern or where potential

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<sup>1</sup> ForgeSolar is a software program commonly used for conducting glare analyses.

modifications are required. Observation Points (OPs) selected for use in this glare study were identified by creating a one-mile boundary to the East, North, and West around all the CWA's and identifying all residences, churches, and other points of interest within the measured boundaries. The CWA locations and OP locations are illustrated on a site plan provided in Attachment A of this Memo.

## DEFINITIONS

The term "glare analysis" is typically used to describe an analysis of potential ocular impacts to defined receptors. The modelling software used to perform this analysis, ForgeSolar, specifically defines glare in the following statement:

*Glare is defined as a continuous source of bright light. Glare is generally associated with stationary objects, which, due to the slow relative movement of the sun, reflect sunlight for a longer duration.*

The solar photovoltaic modules (PV Modules) on FSCSP are mounted on Single-Axis Tracker's which rotate to track the course of the sun from east-facing to west-facing over the course of a typical day to optimize energy production. The slow rate of the tracking motion results in what is considered, for the purpose of this study, to be a stationary object and establishes the PV Modules to be the subject of our glare study and any potential reflectance from the FSCSP project modeled throughout this report will be referred to as glare.

The ForgeSolar output report details glare into three tiers of severity based on the predicted retinal irradiance (intensity) and subtended angle (size/distance) of the glare source to a receptor. These three tiers of severity (ocular hazards) are defined as different glare colors in the model output:

- Red glare: glare predicted with a potential for permanent eye damage (retinal burn)
- Yellow glare: glare predicted with a potential for temporary after-image
- Green glare: glare predicted with a low potential for temporary after-image

## GLARE ANALYSIS METHOD AND INPUTS

Tetra Tech has utilized the Solar Glare Hazard Analysis Tool (SGHAT) as licensed for use in ForgeSolar GlareGauge cloud software application for modeling and analysis. ForgeSolar GlareGauge with SGHAT modeling provides a quantified assessment of when and where glare will occur as well as information about potential ocular impacts. The calculations and methods are based on analyses, test data, a database of different photovoltaic module surfaces (e.g., anti-reflective coating, texturing), and models developed over several years at Sandia National Laboratory. The results are presented in a simple easy-to-interpret color-coded plot (to indicate potential ocular hazard) that specifies when glare will occur throughout the year.

The sample OPs selected for use in this glare study were chosen by creating a one-mile boundary to the East, North, and West around all of the PV Arrays and identifying all residences, churches, and other Points of Interest within the measured boundaries. In the case where a road was near the one-mile boundary line, the study was extended in that direction to include any potential glare impacts on the nearby road. In instances where multiple Points of Interest were identified in a compact area, OPs were distributed to represent any potential glare impacts on the entire area. A total of 40 OPs and 20 Road Segments per township were selected, providing a comprehensive coverage around the arrays. This study was performed for both the Evergreen and Bushnell Townships, with OPs overlapping adjacent townships along Condensery Road. All OP's and CWA's are represented in the Glare Study Site Plan in Attachment A.

The glare analysis includes multiple types of OPs, routes, and obstructions to quantify the glare that could be produced throughout the day. From a desktop review of the area, most residential homes were single story structures. A height of 6

feet was used for the single-story residential homes, while a height 5 feet was used for the vantage point along roads.

The analysis was performed by modeling a single-axis tracking (SAT) system, PV Modules with smooth glass surface material with an anti-reflective coating, a 52° maximum tracking range from horizontal (0°), and a resting angle of 5°. The resting angle represents the angle that the modules are set to when the sun is outside the tracking range. A summary of these inputs is found in Table 1 below.

**Table 1. Glare Analyses Input Features**

Analysis No.	Racking Type	Module Orientation <sup>1</sup>	Panel Tilt (degrees)	Resting Angle <sup>2</sup> (degrees)	Module Height <sup>3</sup> (feet)	OP Height <sup>4</sup> (feet)	Route Height <sup>5</sup> (feet)
1	SAT System	1P	±52	5	5	5	6

OP = observation point

SAT = single-axis tracking

1P = Module in Single Portrait Orientation

1. Photovoltaic array areas modeled as single-axis tracking modules, which vary from east-facing in the morning hours to west-facing in the evening hours.

2. Stationary rotation angle of modules when sun is outside of the tracking range.

3. Average module centroid height above ground surface.

4. Height of observation point receptor: 6 feet represents an average first floor residential/commercial point of view, and 16 feet represents an average second floor residential/commercial point of view.

5. Height of vehicular route receptor: 5 feet represents typical commuter car height, and 9 feet represents typical semi-tractor-trailer truck views. Height of vehicular route receptor:

**GLARE ANALYSIS RESULTS**

**Table 2. Analysis of Predicted Glare Summary – Scenario 1**

	Receptor	Annual Green Glare		Annual Yellow Glare	
		(Minutes)	(hours)	(minutes)	(hours)
Analysis 1	OP 1 - (43.206609, -85.016152)	0	0	0	0
	OP 2 - (43.206806, -85.014341)	0	0	0	0
	OP 3 - (43.206583, -85.007244)	0	0	0	0
	OP 4 - (43.207983, -84.994233)	0	0	0	0
	OP 5 - (43.213249, -84.994506)	0	0	0	0
	OP 6 - (43.215845, -84.985919)	0	0	0	0
	OP 7 - (43.219527, -84.983977)	0	0	0	0
	OP 8 - (43.227147, -84.985395)	0	0	0	0
	OP 9 - (43.219558, -85.019399)	0	0	0	0
	OP 10 - (43.215206, -85.018695)	0	0	0	0
	OP 11 - (43.211156, -85.018801)	0	0	0	0
	OP 12 - (43.208974, -85.01996)	0	0	0	0
	OP 13 - (43.208898, -85.010339)	0	0	0	0
	OP 14 - (43.206021, -84.991053)	0	0	0	0
	OP 15 - (43.206936, -84.991557)	0	0	0	0
	OP 16 - (43.20689, -84.987722)	0	0	0	0
	OP 17 - (43.206061, -84.985357)	0	0	0	0
	OP 18 - (43.224201, -85.013286)	0	0	0	0
	OP 19 - (43.224466, -85.003791)	0	0	0	0
	OP 20 - (43.212206, -84.975537)	0	0	0	0
	OP 21 - (43.221589, -84.974422)	0	0	0	0
	OP 22 - (43.217952, -84.98544)	0	0	0	0
	OP 23 - (43.212009, -84.985633)	0	0	0	0
	OP 24 - (43.221177, -84.976517)	0	0	0	0
	OP 25 - (43.216798, -84.975358)	0	0	0	0
	OP 26 - (43.209618, -84.990312)	0	0	0	0
	OP 27 - (43.210494, -84.987029)	0	0	0	0
	OP 28 - (43.214121, -85.021648)	0	0	0	0
	OP 29 - (43.213886, -85.024416)	0	0	0	0
	OP 30 - (43.207631, -85.018086)	0	0	0	0
	OP 31 - (43.216873, -84.984273)	0	0	0	0
	OP 32 - (43.206825, -84.975507)	0	0	0	0
	OP 33 - (43.208467, -84.979691)	0	0	0	0

OP 34 - (43.231215, -84.993848)	0	0	0	0
OP 35 - (43.208826, -84.9827)	0	0	0	0
Muskrat Rd	0	0	0	0
S Lund Rd	0	0	0	0
S Vickeryville Rd	0	0	0	0
Townhall Rd	0	0	0	0
Tow Rd	0	0	0	0
Wicker Rd and E Muskrat Rd	0	0	0	0
Wood Rd	0	0	0	0
Wood Rd and Bearsley Rd	0	0	0	0
No instances of red glare are predicted for any observation point or road segment.				

Under Scenario 1 (obstructions **excluded**), results indicate no glare being observed within Evergreen Township. The total glare observed in minutes and in hours is shown above in Table 2. Note that the minutes and hour columns are equivalent and not in addition to each other.

**Table 3. Analysis of Predicted Glare Summary – Scenario 2**

	Receptor	Annual Green Glare		Annual Yellow Glare	
		(Minutes)	(hours)	(minutes)	(hours)
Analysis 2	OP 1 - (43.206609, -85.016152)	0	0	0	0
	OP 2 - (43.206806, -85.014341)	0	0	0	0
	OP 3 - (43.206583, -85.007244)	0	0	0	0
	OP 4 - (43.207983, -84.994233)	0	0	0	0
	OP 5 - (43.213249, -84.994506)	0	0	0	0
	OP 6 - (43.215845, -84.985919)	0	0	0	0
	OP 7 - (43.219527, -84.983977)	0	0	0	0
	OP 8 - (43.227147, -84.985395)	0	0	0	0
	OP 9 - (43.219558, -85.019399)	0	0	0	0
	OP 10 - (43.215206, -85.018695)	0	0	0	0
	OP 11 - (43.211156, -85.018801)	0	0	0	0
	OP 12 - (43.208974, -85.01996)	0	0	0	0
	OP 13 - (43.208898, -85.010339)	0	0	0	0
	OP 14 - (43.206021, -84.991053)	0	0	0	0
	OP 15 - (43.206936, -84.991557)	0	0	0	0
	OP 16 - (43.20689, -84.987722)	0	0	0	0
	OP 17 - (43.206061, -84.985357)	0	0	0	0
	OP 18 - (43.224201, -85.013286)	0	0	0	0
	OP 19 - (43.224466, -85.003791)	0	0	0	0
	OP 20 - (43.212206, -84.975537)	0	0	0	0

OP 21 - (43.221589, -84.974422)	0	0	0	0
OP 22 - (43.217952, -84.98544)	0	0	0	0
OP 23 - (43.212009, -84.985633)	0	0	0	0
OP 24 - (43.221177, -84.976517)	0	0	0	0
OP 25 - (43.216798, -84.975358)	0	0	0	0
OP 26 - (43.209618, -84.990312)	0	0	0	0
OP 27 - (43.210494, -84.987029)	0	0	0	0
OP 28 - (43.214121, -85.021648)	0	0	0	0
OP 29 - (43.213886, -85.024416)	0	0	0	0
OP 30 - (43.207631, -85.018086)	0	0	0	0
OP 31 - (43.216873, -84.984273)	0	0	0	0
OP 32 - (43.206825, -84.975507)	0	0	0	0
OP 33 - (43.208467, -84.979691)	0	0	0	0
OP 34 - (43.231215, -84.993848)	0	0	0	0
OP 35 - (43.208826, -84.9827)	0	0	0	0
Muskrat Rd	0	0	0	0
S Lund Rd	0	0	0	0
S Vickeryville Rd	0	0	0	0
Townhall Rd	0	0	0	0
Tow Rd	0	0	0	0
Wicker Rd and E Muskrat Rd	0	0	0	0
Wood Rd	0	0	0	0
Wood Rd and Bearsley Rd	0	0	0	0
No instances of red glare are predicted for any observation point or road segment.				

Under Scenario 2 (obstructions ***included***), results of the analysis indicate no glare is observed at any of the OPs and observations routes. With the addition of trees as an obstruction throughout the model, no glare is observed.

**CONCLUSIONS**

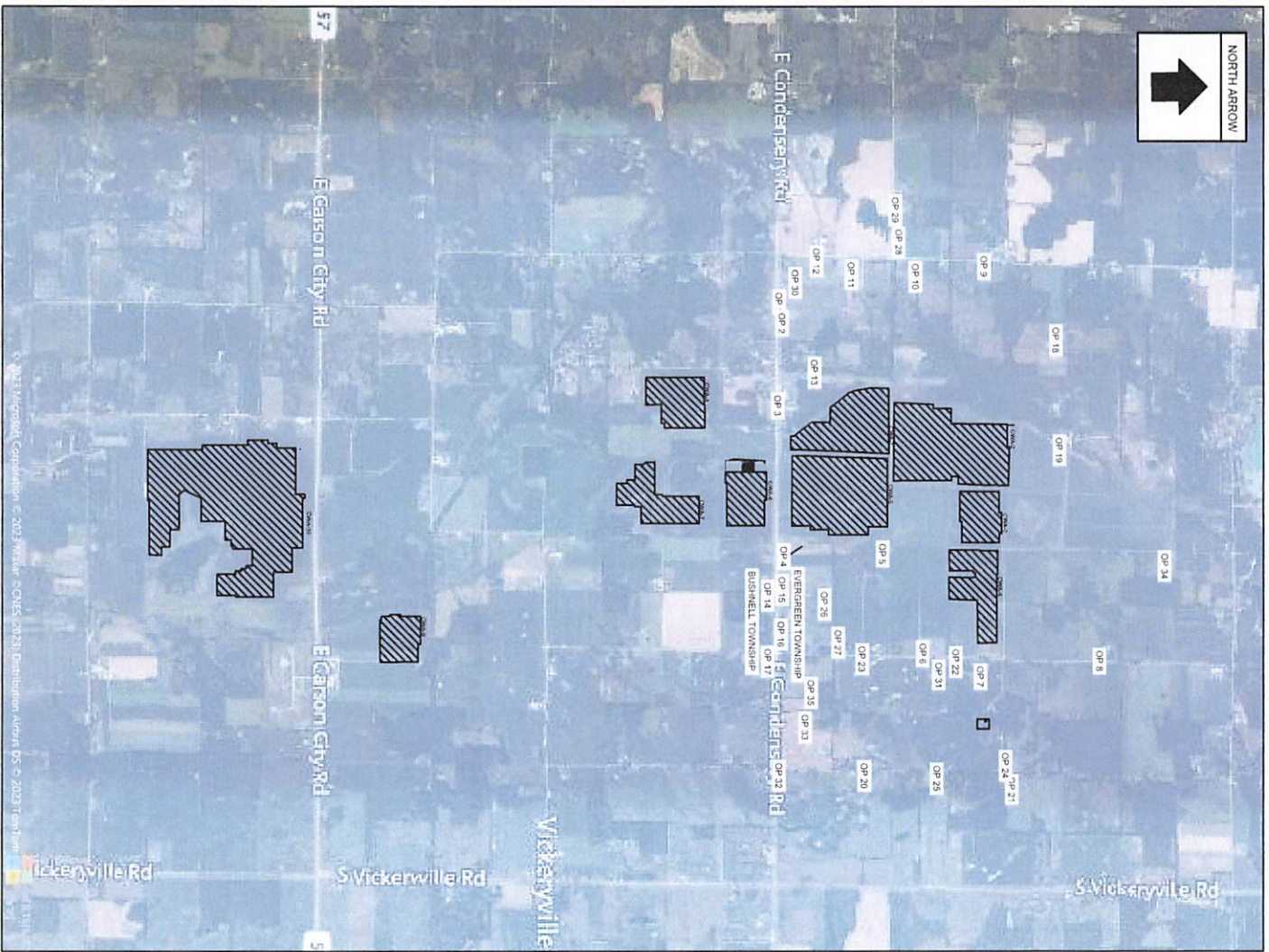
Both Scenarios 1 and 2 do not produce glare on any of the observation points and roads in the vicinity of the solar arrays. As a general mitigation strategy for potential glare (not detected in Evergreen Township), the resting angle of the array can be adjusted so that in the early morning and evening the glare will be redirected higher missing any potential observation points and receptors along the roads. The resting angle of the array will determine the angle the modules are stored at when the sun gets too low for production. Zero degrees would be a horizontally stored position. A resting angle of 5 degrees was used for all models.

Full ForgeSolar analysis results can be provided upon request.

**ATTACHMENT A GLARE STUDY SITE PLAN**



A B C D E



**LEGEND**  
 Hatched Area  
 OP - OBSERVATION POINT  
 OBSERVATION POINTS IDENTIFIED FOR USE IN GLARE STUDY AND ARE BASED ON CHANGES TO WINDOW ACES AND OTHER POINTS OF INTEREST LOCATED WITHIN THE GREATER DISTANCE OR ONE LINE OF THE ARRAY BOUNDARY OR NEAREST ROAD IN THE EAST, NORTH, AND WEST DIRECTIONS.

MARK	DATE	DESCRIPTION	BY
A	09/08/23	GLARE STUDY	MRA

PROJ	M. ACKER
DESN	M. ACKER
DRWN	M. ACKER
CHKD	T. BURDIAK
<b>GLARE STUDY OBSERVATION POINTS</b> EVERGREEN TOWNSHIP	
<b>DTE</b>	


  
 www.tetratech.com

Bar measures 1 inch, otherwise drawing is not to scale

**E-201**  
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APPENDIX F -  
ELECTRICAL INTERFERENCE STUDIES



# GeoPlanner™

## Over-the-Air TV Analysis

### Fish Creek Solar Project



Prepared on Behalf of  
DTE Electric Company

August 24, 2023



**COMSEARCH**  
A CommScope Company



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## **1. Introduction**

Over-the-air (OTA) television stations broadcast signals from terrestrially-based facilities directly to television receivers. Comsearch identified those OTA stations whose service could potentially be affected by a proposed solar farm. DTE Electric Company is proposing to construct and place in utility service the Fish Creek Solar Project, an electric generation facility that will be partially located in Evergreen Township, Michigan. The facility will generate electricity using silicon photovoltaic (PV) modules fixed to single axis solar trackers. It will have an installed capacity of up to 132 MW ac (172 MW dc).

Comsearch examined the coverage of the OTA stations identified and the communities in the area that could potentially have degraded television reception due to the location of the solar farm.

## 2. Summary of Results

The proposed solar farm project area and local communities are depicted in Figure 1 below.

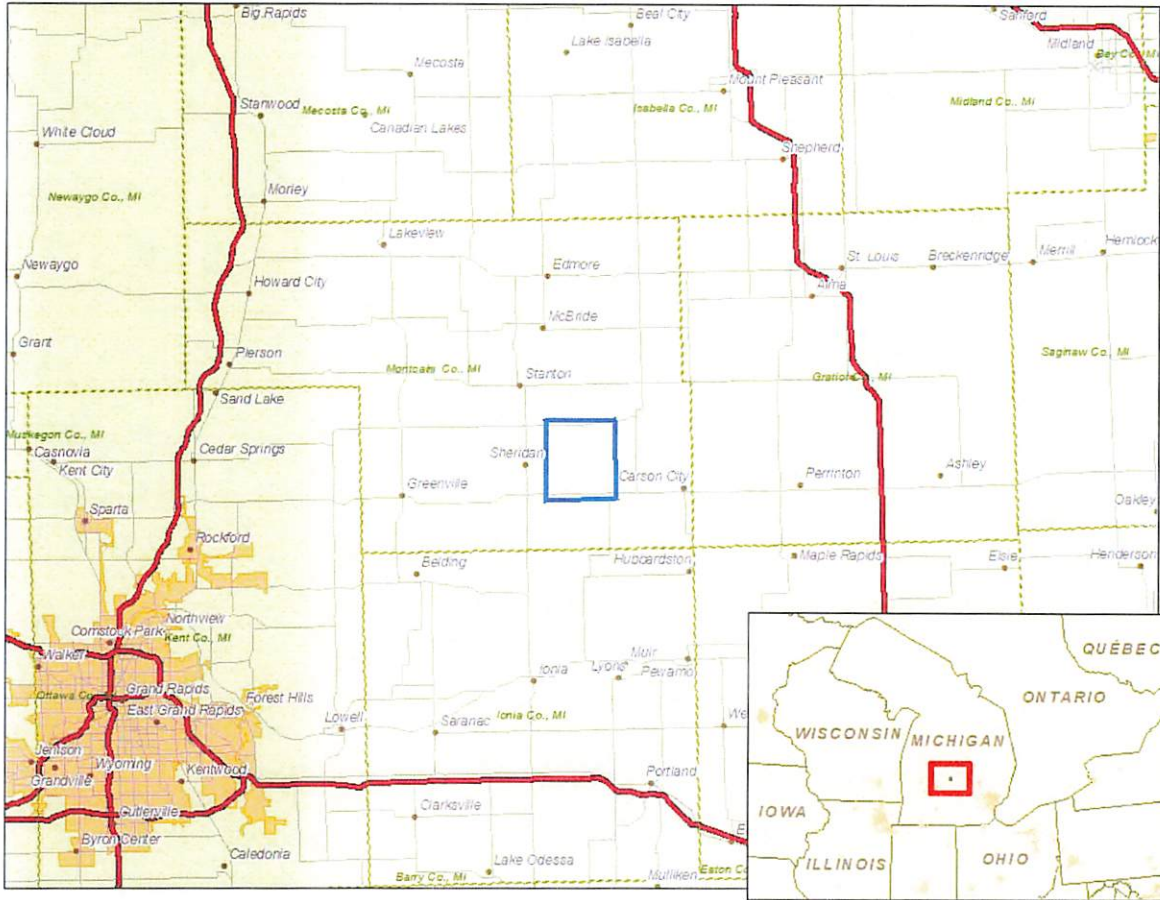


Figure 1: Solar Farm Project Area and Local Communities

To begin the analysis, Comsearch compiled all OTA television stations<sup>1</sup> within 100 kilometers of the solar farm. TV stations at a distance of 100 kilometers or less are the most likely to provide OTA coverage to the project area and neighboring communities. These stations are listed in Table 1 below, and a plot depicting their locations is provided in Figure 2. There are a total of 35 database records for stations within approximately 100 kilometers of the solar farm. Of these stations, 34 are currently licensed and operating, and 9 of which are low-power stations or translators. Translator stations are low-power stations that receive signals from distant broadcasters and retransmit the signal to a local audience. These stations serve local audiences and have limited range, which is a function of their transmit power and the height of their transmit antenna.

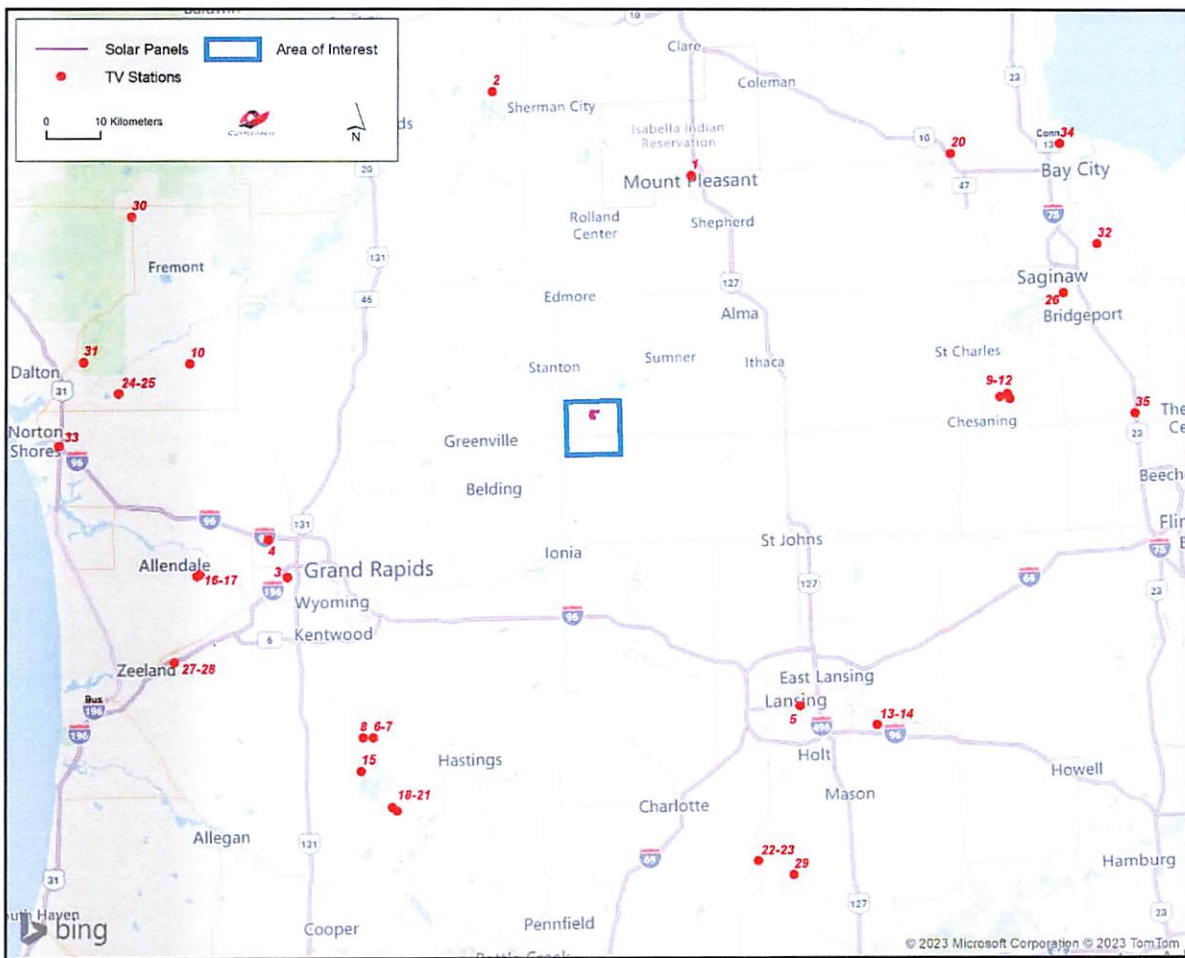


Figure 2: Plot of OTA TV Stations within 100 Kilometers of Solar Farm

<sup>1</sup> Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data presented in this report is derived from the TV station's FCC license and governed by Comsearch's data license notification and agreement located at [http://www.comsearch.com/files/data\\_license.pdf](http://www.comsearch.com/files/data_license.pdf).

ID	Call Sign	Status	Service <sup>2</sup>	Channel	Transmit ERP <sup>3</sup> (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Solar Panels (km)
1	WBWM-LD	LIC	LPD	28	2.85	43.603889	-84.763611	46.26
2	WCMU-TV	LIC	DTV	26	450.0	43.751417	-85.212833	61.28
3	WUHQ-LD	LIC	LPD	29	6.0	42.953889	-85.697778	63.04
4	WXSP-CD	LIC	DCA	15	15.0	43.016472	-85.740056	63.41
5	WLNM-LD	LIC	LPD	29	15.0	42.723611	-84.547694	64.96
6	WOOD-TV	LIC	DTV	7	30.0	42.687417	-85.509722	70.90
7	WOLP-CD	LIC	DCA	35	14.4	42.687417	-85.509722	70.90
8	WXMI	LIC	DTV	19	725.0	42.687500	-85.532500	71.99
9	WSMH	LIC	DTV	16	245.0	43.225306	-84.075806	73.96
10	WZZM	LIC	DTV	13	24.5	43.309833	-85.912444	74.21
11	WJRT-TV	LIC	DTV	12	30.0	43.230278	-84.058889	75.34
12	WAQP	LIC	DTV	36	1000.0	43.221667	-84.053889	75.74
13	WLAJ	LIC	DTV	14	950.0	42.688611	-84.376389	76.64
14	WLNS-TV	LIC	DTV	14	950.0	42.688611	-84.376389	76.64
15	WVMT	LIC	DTV	8	25.0	42.632222	-85.537778	77.24
16	WGVU-TV	LIC	DTV	11	41.5	42.959639	-85.895806	77.52
17	WTLJ	LIC	DTV	24	310.0	42.956944	-85.901944	78.09
18	WOTV	LIC	DTV	17	325.0	42.570972	-85.469139	80.16
19	WZPX-TV	LIC	DTV	21	400.0	42.570972	-85.469139	80.16
20	W24DL-D	LIC	LPD	24	2.33	43.629056	-84.169389	80.22
21	WLLA	LIC	DTV	22	350.0	42.564472	-85.458611	80.39
22	WSYM-TV	CP	DTV	28	1000.0	42.467500	-84.651667	86.80
23	WSYM-TV	LIC	DTV	28	642.0	42.467500	-84.651667	86.80
24	WOMS-CD	LIC	DCA	29	0.7	43.262389	-86.076167	86.93
25	WOOD-TV	LIC	DRT	34	3.1	43.262389	-86.076167	86.93
26	WFFC-LD	LIC	LPD	17	10.0	43.392500	-83.924194	88.26
27	WOGC-CD	LIC	DCA	25	0.73	42.816389	-85.955556	88.83
28	WOHO-CD	LIC	DCA	33	0.52	42.816389	-85.955556	88.83
29	WILX-TV	LIC	DTV	10	30.0	42.442500	-84.572500	91.68
30	W36FA-D	LIC	LPD	36	15.0	43.552139	-86.041944	91.71
31	W18ER-D	LIC	LPD	18	15.0	43.313917	-86.154778	93.77

<sup>2</sup> Definitions of service and status codes:

- DT – Digital television broadcast station
- LD – Low-power digital television broadcast station
- TX – Translator station
- DC – Class A digital television broadcast station
- DX – Digital auxiliary (backup) facility
- LIC – Licensed and operational station
- CP – Construction permit granted
- CP MOD – Modification of construction permit
- APP – Application for construction permit, not yet operational

<sup>3</sup> ERP = Transmit Effective Radiated Power





ID	Call Sign	Status	Service <sup>2</sup>	Channel	Transmit ERP <sup>3</sup> (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Solar Panels (km)
32	WNEM-TV	LIC	DTV	30	585.0	43.470556	-83.843333	96.75
33	WMKG-CD	LIC	DCA	31	7.0	43.175861	-86.212000	97.94
34	WKNX-LD	LIC	LPD	22	0.3	43.639722	-83.921389	98.00
35	W35DQ-D	LIC	LPD	35	15.0	43.190778	-83.770722	98.83

Table 1: OTA TV Stations within 100 Kilometers of Solar Farm

### **3. Impact Assessment**

Typically, solar farms do not cause electromagnetic interference (EMI) to OTA television reception. If any, the most likely source of EMI are the photovoltaic (PV) inverters that are installed at every Power Conversion Station (PSC) throughout the solar farm. These PV inverters convert the direct current (DC) current output of a solar array into alternating current (AC) that can be fed into a commercial electrical grid. However, Title 47 Part 15B of the FCC rules and regulations provide guidelines for grid-tied PV inverters such that their EMI emissions are controlled to within certain limits and thereby avoid contaminating the AC grid voltage. And due to the low frequency (60 Hz) operation of the PV inverters, EMI from these devices does not normally extend above 1 MHz which would be well below the frequency of operation for OTA television.

### **4. Recommendations**

If possible, the PV inverters of a power conversion station (PCS) should be installed away from residential areas to reduce the likelihood of EMI to households that may rely on OTA television service. At minimum, a setback distance of 250 feet from any household and the centralized inverters is recommended. In the unlikely event that EMI is observed at a certain household following the construction of the solar farm, a high-gain directional antenna may be employed, preferably outdoors, and oriented towards the signal origin to mitigate the potential impact on OTA TV signal reception.

Both cable service and direct broadcast satellite service will be unaffected by the presence of the solar farm.

### **5. Contact**

For questions or information regarding the AM and FM Radio Report, please contact:

Contact person:	David Meyer
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Company:	Comsearch
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Telephone:	703-726-5656 (office) / 703-726-5595 (fax)
Email:	dmeyer@comsearch.com
Web site:	www.comsearch.com

# Solar Power GeoPlanner™

## AM and FM Radio Report

### Fish Creek Solar Project



Prepared on Behalf of  
DTE Electric Company

August 25, 2023



**COMSEARCH**<sup>®</sup>  
A CommScope Company



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## 1. Introduction

DTE Electric Company is proposing to construct and place in utility service the Fish Creek Solar Project, an electric generation facility that will be partially located in Evergreen Township, Michigan. The facility will generate electricity using silicon photovoltaic (PV) modules fixed to single axis solar trackers. It will have an installed capacity of up to 132 MW ac (172 MW dc).

Comsearch analyzed AM and FM radio broadcast stations whose service could potentially be affected by the Fish Creek Solar Project.

## 2. Summary of Results

### AM Radio Analysis

Comsearch found four database records<sup>1</sup> for AM stations within approximately 30 kilometers of the project solar farm, as shown in Table 1 and Figure 1. These records represent two distinct licensed stations. Both of these stations, WION and WGLM, are licensed separately for daytime and nighttime operations. The closest station to the project area of interest (AOI) is WGLM, licensed out of Greenville, Michigan and located 20.90 km to the west of the solar array.

ID	Call Sign	Status <sup>2</sup>	Frequency (kHz)	Transmit ERP <sup>3</sup> (kW)	Operation Time	Latitude (NAD 83)	Longitude (NAD 83)	Required Separation Distance <sup>4</sup> (km)	Distance to the Solar Array (km)
1	WION	LIC	1430	4.7	Daytime	43.004478	-85.085842	2.10	23.26
2	WION	LIC	1430	0.33	Nighttime	43.004478	-85.085842	2.10	23.26
3	WGLM	LIC	1380	1.0	Daytime	43.158364	-85.254464	2.17	20.90
4	WGLM	LIC	1380	0.5	Nighttime	43.158364	-85.254464	2.17	20.90

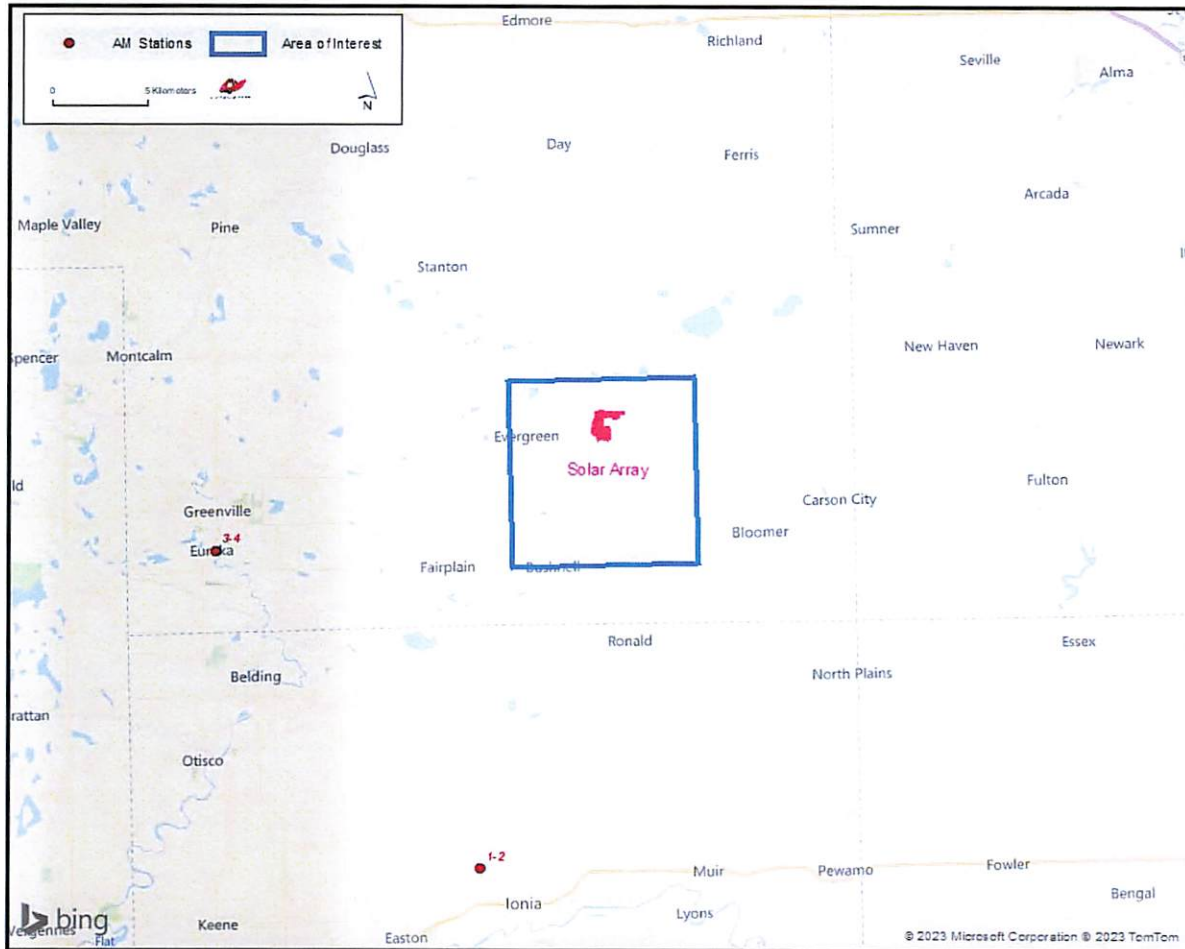
*Table 1: AM Radio Stations within 30 Kilometers of Solar Project*

<sup>1</sup> Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data presented in this report is derived from the AM/FM station's FCC license and governed by Comsearch's data license notification and agreement located at [http://www.comsearch.com/files/data\\_license.pdf](http://www.comsearch.com/files/data_license.pdf).

<sup>2</sup> LIC = Licensed and operational station; APP = Application for construction permit; CP=Construction permit granted; CP MOD = Modification of construction permit.

<sup>3</sup> ERP = Transmit Effective Radiated Power.

<sup>4</sup> The required separation distance is based on the lesser of 10 wavelengths or 3 kilometers for directional antennas and 1 wavelength for non-directional antennas.



*Figure 1: AM Radio Stations within 30 Kilometers of Solar Project*

### FM Radio Analysis

Comsearch determined that there were eight database records for FM stations within 30 kilometers of the solar project, as listed in Table 2. All but one of these stations are currently licensed and operating, two of which are low-power stations and two are translator stations that broadcast with limited range. The closest station to the solar array, DWDLP-LP, is licensed in Belding, Michigan, and located 11.38 km to the west.

ID	Call Sign	Status <sup>5</sup>	Service <sup>6</sup>	Frequency (MHz)	Transmit ERP <sup>7</sup> (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Solar Array (km)
1	DWDLP-LP	FL	LIC	93.1	0.1	43.159472	-85.128611	11.38
2	WSJH	FM	LIC	103.7		43.133917	-84.830833	15.71
3	W224BZ	FX	LIC	92.7	0.25	43.004472	-85.085833	23.26
4	W270DN	FX	LIC	101.9	0.25	43.15975	-85.255028	20.90
5	-	FM	CP	89.9	6.0	43.069972	-85.222	23.29
6	WGLN-LP	FL	LIC	93.5	0.064	43.401139	-84.976111	20.09
7	WSLI	FM	LIC	90.9		43.086694	-85.316389	28.66
8	WDPW	FM	LIC	91.9		43.086694	-85.316389	28.66

Table 2: FM Radio Stations within 30 Kilometers of Solar Project

<sup>5</sup> LIC = Licensed and operational station; APP = Application for construction permit; CP=Construction permit granted; CP MOD = Modification of construction permit.

<sup>6</sup> FM = FM broadcast station; FX = FM translator station; FL = Low-power FM station; FS = FM auxiliary (backup) station; FB = FM booster station.

<sup>7</sup> ERP = Transmit Effective Radiated Power.

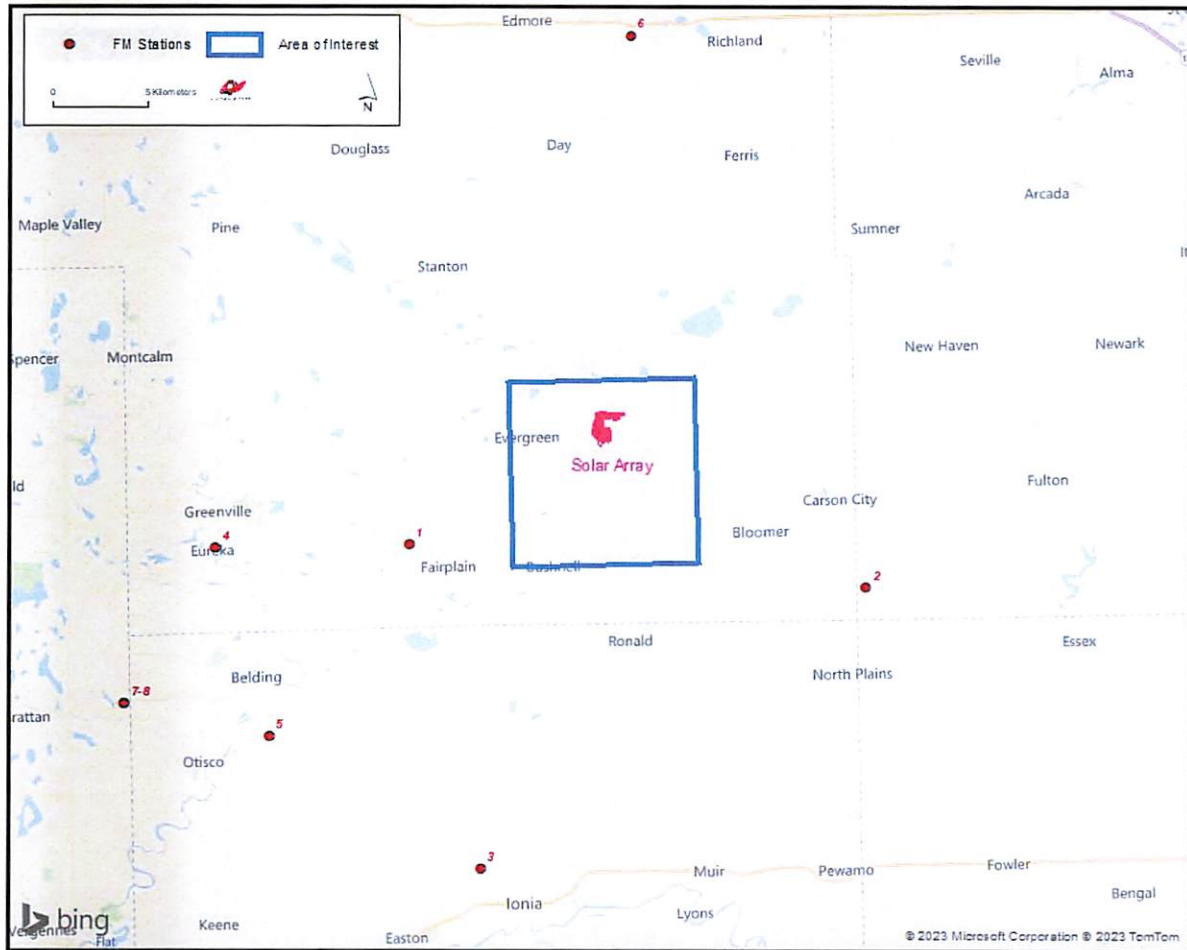


Figure 2: FM Radio Stations within 30 Kilometers of Solar Farm



### **3. Impact Assessment**

The exclusion distance for AM broadcast stations varies as a function of the antenna type and broadcast frequency. For directional antennas, the exclusion distance is calculated by taking the lesser of 10 wavelengths or 3 kilometers. For non-directional antennas, the exclusion distance is simply equal to 1 wavelength. Potential problems with AM broadcast coverage are only anticipated when AM broadcast stations are located within their respective exclusion distance limit from the solar farm. The closest AM station to the project area is WGLM which is located at a separation distance of approximately 20.90 kilometers. Since there were no stations found within 3 kilometers of the project, which is the maximum possible exclusion distance based on a directional AM antenna broadcasting at 1000 KHz or less, the project should not impact the coverage of local AM stations.

The coverage of FM stations is generally not susceptible to interference caused by large objects, such as solar farms, especially when they are sited in the far-field region of the radiating FM antenna. However, at distances less than 500 meters, distorting the antenna's radiation pattern could become a risk factor due to structures being placed in the proximity of the antenna (near-field). The nearest operational FM station to the Fish Creek Solar Project, DWDLP-LP, is located 11.38 km from the proposed solar array and as such, should not be subject to interference. The remaining FM stations identified in Table 2 are 15.71 km or farther from the solar array and therefore outside the range of potential impact, as shown in Figure 2.

Unlike AM and FM stations which transmit signals and thus require an exclusion distance in order to avoid distorting the radiation pattern of their broadcast antenna, radio units receive the signals and thus are susceptible to potential reception issues due to electromagnetic interference (EMI). Electromagnetic interference from a solar farm is caused by an induction field, which is created by the AC electrical power and harmonics at the inverter of the Power Conversion Stations (PCS) located throughout the facility. The propagation of the interference occurs over very short distances which are generally around 500 feet or less, and due to the low frequency (60 Hz) operation of the PV inverter, EMI from solar farms does not normally extend above 1 MHz. Furthermore, Title 47 Part 15B of the FCC rules and regulations provide guidelines that specify the maximum field strength limits for the emissions from unintentional radiators such as inverters.

Therefore, radio units that could be affected by EMI from a solar farm would be AM radios, which operate between 0.5 and 1.6 MHz. The degree of degradation to AM reception would be a function of the separation distance of the AM radio from the inverters of the solar farm and the strength of the received signal. However, to the extent that the inverters used throughout the proposed facility are FCC Part 15B compliant, this degradation would be no different than what occurs when a car radio passes under or near existing high voltage transmission lines that interconnect utility companies and their sub stations throughout the state.



## **4. Recommendations**

No recommendation for mitigation is necessary for the proposed solar farm, as the location of the solar arrays meets or exceeds the required distance separation from all licensed AM and FM broadcast stations near the Fish Creek Solar Project area.

## **5. Contact**

For questions or information regarding the AM and FM Radio Report, please contact:

Contact person: David Meyer  
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Company: Comsearch  
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Email: dmeyer@comsearch.com  
Web site: www.comsearch.com

# Solar Power GeoPlanner™

## Mobile Phone Carrier Report

Fish Creek Solar Project



Prepared on Behalf of  
DTE Electric Company

August 23, 2023



**COMSEARCH**  
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## **1. Introduction**

Comsearch has developed and maintains comprehensive technical databases containing information on licensed mobile phone carriers across the US. Mobile phone carriers operate in multiple frequency bands and are often referred to as Advanced Wireless Service (AWS), Personal Communication Service (PCS), 700 MHz Band, Wireless Communications Service (WCS), and Cellular. They hold licenses on an area-wide basis which are typically comprised of several counties.

This report focuses on the potential impact of a proposed solar farm on mobile phone operations in and around the project area. DTE Electric Company is proposing to construct and place in utility service the Fish Creek Solar Project, an electric generation facility that will be partially located in the township of Evergreen, Michigan. The facility will generate electricity using silicon photovoltaic (PV) modules fixed to single axis solar trackers. It will have an installed capacity of up to 132 MW ac (172 MW dc).

## 2. Summary of Results

### Methodology

Our mobile phone analysis was performed using Comsearch's proprietary carrier database, which is derived from a variety of sources including the Federal Communications Commission (FCC). Since mobile phone market boundaries differ from service to service, we disaggregated the carriers' licensed areas down to the county level. Then we compiled a list of all mobile phone carriers in the main counties that intersect the solar farm. A depiction of the proposed solar farm in Montcalm County, Michigan appears below.

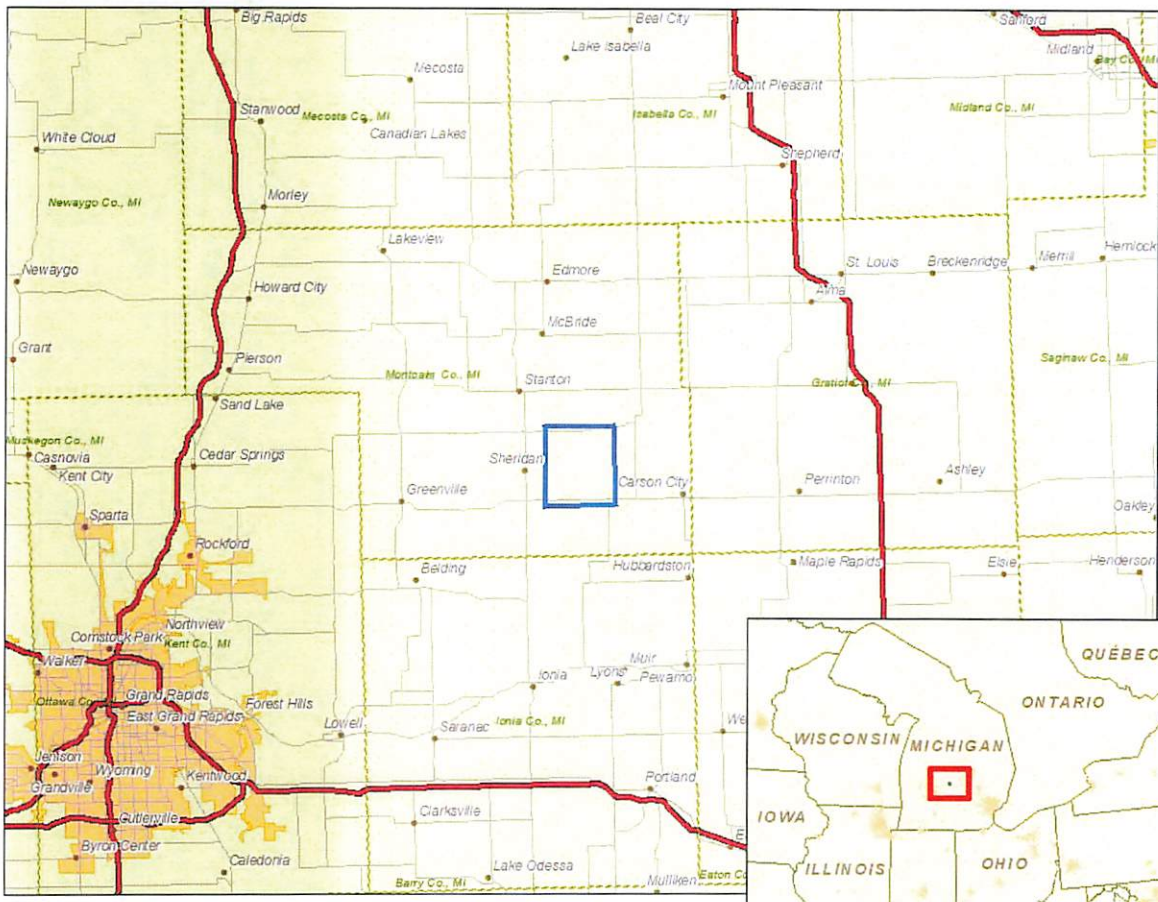


Figure 1: Counties that intersect the Solar Farm



## **Results**

The Fish Creek Solar Project is located in Montcalm County, MI. We have identified the type of service, channel block, market ID and FCC callsign for each carrier in the county of interest. A description of the various service types and geographic market areas is below with a summary table on the following page.

## **AWS**

AWS licensees won their spectrum in an auction that started in August 2006. The licensees are authorized by 734 Cellular Market Areas (CMA) for Block A, 176 Economic Areas (BEA) for Blocks B and C, and 12 Regional Economic Area Groupings (REAG) for Blocks D, E and F. This spectrum at 1.7 and 2.1 GHz was allocated for mobile broadband and advanced wireless services. Partitioning and leases are permitted in the band.

## **Cellular**

Licensees are authorized by Metropolitan and Rural Statistical Areas, also known as CMAs. Unserved areas can be covered by licensees other than the original A or B block licensee. To determine the most realistic coverage, we compiled the Cellular Geographic Service Areas (CGSA) from the 32 dBu contours defined by Part 22.911(a) of the FCC rules. Mobile services are provided at 800 MHz and partitioning and leases are permitted in the band.

## **PCS**

There have been nine auctions for this band, with the last one being held in August 2008. Licensees are authorized by 51 Major Trading Areas (MTA) for Blocks A and B, 493 Basic Trading Areas (BTA) for Blocks C through F, and 176 Economic Areas (EA) for Block G. This band has been heavily partitioned and disaggregated both by counties and by smaller polygons within counties (known as undefined areas or partial counties). The 1.9 GHz PCS carriers provide mobile services and leases are permitted in the band.

## **700 MHz Band**

Originally used for analog television broadcasting, this band consists of an upper and lower band, each having its own set of frequency blocks. There have been three auctions in this band with the last one (Auction 73) being held in 2008 and mobile phone carriers eventually winning licenses for Blocks A, B, and C of the Lower 700 MHz band and Block C of the Upper 700 MHz band. Licensees are authorized by 176 Economic Areas (EA) for Lower Block A, 734 Cellular Market Areas (CMA) for Lower Blocks B and C, and 12 Regional Economic Area Groupings (REAG) for Upper Block C. Partitioning and leases are permitted in the band.

## **WCS**

Mobile services provided in the 2.3 GHz band occupy frequency blocks above and below the spectrum allocated for Satellite Digital Audio Radio Service (SDARS) from 2320 MHz to 2345 MHz. WCS licensees are authorized by 52 Major Economic Areas (MEA) for Blocks A and B and 12 Regional Economic Area Groupings (REAG) for Blocks C and D. Partitioning and leases are permitted in the band.



Service <sup>1</sup>	Mobile Phone Carrier	Channel Block	County	ST	Market ID	Callsign
700 MHz	T-Mobile	Lower A	Montcalm	MI	BEA062	WQJQ706
700 MHz	AT&T	Lower B	Montcalm	MI	CMA478	WQJQ680
700 MHz	AT&T	Lower B	Montcalm	MI	CMA478	WQJQ680
700 MHz	AT&T	Lower C	Montcalm	MI	CMA478	WPWU893
700 MHz	AT&T	Lower C	Montcalm	MI	CMA478	WPWU893
700 MHz	AT&T	Lower D	Montcalm	MI	EAG704	WPZA238
700 MHz	DISH Network	Lower E	Montcalm	MI	BEA062	WQJZ204
700 MHz	Verizon	Upper C	Montcalm	MI	REA003	WQJQ691
AWS	AT&T	A	Montcalm	MI	CMA478	WQGL793
AWS	AT&T	B	Montcalm	MI	BEA062	WQGA950
AWS	AT&T	B	Montcalm	MI	BEA062	WQGA950
AWS	T-Mobile	C	Montcalm	MI	BEA062	WQGA727
AWS	T-Mobile	D	Montcalm	MI	REA003	WRAM895
AWS	Verizon	E	Montcalm	MI	REA003	WRAM881
AWS	Verizon	F	Montcalm	MI	REA003	WQMC323
Cellular	AT&T	A	Montcalm	MI	CMA478	KNKN998
Cellular	Verizon	B	Montcalm	MI	CMA478	KNKQ319
PCS	AT&T	A	Montcalm	MI	MTA005	KNLF210
PCS	AT&T	A	Montcalm	MI	MTA005	KNLF210
PCS	T-Mobile	B	Montcalm	MI	MTA005	KNLF211
PCS	T-Mobile	B	Montcalm	MI	MTA005	WQJJ975
PCS	AT&T	C	Montcalm	MI	BTA169	WPUR877
PCS	AT&T	C	Montcalm	MI	BTA169	WPUR877
PCS	AT&T	C	Montcalm	MI	BTA169	WQMC324
PCS	AT&T	C	Montcalm	MI	BTA169	WQMC324
PCS	AT&T	D	Montcalm	MI	BTA169	KNLG664
PCS	AT&T	D	Montcalm	MI	BTA169	KNLG664
PCS	T-Mobile	E	Montcalm	MI	BTA169	WPOM283
PCS	AT&T	F	Montcalm	MI	BTA169	WPUR880
PCS	AT&T	F	Montcalm	MI	BTA169	WPUR880
PCS	T-Mobile	G	Montcalm	MI	BEA062	WQKT276

<sup>1</sup> AWS: Advanced Wireless Service at 1.7/2.1 GHz  
 CELL: Cellular Service at 800 MHz  
 PCS: Personal Communication Service at 1.9 GHz  
 700 MHz: Commercial Mobile Phone at 700 MHz  
 WCS: Wireless Communication Service at 2.3 GHz





Service <sup>1</sup>	Mobile Phone Carrier	Channel Block	County	ST	Market ID	Callsign
WCS	AT&T	A	Montcalm	MI	MEA016	KNLB304
WCS	AT&T	B	Montcalm	MI	MEA016	KNLB278
WCS	AT&T	C	Montcalm	MI	REA003	WPQL632
WCS	AT&T	D	Montcalm	MI	REA003	KNLB325

Table 1: Mobile Phone Carriers in the Solar farm

**FCC-Licensed Sites**

For competitive and confidentiality reasons, most mobile phone carriers' individual sites are not licensed with the FCC. However, in the cellular band, if a base station extends the existing Cellular Geographic Service Area (CGSA), then it must be recorded with the FCC. We identified one cellular site within the Fish Creek Solar Project area of interest. Figure 2 on the next page depicts its location in relation to the proposed solar array and Table 2 contains the technical parameters on the FCC license.

Callsign	Licensee	ASR Number	Latitude (NAD83)	Longitude (NAD83)	Distance to Solar Array (km)
KNKN998	AT&T	1212677	43.178444	-84.959417	4.4

Table 2: FCC-Licensed Mobile Phone Sites

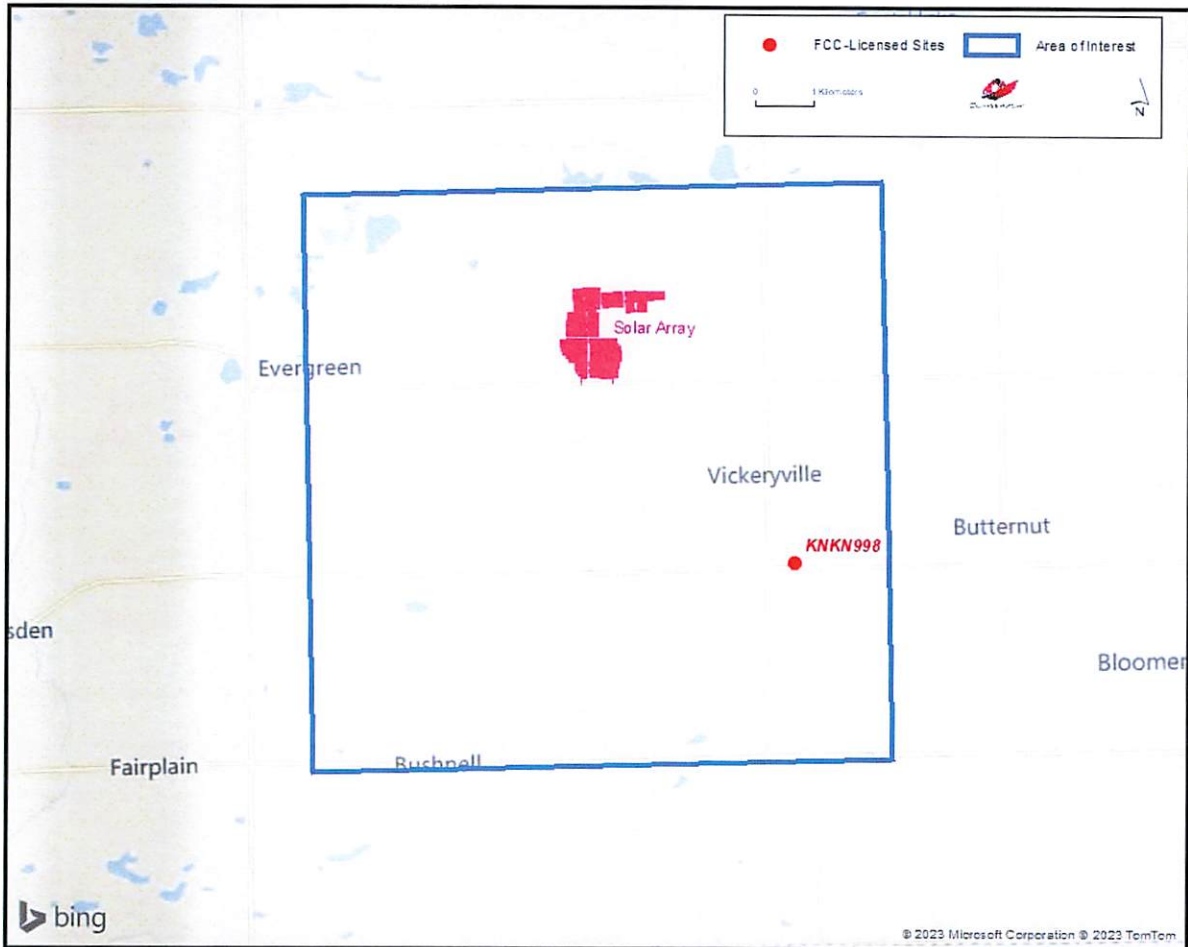


Figure 2: FCC-Licensed Mobile Phone Sites in the Area of Interest



### **Impact Assessment and Distance Setback Requirements**

Mobile cellular phone networks are typically unaffected by the presence of a solar farm because they are designed to operate reliably in a non-line-of-sight (NLOS) environment using multiple base transmitter stations or cell towers that cover a large geographic area. Additionally, these networks are designed with coverage overlap such that if a mobile unit is unable to make a connection to one base station, the network would handoff the mobile unit to an adjacent base station to maintain the connection. Furthermore, the height of the proposed solar panels relative to the antenna height of a typical base transmitter station is significantly lower, raising to a maximum of 15 feet above ground level. Consequently, any signal blockage caused by the solar farm does not materially degrade the reception because the end user would receive signals from neighboring transmitter locations. Therefore, reliable mobile phone service is made possible even in places that are congested with larger structures such as downtown urban areas, and we do not anticipate any significant harmful effect to mobile phone services in the solar farm project area.

### **3. Recommendation**

For the cellular towers located within the project area, no setback distance is required from an interference standpoint due to the higher frequencies in which they operate within the UHF band. Electromagnetic interference (EMI) from a solar farm is caused by an induction field, which is created by the AC electrical power and harmonics at the inverter of the Power Conversion Stations (PCS) located throughout the facility. The propagation of the interference occurs over very short distances which are generally around 500 feet or less, and due to the low frequency operation of the inverter, EMI does not normally extend above 1 MHz. Based on the frequency range for the mobile phone licenses identified in the area from 700 MHz – 2.3 GHz, we do not anticipate any harmful interference impact on mobile phone operations due to EMI from the Fish Creek Solar Project. No mitigation techniques or additional recommendations are required.



*DTE Electric Company  
Solar Power GeoPlanner™  
Mobile Phone Carrier Report  
Fish Creek Solar Project*

## **4. Contact Us**

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Web site: [www.comsearch.com](http://www.comsearch.com)

# Solar Power GeoPlanner™

## Microwave Study

### Fish Creek Solar Project



Prepared on Behalf of  
DTE Electric Company

August 23, 2023



**COMSEARCH**  
A CommScope Company



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## **1. Introduction**

Microwave bands that may be affected by the solar farms operate over a wide frequency range (900 MHz – 23 GHz). Comsearch has developed and maintains comprehensive technical databases containing information on licensed microwave networks throughout the United States. These systems are the telecommunication backbone of the country, providing long-distance and local telephone service, backhaul for cellular and personal communication service, data interconnects for mainframe computers and the Internet, network controls for utilities and railroads, and various video services. This report focuses on the potential impact of a proposed solar farm on licensed, proposed, and applied non-federal government microwave systems.

## 2. Project Overview

The proposed Fish Creek Solar Project will be partially located in Evergreen Township, Michigan. The facility will generate electricity using silicon photovoltaic (PV) modules fixed to single axis solar trackers. It will have an installed capacity of up to 132 MW ac (172 MW dc).

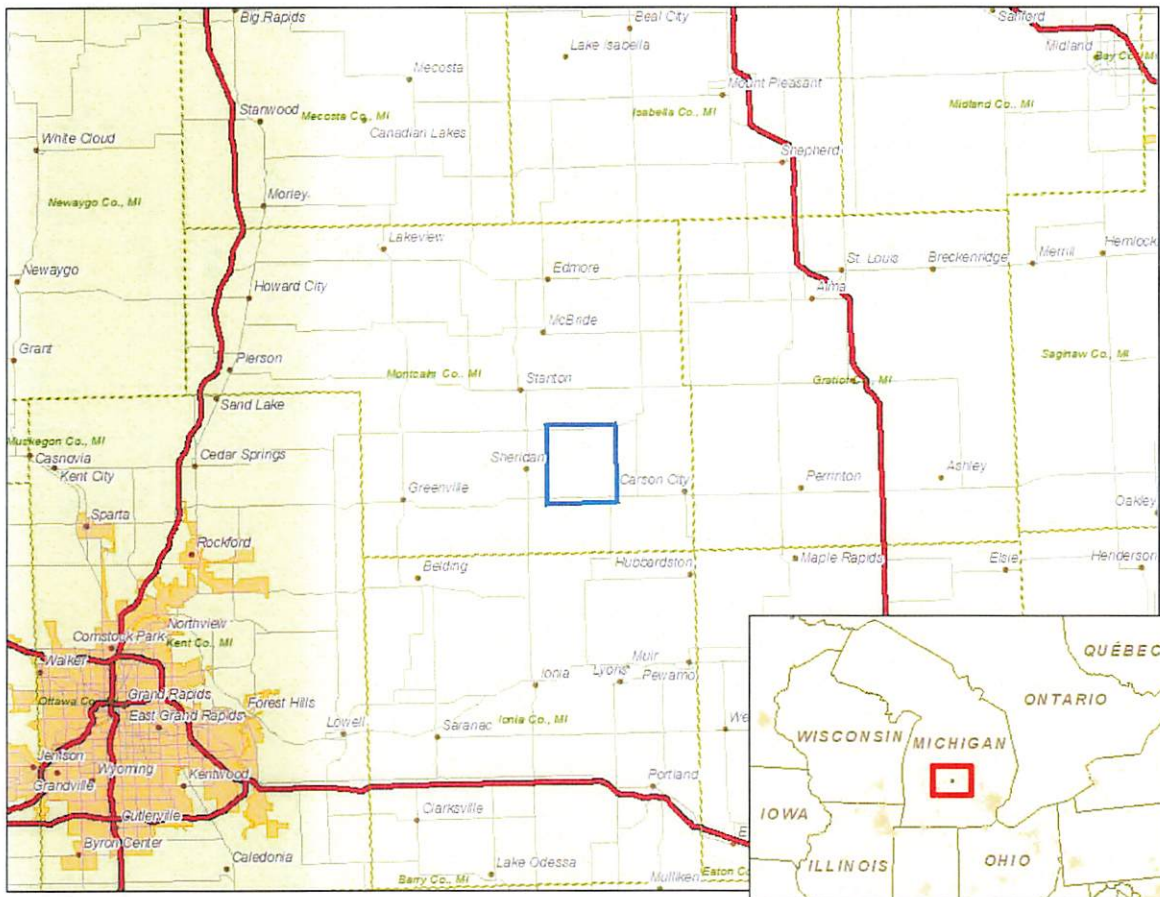


Figure 1: Area of Interest



### 3. Two-Dimensional Fresnel Zone Analysis

#### Methodology

Our obstruction analysis was performed using Comsearch's proprietary microwave database, which contains all non-government licensed, proposed and applied paths from 0.9 - 23 GHz<sup>1</sup>. First, we determined all microwave paths that intersect the proposed solar farm<sup>2</sup> and listed them in Table 1. These paths and the solar farm array are shown in Figure 2 below.

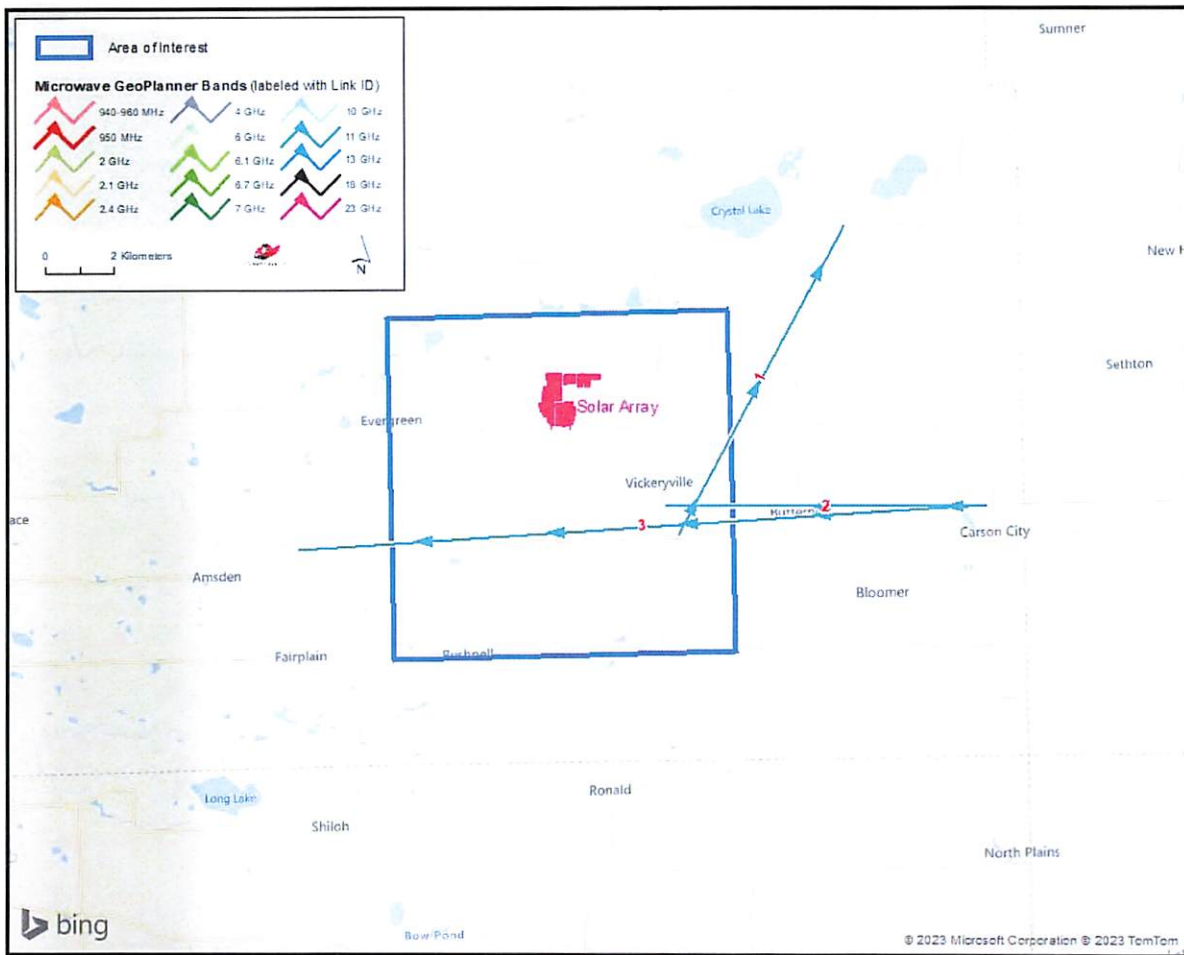


Figure 2: Microwave Paths that Intersect the Area of Interest

<sup>1</sup> Please note that this analysis does not include unlicensed microwave paths or federal government paths that are not registered with the FCC.

<sup>2</sup> We use FCC-licensed coordinates to determine which paths intersect the area of interest. It is possible that as-built coordinates may differ slightly from those on the FCC license.

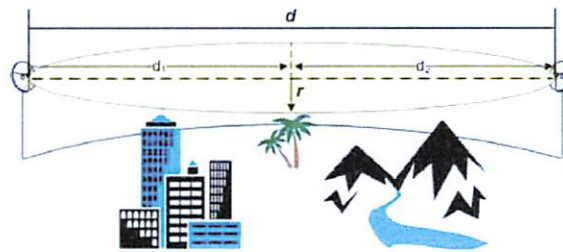
ID	Status	Callsign 1	Callsign 2	Band	Path Length (km)	Licensee
1	Proposed	CARSON C	CRYSTAL	11 GHz	10.07	Cellco Partnership - Michigan
2	Licensed	WQTJ534	WRDM448	11 GHz	9.24	New Cingular Wireless PCS LLC - Michigan
3	Licensed	WQUY877	WRAT717	11 GHz	19.91	CMSInter.Net, LLC

*Table 1: Summary of Microwave Paths that Intersect the Area of Interest*

*(See enclosed mw\_geopl.xlsx for more information and GP\_dict\_matrix\_description.xls for detailed field descriptions)*

Next, we calculated the 1<sup>st</sup> Fresnel zone for each path based on the following formula:

$$r \cong 17.3 \sqrt{\frac{n}{F_{GHz}} \left( \frac{d_1 d_2}{d_1 + d_2} \right)}$$



Where,

- r = Fresnel zone radius at a specific point in the microwave path, meters
- n = Fresnel zone number, 1
- F<sub>GHz</sub> = Frequency of microwave system, GHz
- d<sub>1</sub> = Distance from antenna 1 to a specific point in the microwave path, kilometers
- d<sub>2</sub> = Distance from antenna 2 to a specific point in the microwave path, kilometers

In general, the 1<sup>st</sup> Fresnel zone (i.e., n = 1) is the area where the planned structures should be avoided in order to maintain clear line-of-sight (LOS) between the two endpoints of the microwave beam path. Likewise, Comsearch recommends that an area directly in front of each microwave antenna should be avoided. This corresponds to the Consultation Zone which measures 1 kilometer along the main beam of the antenna and 24 ft (7.3 meters) wide. A depiction of the individual Fresnel and Consultation Zones is shown in Figure 3, and is also included in the enclosed shapefiles<sup>3,4</sup>.

<sup>3</sup> The ESRI® shapefiles enclosed are in NAD 83 UTM Zone 16 projected coordinate system.

<sup>4</sup> Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data provided in this report is governed by Comsearch's data license notification and agreement located at [http://www.comsearch.com/files/data\\_license.pdf](http://www.comsearch.com/files/data_license.pdf).

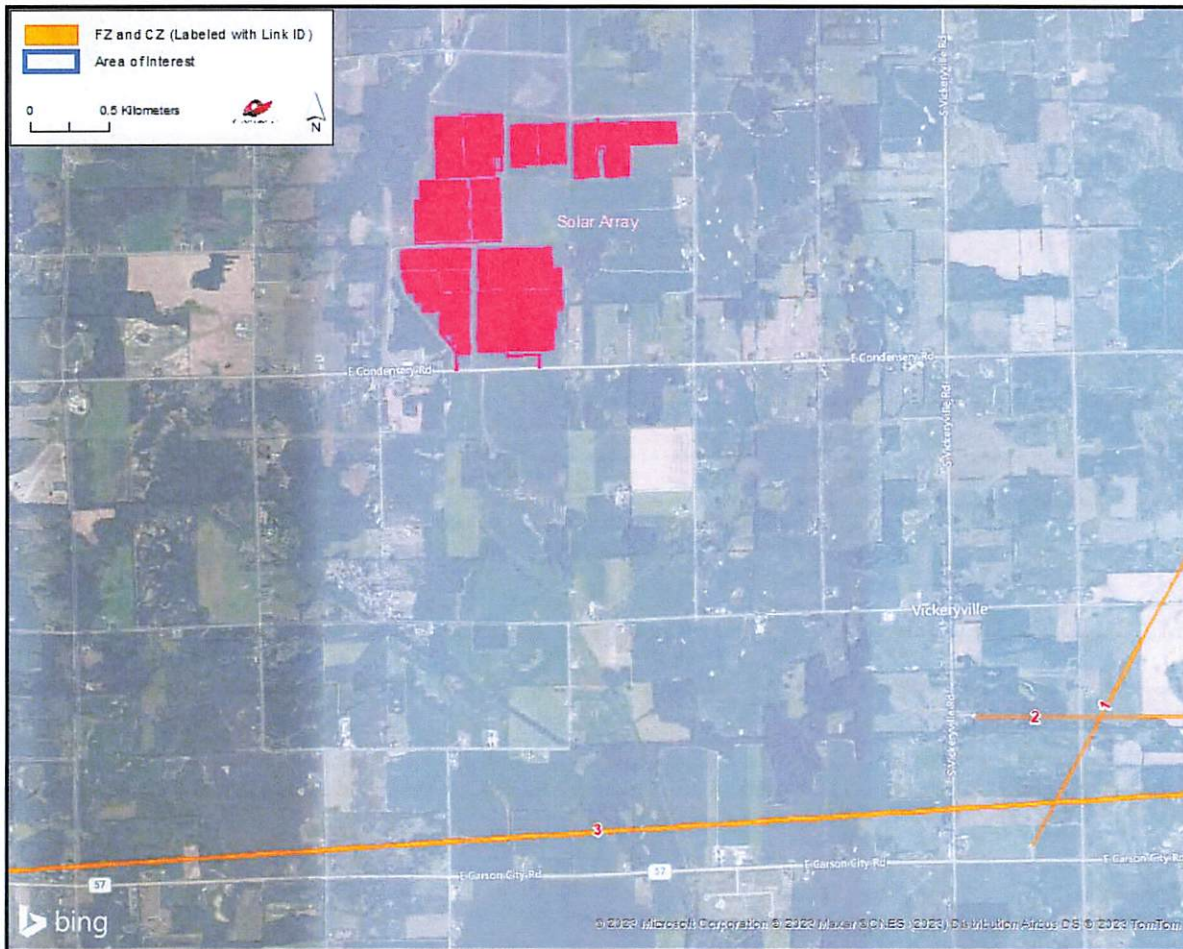


Figure 3: Fresnel Zones and Consultation Zones in the Area of Interest



## **4. Conclusion**

Our study identified three microwave paths intersecting the Fish Creek Solar Project area of interest. The Fresnel Zones and Consultation Zones for these microwave paths were calculated and mapped. Since there were no microwave paths crossing over the solar array, none of the proposed structures will cause obstructions with the microwave systems identified in the area.

## **5. Contact**

For questions or information regarding the Microwave Study, please contact:

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Web site:	<a href="http://www.comsearch.com">www.comsearch.com</a>

# Solar Power GeoPlanner™

## Land Mobile & Emergency Services Report

### Fish Creek Solar Project



Prepared on Behalf of  
DTE Electric Company

August 23, 2023



**COMSEARCH**  
A CommScope Company

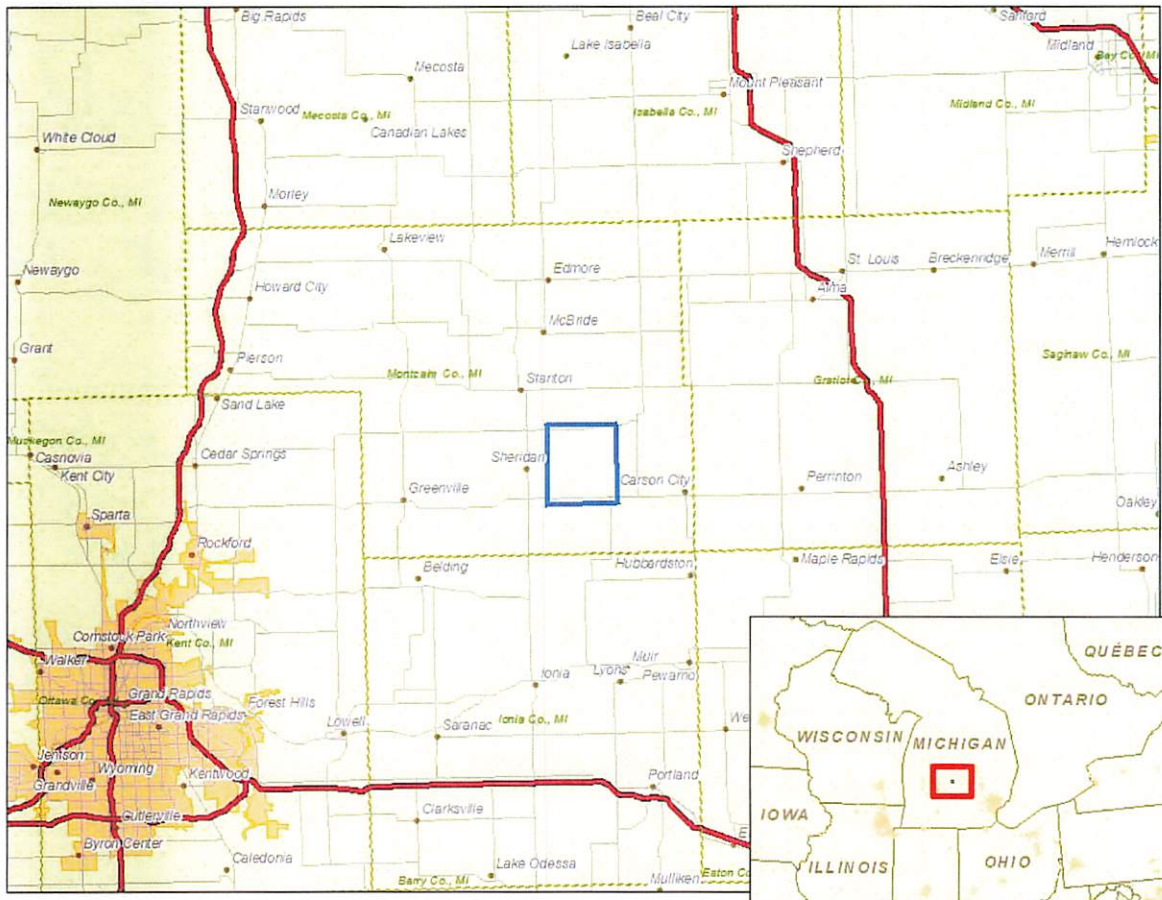


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## 1. Introduction

An assessment of the emergency services in the Fish Creek Solar Project that will be partially located in Evergreen Township, Michigan was performed by Comsearch to identify potential impact from the proposed solar farm. Comsearch evaluated the registered frequencies for the following types of first responder entities: police, fire, emergency medical services, emergency management, hospitals, public works, transportation and other state, county, and municipal agencies. We also identified all industrial and business land mobile radio (LMR) systems and commercial E911 operators in proximity of the solar farm project. This information is useful in the planning stages of the project because the data can be used in support of facility communications needs and to evaluate any potential impact on the emergency services provided in that region. An overview of the project area, located in Montcalm County, Michigan, appears in Figure 1.



**Figure 1: Area of Interest (AOI)**

## 2. Summary of Results

Our land mobile and emergency services incumbent data<sup>1</sup> was derived from the FCC's Universal Licensing System (ULS) and the FCC's Public Safety & Homeland Security bureau. We identified both site-based licenses as well as regional area-wide licenses designated for public safety use.

### Site-Based Licenses

The site-based licenses were imported into GIS software and geographically mapped relative to the solar farm project area of interest as defined by the customer. A depiction of the fixed-site licenses in the project area appears in Figure 2 below.

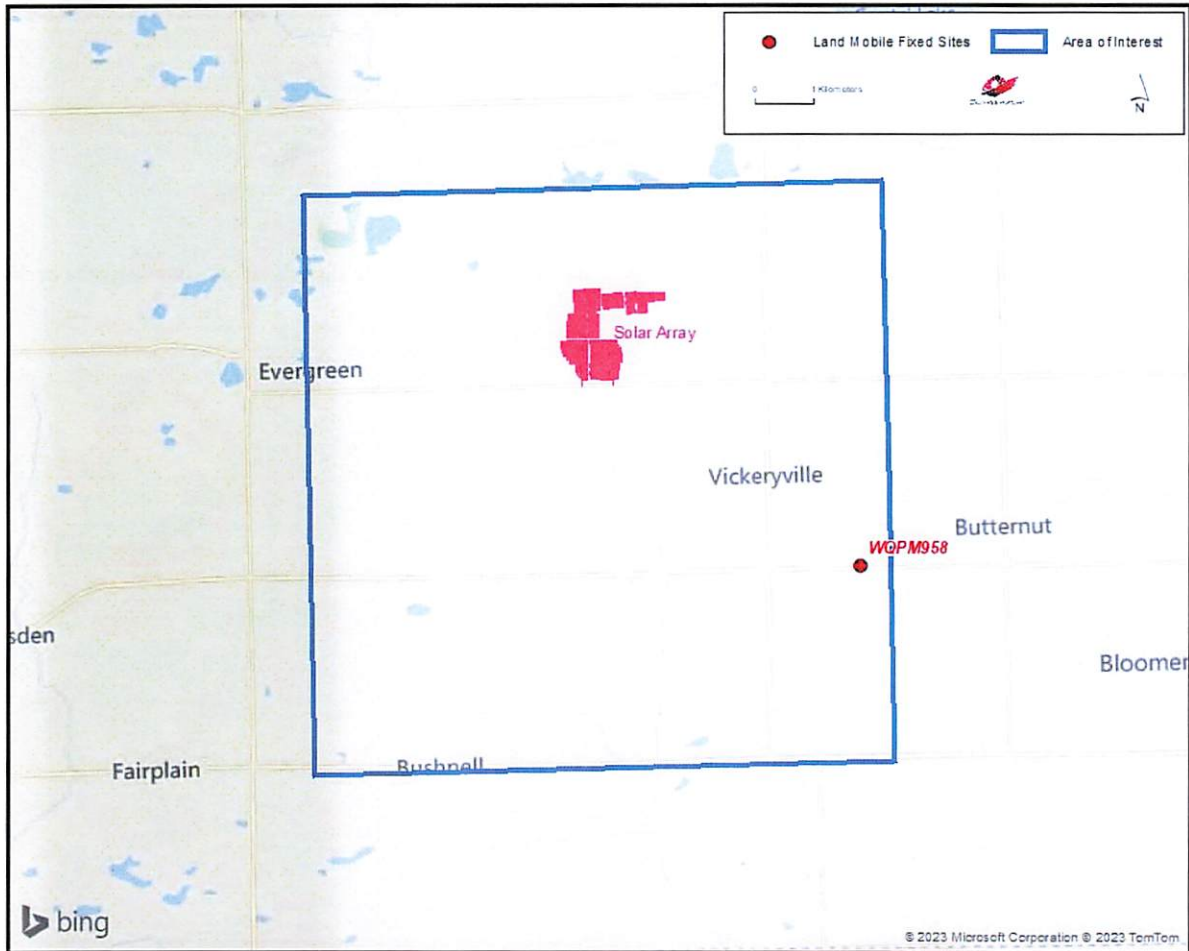


Figure 2: Land Mobile & Emergency Service Sites within Area of Interest

<sup>1</sup> Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data presented in this report is derived from the land mobile station's FCC license and governed by Comsearch's data license notification and agreement located at [http://www.comsearch.com/files/data\\_license.pdf](http://www.comsearch.com/files/data_license.pdf)



Figure 2 identifies one site-based licenses within the Fish Creek Solar Project area of interest. Specific information about this site is provided in Table 1.

Call Sign	Frequency Band (MHz)	Licensee	Antenna Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)	Distance to the Solar Array (km)
WQPM958	150-174	Longs Propane LLC	29	43.177944	-84.946306	5.2

**Table 1: Land Mobile & Emergency Service Sites in Area of Interest**

### Mobile Licenses

In addition to the fixed-site licenses above, 365 mobile licenses defined by center point and radius were found to intersect the Fish Creek Solar Project area of interest. Appendix A contains a tabular summary of these stations.

### Area-Wide Licenses

The regional area-wide licenses were compiled from FCC data sources and identified for each county intersected by the solar farm. The solar farm project is located in Montcalm County, Michigan, part of Public Safety Region #21, which contains all of the counties in Michigan. The regional public safety operations are overseen by the entity listed below.

**Keith M. Bradshaw**  
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The chairperson for Region #21 serves as the representative for all public safety entities in the area and is responsible for coordinating current and future public safety use in the wireless spectrum. In the bands licensed by the FCC for area-wide first responders, which include 220 MHz, 700 MHz, 800 MHz and 4.9 GHz, as well as the traditional Part 90 public safety pool of frequencies, twelve licenses were found for the State of Michigan and three for the County of Montcalm (Table 2). These area-wide licenses are designated for mobile use only.

ID	Licensee	Area of Operation	Frequency Band (MHz)
1	American National Red Cross	Statewide: MI	25-50
2	BERRIEN COUNTY PUBLIC SAFETY COMMUNICATION CENTER	Statewide: MI	150-174
3	GRAND RAPIDS, CITY OF	Statewide: MI	150-174
4	GREENVILLE, CITY OF	Countywide: MONTCALM, MI	150-174
5	LANSING, CITY OF	Statewide: MI	150-174
6	MICHIGAN DEPT OF Health and Human Services	Statewide: MI	450-470
7	MICHIGAN, STATE OF	Statewide: MI	0-10, 25-50, 150-174, 421-430, 450-470, 769-775/799-805, 800/900, 2450-2500, 4940-4990
8	MONTCALM COUNTY CENTRAL DISPATCH	Countywide: MONTCALM, MI	150-174
9	MONTCALM, COUNTY OF	Countywide: MONTCALM, MI	150-174, 450-470
10	Muskegon Central Dispatch 911	Statewide: MI	150-174
11	MUSKEGON, CITY OF	Statewide: MI	150-174
12	MUSKEGON, COUNTY OF	Statewide: MI	150-174
13	NATIONAL SKI PATROL SYSTEM INC	Statewide: MI	150-174
14	STATE OF MICHIGAN, DEPT OF HEALTH AND HUMAN SERVICES	Statewide: MI	150-174
15	UNIVERSITY OF MICHIGAN HOSPITALS	Statewide: MI	150-174

**Table 2: Regional Licenses**

### E911 Operators

Wireless operators are granted area-wide licenses from the FCC to deploy their cellular networks, which often include handsets with E911 capabilities. Since mobile phone market boundaries differ from service to service, we disaggregated the carriers' licensed areas down to the county level. We have identified the type of service for each carrier in Montcalm County, Michigan, in Table 3.

Mobile Phone Carrier	Service <sup>2</sup>
AT&T	700 MHz, AWS, Cellular, PCS, WCS
Blue Ridge Wireless II	AWS
DISH Network	700 MHz, AWS
T-Mobile	700 MHz, AWS, PCS
Verizon	700 MHz, AWS, Cellular

**Table 3: Mobile Phone Carriers in Area of Interest with E911 Service**

<sup>2</sup> AWS: Advanced Wireless Service at 1.7/2.1 GHz  
 CELL: Cellular Service at 800 MHz  
 PCS: Personal Communication Service at 1.9 GHz  
 WCS: Wireless Communications Service at 2.3 GHz  
 700 MHz: Lower 700 MHz Service

### **3. Impact Assessment**

The first responder, industrial/business land mobile sites, area-wide public safety, and commercial E-911 communications as described in this report are typically unaffected by the presence of a solar farm, and we do not anticipate any significant harmful effect to these services in the solar farm project area. Although each of these services operates in different frequency ranges and provides different types of service including voice, video and data applications, there is commonality among these different networks with regard to the impact of a solar farm on their service. Each of these networks is designed to operate reliably in a non-line-of-sight (NLOS) environment. Many land mobile systems are designed with multiple base transmitter stations covering a large geographic area with overlap between adjacent transmitter sites in order to provide handoff between cells.

Furthermore, the heights of the solar panels whose range will not exceed 15 feet above ground level are generally lower than the antenna height of the land mobile systems identified. Therefore, any signal blockage caused by the solar farm does not materially degrade the reception due to the height differential or because the end user is likely capable of receiving signals from multiple transmitter locations. Additionally, the frequencies of operation for these services have characteristics that allow the signal to propagate over and through the solar panels. As a result, very little, if any, change in their coverage should occur when the solar farm is installed.

### **4. Recommendations**

No recommendation with regard to coverage impact mitigation is necessary, as the proposed solar farm is not expected to cause any significant degradation in signal strength after construction of the solar farm.

With regard to electromagnetic interference (EMI) emissions, Comsearch recommends a minimum setback distance for the PV inverters. When planning their locations in the project area of interest, a conservative approach would dictate not locating any power conversion station (PCS) within 77.5 meters of land mobile fixed-base stations to avoid any possible impact to the communications services that they provide. This distance is based on FCC interference emissions from electrical devices in the land mobile frequency bands. Therefore, as long as the PCS installations which house the PV inverters are located more than 77.5 meters from the land mobile stations, they will meet the setback distance criteria for FCC interference emissions in the land mobile bands.



## **5. Contact**

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Web site: [www.comsearch.com](http://www.comsearch.com)



## Appendix A

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
1	WQUS514	450-470	Absolute Security	80	42.737222	-85.621111
2	WPYV212	450-470	Aclara Technologies LLC	81	42.914944	-85.172694
3	WQZG318	450-470	ADM ALLIANCE NUTRITION, INC.	32	42.869917	-84.899361
4	WSH543	150-174	ALMA BOARD OF EDUCATION	40	43.391694	-84.670833
5	KTT771	150-174	ALMA COLLEGE	40	43.379806	-84.667306
6	KGL388	25-50	American National Red Cross	121	43.006139	-83.697444
7	KTV410	450-470	Antenna Design	40	43.089194	-85.221139
8	KQB213	150-174	Antenna Designs of Kent County	121	42.881694	-84.918889
9	WPRZ893	450-470	Antenna Designs of Kent County	64	43.016472	-85.740056
10	WPFF288	800/900	ASHCROFT ITV INC	113	43.392528	-83.924139
11	WRCY944	450-470	AVALON & TAHOE MFG.	32	43.382222	-84.648611
12	WPGS581	450-470	BAXTER, GARY	40	43.385028	-84.577222
13	KPG474	150-174	BEASLEY MEDIA GROUP LICENSES, LLC	322	42.470861	-83.249917
14	KDA722	150-174	BELDING, CITY OF	25	43.103361	-85.224472
15	WQGN411	450-470	Bell Packaging Corp	57	42.982778	-85.665278
16	WQPG912	150-174	Bennett, Matthew L	35	42.917139	-85.093528
17	KD46985	150-174	BERLIN ORANGE TOWNSHIP OF	24	42.957583	-85.082444
18	WPNW820	150-174	BLACK LOCUST FARM LLC	25	43.373639	-85.133083
19	KD28628	450-470	BRINK'S INCORPORATED	121	42.245306	-84.406056
20	KD28629	450-470	BRINK'S INCORPORATED	120.7	42.291417	-85.587222
21	KD28630	450-470	BRINK'S INCORPORATED	121	42.733639	-84.554139
22	KD28631	450-470	BRINK'S INCORPORATED	121	42.953639	-85.698639
23	KD28632	450-470	BRINK'S INCORPORATED	121	43.416694	-83.983306
24	WRXD236	150-174	Buerge Insulation & Window Co	40	43.231694	-84.659167



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Land Mobile & Emergency Services Report  
Fish Creek Solar Project**

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
25	WRXD236	150-174	Buerge Insulation & Window Co	40	43.234556	-84.654806
26	WRXD236	150-174	Buerge Insulation & Window Co	40	43.282306	-84.617944
27	KNNS962	450-470	BYRON CENTER HIGH SCHOOL	80	42.809750	-85.747250
28	WRQB409	450-470	Caledonia Farmers Elevator	80	42.789306	-85.511694
29	KZZ268	450-470	CALVIN COLLEGE	80	42.929472	-85.584194
30	WQVI776	150-174	Cannonsburg LLC	40	43.050611	-85.503694
31	WRUA645	450-470	CARL SCHLEGEL, INC.	40	43.091111	-84.667778
32	WRUA645	450-470	CARL SCHLEGEL, INC.	40	43.037778	-84.535556
33	WRUA645	450-470	CARL SCHLEGEL, INC.	40	43.041111	-84.485278
34	WQVX649	150-174	Carlson-Arbogast Farms, LLC	32	43.357500	-85.383639
35	KNJM559	25-50	CARR, DUANE:CARR, LYNN:CARR, PATRICK DBA CARR FARMS	32	43.462806	-85.274194
36	WQVK565	450-470	CARSON CITY CRYSTAL SCHOOLS	32	43.172861	-84.837139
37	WQK278	150-174	CASCADE, TOWNSHIP OF	121	42.911389	-85.509167
38	KFW391	25-50	CEDAR SPRINGS PUBLIC SCHOOLS	40	43.186139	-85.544472
39	KNEK512	450-470	CENTRAL MONTCALM SCHOOLS	20	43.310000	-85.098611
40	WRBL579	450-470	CF, LLC	35	43.306722	-84.713972
41	WPEQ969	450-470	CHICAGO DIVERSIFIED FOODS	121	42.875028	-85.625028
42	WPKM394	450-470	CHROUCH COMMUNICATIONS INC	32	43.174722	-85.297500
43	WPPF521	450-470	CHROUCH COMMUNICATIONS INC	32	43.174750	-85.297528
44	WQQH356	150-174	Chrouch Communications Inc	32	42.986694	-85.104167
45	WQRZ695	150-174	Chrouch Communications, Inc.	40	42.958444	-84.548250
46	WQYJ227	150-174, 450-470	CIGANICK, TANNER	80	43.706806	-85.063333
47	WPMK822	150-174	CLINTON, COUNTY OF	40	42.958444	-84.548250
48	WPNS770	800/900	CLINTON, COUNTY OF	40	42.961139	-84.552472
49	WQTT508	450-470	Clover, J P	32	43.022944	-84.996167



ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
50	WQSL756	150-174	Coblentz, Troy L	35	43.218361	-84.666944
51	KDM889	450-470	COMBINED COMMUNICATIONS OF OKLAHOMA, LLC	60	43.014722	-85.684722
52	KDL305	450-470	COMMUNICATIONS SPECIALISTS INC	97	42.796139	-85.649472
53	KGJ993	450-470	COMMUNICATIONS SPECIALISTS INC	56	42.987528	-85.623917
54	WCE473	450-470	COMMUNICATIONS SPECIALISTS INC	121	42.737222	-85.621111
55	WNVK875	450-470	COMMUNICATIONS SPECIALISTS INC	121	42.796139	-85.649472
56	WNYT724	450-470	COMMUNICATIONS SPECIALISTS INC	121	42.581139	-85.754750
57	WPCW449	220-222	COMMUNICATIONS SPECIALISTS INC	80	43.068917	-85.636139
58	WPDC739	220-222	COMMUNICATIONS SPECIALISTS INC	80	43.442806	-85.804222
59	WPQA411	150-174	COMMUNICATIONS SPECIALISTS INC	40	43.160000	-84.655556
60	WPCX584	220-222	Communications Specialists, Inc.	80	42.737250	-85.621139
61	WPFM965	220-222	Communications Specialists, Inc.	80	42.737250	-85.621139
62	WQYC855	450-470	Communications Specialists, Inc.	32	43.160000	-84.655556
63	WQTT506	450-470	Comsource Inc.	32	42.880333	-85.035833
64	KZD560	150-174	CONLEY SECURITY	161	43.472250	-83.941639
65	WRNT405	450-470	Crook Farms Inc	32	43.370750	-85.122750
66	WQSY304	450-470	Demott, Kale	32	43.186111	-84.713889
67	WNCJ274	450-470	DEVEREAUX SAWMILL INC	32	43.031694	-84.844444
68	KUJ723	450-470	DEWITT, TOWNSHIP OF	48	42.958444	-84.548250
69	WQYJ370	450-470	DICASTAL NORTH AMERICA, INC.	15	43.198583	-85.236556
70	WQYN487	450-470	DIVERSIFIED FARMS, LLC	35	42.881778	-84.777806
71	WQWV576	450-470	Double R Ranch	24	43.047528	-85.267528
72	KB8150	25-50	DTE Electric Company	120	42.738889	-83.666667
73	KQF981	150-174	DTE Electric Company	40	43.545583	-84.825861
74	WPCS717	150-174	DTE Electric Company	40	43.178361	-84.601111





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75	WPJQ721	450-470	DTE Electric Company	32	43.447250	-85.143361
76	WPKM201	450-470	DTE Electric Company	32	43.178361	-84.601111
77	WPKN673	450-470	DTE Electric Company	32	43.235861	-85.450028
78	WPME473	216-220	DTE Electric Company	200	42.333917	-83.057694
79	WPPH566	450-470	DTE Electric Company	100	42.726417	-84.544972
80	WPPZ443	450-470	DTE Electric Company	100	43.583361	-85.312528
81	WPQI931	150-174	DTE Electric Company	40	43.235861	-85.450028
82	WQZX301	800/900	DTE Electric Company	113	43.316389	-85.106111
83	WQZX937	800/900	DTE Electric Company	113	42.978250	-85.667167
84	WQZX937	800/900	DTE Electric Company	113	43.653333	-85.486389
85	WQZX937	800/900	DTE Electric Company	113	43.013889	-85.478056
86	WQZZ273	800/900	DTE Electric Company	113	43.410278	-86.228333
87	WQZZ273	800/900	DTE Electric Company	113	43.890833	-84.966667
88	WRMA692	800/900	DTE ELECTRIC COMPANY	113	43.410083	-86.369694
89	WRMA692	800/900	DTE ELECTRIC COMPANY	113	43.239083	-86.248306
90	WRMA692	800/900	DTE ELECTRIC COMPANY	113	43.145472	-86.243389
91	WRMA692	800/900	DTE ELECTRIC COMPANY	113	43.253778	-86.201361
92	WRMA692	800/900	DTE ELECTRIC COMPANY	113	43.260556	-86.076944
93	WRMA692	800/900	DTE ELECTRIC COMPANY	113	43.262667	-85.807694
94	WRUL805	800/900	DTE Electric Company	113	42.552806	-83.874667
95	WPEG452	450-470	DUHADWAY, KENDALL & ASSOCIATES	121	42.971417	-85.667806
96	WQYB647	450-470	Edward W. Sparrow Hospital Association	10	43.175250	-84.841806
97	KD3809	450-470	Enbridge Energy Company, Inc.	80	42.665000	-84.611111
98	WPCT548	150-174	ENDSLEY, GORDON	64	42.638917	-85.194444
99	WPYB830	150-174	ENSZ, JOE	40	43.219444	-84.690000



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100	WPHE802	450-470	FAIRS SALVAGE COMPANY	32	43.205778	-85.126778
101	WPMG366	450-470	Feldpausch, Neil	32	42.995028	-84.995000
102	KNIT735	150-174	FELDPAUSCH, PATRICK OR BECKY	48	42.974194	-84.720000
103	WQBC824	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	43.408806	-86.318417
104	WQBC824	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	43.190611	-86.261278
105	WQBC824	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.806139	-86.102889
106	WQBC869	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.903917	-85.787250
107	WQBC869	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.963361	-85.689917
108	WQBC869	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	43.009306	-85.688694
109	WQBC869	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.970111	-85.645972
110	WQBC912	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.740917	-84.613583
111	WQBC912	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.699556	-84.567500
112	WQBC912	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.662722	-84.539583
113	WQBC912	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.733444	-84.526944
114	WQBC912	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.705250	-84.419167
115	WQBC914	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.942528	-85.667528
116	WQBC914	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.961389	-85.655833
117	WQBC914	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.868472	-85.644944
118	WQBC914	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.912389	-85.595028
119	WQBC914	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	121	42.986500	-85.071139
120	WQEG374	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	79	42.900444	-85.665528
121	WQEG376	450-470	FITZPATRICK ACQUISITIONS LLC DBA WMCR CO.	79	43.177306	-85.277861
122	BLP00677	25-50, 150-174, 450-470, 470-512	Flint TV License Company, LLC	129	43.013917	-83.692444
123	KR9978	150-174	Flint TV License Company, LLC	113	43.230028	-84.059694



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124	KNAH775	450-470	Flint TV License Company, LLC	113	43.230278	-84.058889
125	WPNX785	150-174	Flint TV License Company, LLC	113	43.230306	-84.058861
126	WRFK264	450-470	FLURESH LLC	80	42.940556	-85.673389
127	KNGS421	150-174	FRANICH, JOHN C	48	43.219472	-84.555556
128	WRDJ302	150-174	FRIESEN LEGACY FARM, LLC	40	43.210139	-84.681278
129	KNIT876	450-470	FULTON SCHOOLS	24	43.167250	-84.718056
130	KNIJ764	150-174	GASPER, KEN	32	43.024194	-85.244750
131	WPMW871	800/900	GENERAL MOTORS RESEARCH CORPORATION	113	42.985028	-83.716056
132	WQTN772	800/900	General Motors Research Corporation	113	42.693528	-84.678917
133	WQTP275	800/900	General Motors Research Corporation	113	42.724056	-84.555833
134	WQTU702	800/900	GENERAL MOTORS RESEARCH CORPORATION	113	42.972472	-83.794194
135	WQTZ382	800/900	GENERAL MOTORS RESEARCH CORPORATION	113	42.711889	-84.598250
136	WQUN819	800/900	GENERAL MOTORS RESEARCH CORPORATION	113	43.012361	-83.701083
137	KNBG218	150-174	GENESEE, COUNTY OF	161	43.191972	-83.864972
138	WPEG424	450-470	GRACE BIBLE COLLEGE	121	42.971417	-85.667806
139	KNHV896	25-50	GRAND RAPIDS GRAVEL COMPANY	121	42.910306	-85.645861
140	WNXN886	800/900	GRAND RAPIDS, CITY OF	80	42.933361	-85.625028
141	KC24054	450-470	GRAND VALLEY STATE UNIVERSITY	72.4	42.959750	-85.895861
142	WQJR232	150-174	GRATIOT, COUNTY OF	40	43.160000	-84.655556
143	WQIK559	150-174	GRATIOT, COUNTY OF	40	43.272139	-84.607528
144	WQXT278	150-174	GRATIOT, COUNTY OF	40	43.288583	-84.814222
145	WRDH891	450-470	Gratiot-Isabella Regional Education Service District	40	43.461389	-84.666111
146	BLP01056	25-50	Gray Television Licensee, LLC	121	43.433361	-83.938028
147	WQJA683	450-470	Great Lakes Energy Cooperative	32	42.873361	-84.918861
148	WRBP707	800/900	Great Lakes Energy Cooperative, Inc.	113	44.016667	-85.840278



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149	WRBP707	800/900	Great Lakes Energy Cooperative, Inc.	113	42.590583	-85.137778
150	WPRL432	450-470	GREENVILLE PUBLIC SCHOOLS	32	43.179750	-85.260306
151	KGC916	450-470	GREENVILLE PUBLIC SCHOOLS OF MONTCALM KENTA AND IONIA COUNTI	32	43.174722	-85.297500
152	KNCG835	450-470	GREENVILLE, CITY OF	20	43.177222	-85.253611
153	WNPF722	150-174	GREENVILLE, CITY OF	18	43.192250	-85.218917
154	WRKK363	450-470	GREENVILLE, CITY OF	18	43.181944	-85.241667
155	WPPD445	150-174	GUNDERSEN LUTHERAN MEDICAL CENTER	600	43.794417	-91.249583
156	WNJE681	450-470	HALFMAN, KENNETH L:THELEN, STEVE DBA T & H DAIRY	32	43.045694	-85.057139
157	WNJE681	450-470	HALFMAN, KENNETH L:THELEN, STEVE DBA T & H DAIRY	32	43.032528	-84.738333
158	WNZU926	450-470	HARDY FARMS	48	42.986694	-85.239444
159	WNME516	150-174	HAYNES, KENDALL:HAYNES, GARY DBA KENDALL HAYNES & GARY HAYNE	40	43.104194	-84.905000
160	WQSE982	150-174	HAYNES, TODD	40	43.128667	-84.818750
161	WQUG778	150-174	Haynes, Troy E	35	43.196194	-84.738222
162	WQTM433	150-174	Heffron Farms LLC	32	43.104000	-85.331472
163	WQWZ846	150-174	HEFFRON, TOM	32	43.109528	-85.335861
164	WRQB392	450-470	HERBRUCK POULTRY RANCH, INC.	32	42.883917	-85.201389
165	WRQB392	450-470	HERBRUCK POULTRY RANCH, INC.	32	42.872806	-85.082500
166	WQPE988	150-174	Heritage AG LLC	40	43.453250	-85.264250
167	WPAH447	450-470	HERMAN MILLER INC	121	42.803917	-85.995306
168	WPSF329	150-174	High Grade Materials Co	40	43.429722	-85.150278
169	WPSF459	150-174	High Grade Materials Co	40	43.138361	-85.256972
170	WPSF514	25-50, 150-174	High Grade Materials Co	40	43.259722	-85.535278
171	WQWF907	150-174	Hirschman Farms, LLC	35	43.255417	-84.597861
172	WPXT597	450-470	Hogan, Michael	32	43.061111	-84.906667
173	KC25111	450-470	HOLY FAMILY COMMUNICATIONS, INC	402	40.766167	-83.837167



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174	WRPQ339	450-470	HUSKER FARMS, LLC	32.2	43.146667	-84.588611
175	KFG615	150-174	iHM Licenses, LLC	100	42.964472	-85.669417
176	WQA985	450-470	iHM Licenses, LLC	100	42.964472	-85.669417
177	WQWS952	450-470	IONIA CO INTERMEDIATE SCHOOLS	30	42.954806	-85.093444
178	WPRG715	150-174	IONIA COUNTY MEMORIAL HOSPITAL CORPORATION	32	42.995667	-85.072417
179	WPHW980	450-470	IONIA PUBLIC SCHOOLS	24	42.953417	-85.069667
180	WQGC313	450-470	IONIA PUBLIC SCHOOLS	32	42.950972	-85.072472
181	WPZQ379	450-470	Ionia, City of	32	42.995667	-85.072417
182	WQBK724	800/900	IONIA, CITY OF	35	42.995667	-85.072417
183	WPJI506	150-174	IONIA, COUNTY OF	40	42.874472	-85.213333
184	KQB301	150-174	IONIA, COUNTY OF ROAD COMMISSION	56	42.986694	-85.104167
185	WPGT603	800/900	ISABELLA, COUNTY OF	56	43.714167	-84.825833
186	WQSU968	150-174	ISABELLA, COUNTY OF	40	43.527806	-84.697222
187	WQFD600	450-470	ITHACA PUBLIC SCHOOLS	32	43.297778	-84.597444
188	KTN603	150-174	ITHACA, CITY OF	32	43.290861	-84.615278
189	WRFX716	150-174	JACKSON DIRT WORKS, INC	80	42.811111	-85.113333
190	WQDW983	450-470	JCPENNEY SHARED SERVICES CENTER	32	43.180278	-85.278611
191	WQDZ542	450-470	JCPENNEY SHARED SERVICES CENTER	32	43.395556	-84.666667
192	WROW322	450-470	Kent Foundry Company	32	43.186222	-85.228278
193	KUA768	150-174	KENT, COUNTY OF	56	43.009194	-85.565306
194	WQFV810	450-470	KERKSTRA PRECAST INC	80	42.737250	-85.621139
195	WRDT734	450-470	KIPP FARM SERVICES, LLC	80	43.391389	-85.087139
196	WRQB439	150-174	KLOTZ FAMILY FARMS, LLC	56	42.713056	-85.040556
197	WPGZ547	450-470	KOEHN, GREGORY	32	43.156417	-84.889722
198	WNUF821	450-470	KOEHN, PETE M	48	43.262528	-84.702778



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199	WQSK618	450-470	Koehn, Richard	32	43.165028	-84.728778
200	KGE476	450-470	LAKEVIEW COMMUNITY SCHOOLS	32	43.439167	-85.278333
201	WNRS321	450-470	LAKEWOOD PUBLIC SCHOOLS	48	42.800028	-85.136944
202	WQZG936	150-174	Lauer Farms LLC	35	42.999694	-84.987722
203	KSZ275	150-174	LES MILLER & SONS SAND AGGREGATES INC	32	42.941694	-84.692222
204	KUH442	450-470	LIFE EMS INC	64	42.987500	-85.623889
205	WSE863	450-470	LIFE EMS INC	64	42.981056	-85.637556
206	KNNS441	450-470	LIFE EMS OF IONIA COUNTY	32	42.995667	-85.072417
207	WQQA329	150-174	Litwiller, Darin	32	43.205194	-84.736056
208	WQRX380	150-174	Litwiller, Jered S	40	43.140556	-84.818611
209	WQUH755	450-470	Litwiller, Ryan	32	43.232694	-84.730000
210	WQPM958	150-174	Longs Propane LLC	40	43.177944	-84.946306
211	WPMD612	800/900	LOUCHART ENTERPRISES	113	43.565583	-84.287222
212	WPJT364	800/900	Louchart Enterprises L.L.C.	113	43.704472	-84.010250
213	KNRT993	800/900	LOUCHART ENTERPRISES LLC	113	43.259750	-83.951361
214	WPBD347	800/900	Louchart Enterprises LLC	113	43.704472	-84.010250
215	WPEN549	800/900	LOUCHART ENTERPRISES LLC	113	43.899472	-84.039167
216	WPGI852	800/900	LOUCHART ENTERPRISES LLC	113	43.259750	-83.951361
217	WPJQ994	800/900	Louchart Enterprises LLC	113	43.565583	-84.287222
218	WNCM708	150-174, 450-470	LOWELL AREA SCHOOLS	35	42.943222	-85.354556
219	WRTL493	450-470	LOWELL AREA SCHOOLS	32	43.025833	-85.375278
220	WNYT782	150-174	LOWELL, CITY OF	40	42.941667	-85.334167
221	WPNT734	25-50	LUDEMA & BOYINK SOD FARM LLC	48	42.843083	-85.195000
222	WQCZ530	450-470	MAIN, PAUL	32	43.437778	-85.272500
223	WQCZ530	450-470	MAIN, PAUL	32	43.430778	-85.204694



ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
224	WRNB547	450-470	MAPLE CREEK GOLF COURSE	32	43.104444	-84.564167
225	WRBX561	450-470	MASTER METER INC.	32	43.177944	-85.267000
226	WRUL581	150-174	McALVEY AND SONS FARM LLC	16	43.225000	-84.811111
227	WPNR833	450-470	MEL TROTTER MINISTRIES	121	42.737250	-85.621139
228	WNHE419	450-470	MERRYFIELD, KENNETH L	48	42.785306	-84.911667
229	WQWZ893	450-470	MICHIGAN AGRICULTURAL COMMODITIES, INC	32	43.183917	-84.705278
230	WQXZ671	150-174	MICHIGAN CONFERENCE SEVENTH DAY ADVENTIST CHURCH	24	43.400278	-84.975556
231	WPBC304	450-470	MICHIGAN MASONIC HOME	32	43.388361	-84.661667
232	WQBB965	450-470	MICHIGAN MASONIC HOME	32	43.387889	-84.663417
233	KFY380	150-174	MICHIGAN STATE OF	24	42.975028	-85.095000
234	WNHV245	450-470	MICHIGAN, STATE OF	24	42.968083	-85.111667
235	WNJJ236	150-174	MICHIGAN, STATE OF	16	43.175028	-84.866667
236	WNRO222	150-174	MICHIGAN, STATE OF	40	43.413361	-84.590833
237	WPBX268	450-470	MICHIGAN, STATE OF	121	42.645583	-84.560528
238	WPNS383	450-470	MICHIGAN, STATE OF	24	42.968083	-85.111667
239	WPNS587	150-174	MICHIGAN, STATE OF	40	43.415861	-84.590000
240	WPPA454	150-174	MICHIGAN, STATE OF	16	43.025028	-84.866667
241	WPQA343	450-470	MICHIGAN, STATE OF	24	42.978639	-85.108889
242	KB36899	450-470	MIKES FINER FOODS INC	80	42.733639	-84.554139
243	WNPO615	150-174	MILLERS REDI MIX INC	121	42.916694	-84.737500
244	WRUW786	150-174	Moeggenberg, Anthony	32	43.465861	-84.738333
245	WQSG474	150-174	MOEGGENBORG, HOWARD	40	43.466417	-84.693056
246	WRUJ402	150-174	MONTCALM CO RD COMMISSION	40	43.297528	-85.091139
247	KGJ663	450-470	MONTCALM INTERMEDIATE SCHOOL DISTRICT	32	43.299722	-85.075972
248	KQB397	150-174	MONTCALM, COUNTY OF	40	43.310028	-85.098639



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ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
249	WRUY473	450-470	NETWORK FIRE & SECURITY LLC	80	42.852778	-85.663333
250	WQYU236	800/900	NEXTEL WEST CORP.	113	43.016944	-84.734167
251	WRBV830	800/900	NEXTEL WEST CORP.	113	43.575917	-84.774750
252	WRBV831	800/900	NEXTEL WEST CORP.	113	43.713944	-84.476111
253	WRCL354	800/900	NEXTEL WEST CORP.	113	42.738750	-85.090083
254	WRDW637	800/900	NEXTEL WEST CORP.	113	42.359444	-85.183611
255	WPAH495	800/900	NORTHERN INDIANA PUBLIC SERVICE COMPANY	257	41.116167	-86.163889
256	WQSJ209	450-470	NORTHERN INDIANA PUBLIC SERVICE COMPANY	257	41.116167	-86.163889
257	WPGX305	150-174	NORTHVIEW PUBLIC SCHOOLS	121	43.042806	-85.625583
258	WNSR920	150-174	O E BIERI & SONS INC	40	42.941417	-85.347528
259	WNMZ409	150-174	OFFICE CALLS EDP SERVICES	80	42.537528	-85.504167
260	WQZH302	450-470	OHIO SEMITRONICS OF CA, INC	80	42.961667	-85.672222
261	WRXJ771	450-470	Ohio Semitronics of California, Inc.	64	42.954472	-85.662528
262	WPQH424	800/900	OTTAWA, COUNTY OF	113	43.056972	-86.241167
263	WPQH424	800/900	OTTAWA, COUNTY OF	113	42.836944	-85.985833
264	WPQH424	800/900	OTTAWA, COUNTY OF	113	42.958639	-85.901417
265	KNCZ437	150-174	PETERMAN CONCRETE INC	120	42.206722	-85.600278
266	KNCZ437	150-174	PETERMAN CONCRETE INC	120	42.205889	-85.592778
267	WRCU270	450-470	PEWAMO WESTPHALIA COMMUNITY SCHOOLS	32	42.943028	-84.834972
268	WNYK418	800/900	PHARMACIA & UPJOHN INC	113	42.210333	-85.552778
269	WPUR249	800/900	PHARMACIA & UPJOHN INC	113	42.247278	-85.568889
270	WQSD358	450-470	Pine Flat Farms	35	43.304250	-85.323056
271	KDC282	150-174	PORTLAND, CITY OF	48	42.868500	-84.894694
272	WQWC727	450-470	POWELSON, CLAYTON	32	43.436972	-84.732500
273	KNIT211	450-470	PRO COMM INC	121	43.714167	-84.825833





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ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
274	WNHJ226	450-470	PRO COMM INC	121	43.714167	-84.825833
275	WNUW288	450-470	PRO COMM INC	56	43.714472	-84.825861
276	WNPY642	450-470	Pro Comm Inc.	80	43.603917	-84.331389
277	WQNM583	450-470	Pro Comm Inc.	32	43.436389	-85.233333
278	WQNM583	450-470	Pro Comm Inc.	32	42.873361	-84.918861
279	WQNM583	450-470	Pro Comm Inc.	32	43.160000	-84.655556
280	WNSU270	25-50	R & C REDI MIX	64	43.306694	-85.539750
281	KNIP366	450-470	R E RUEHS GARAGE INC	56	43.173917	-85.296694
282	WRFH578	150-174	RADER FARMS LLC	35	43.427139	-85.322889
283	KPG675	450-470	RADIO LICENSE HOLDING CBC, LLC	80	42.964472	-85.667528
284	WRKX859	150-174	RICH-RO DAIRY LLC	32	43.045556	-84.688056
285	WQIY546	150-174	Rockford Public Schools	40	43.052000	-85.468194
286	WQIY546	150-174	Rockford Public Schools	40	43.103972	-85.456083
287	WRNT842	150-174	ROCK'N OAK DAIRY	40	42.992278	-84.718583
288	WPHS494	450-470	ROE COMM INC	121	42.274750	-85.653889
289	WPHG715	450-470	Roe Comm., Inc.	121	42.274750	-85.653889
290	WNJK409	450-470	RYAN, THOMAS: RYAN, GEORGE: RYAN, HOWARD DBA RYAN FARMS	40	43.202056	-84.875528
291	WQTT983	150-174	S&T Farms	35	43.248639	-84.691861
292	WPQG781	800/900	SACKETT, BRIAN	113	43.569194	-85.231139
293	WPNS628	450-470	SAGINAW CHIPPEWA INDIAN TRIBE	32	43.441417	-84.715556
294	WPWW753	450-470	Saginaw Spirit	80	43.437222	-84.038611
295	WNQQ479	150-174	SAINT LOUIS, CITY OF	48	43.405583	-84.604167
296	KNFF518	450-470	SANDYLAND FARMS	32	43.395583	-85.350861
297	KNFF518	450-470	SANDYLAND FARMS	80	43.395583	-85.350861
298	KTD548	25-50	SARANAC COMMUNITY SCHOOLS	32	42.920028	-85.205000



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ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
299	WQSG954	450-470	Schneider Dairy LLC	35	42.885278	-84.766639
300	KPF376	150-174	SCRIPPS BROADCASTING HOLDINGS LLC	354	42.470583	-83.250194
301	WQKR939	470-512	SCRIPPS BROADCASTING HOLDINGS LLC	80	42.727806	-84.560528
302	WRJW292	150-174	Seiler, Quincy	40	43.186389	-84.719444
303	WRWI834	800/900	Semco Energy Gas Company	113	43.056000	-86.237250
304	WRWI834	800/900	Semco Energy Gas Company	113	43.062944	-86.225083
305	WRWI834	800/900	Semco Energy Gas Company	113	42.755000	-86.086028
306	WRWI834	800/900	Semco Energy Gas Company	113	43.001111	-85.959722
307	WRWI834	800/900	Semco Energy Gas Company	113	43.127583	-85.875861
308	WRWI842	800/900	Semco Energy Gas Company	113	42.938889	-86.086944
309	WRWI842	800/900	Semco Energy Gas Company	113	42.704167	-84.973806
310	WRWI842	800/900	Semco Energy Gas Company	113	42.434167	-84.918417
311	WRWI842	800/900	Semco Energy Gas Company	113	42.582194	-84.849083
312	WRWI842	800/900	Semco Energy Gas Company	113	42.758806	-84.663250
313	WRWI842	800/900	Semco Energy Gas Company	113	42.467500	-84.651667
314	WRTL786	150-174	SHADY GLADE FARMS	35	43.191111	-84.796389
315	WQPU289	150-174	Sheridan Community Hospital	5	43.215972	-85.074139
316	WPGI593	450-470	Sherwood, Jeffrey E	48	43.407361	-84.535833
317	WRPX607	150-174	SIMON BROTHERS LLC	40	43.002389	-84.752917
318	KNDB269	450-470	SNIP & ANDERSON COMPANY	64	42.796139	-85.649472
319	WPRV648	450-470	SOUTH COUNTY SEWER AND WATER AUTHORITY	120	42.201444	-85.430000
320	WQFK525	450-470	SPECTRUM HEALTH UNITED MEMORIAL	30	43.173639	-85.275028
321	WQVU691	150-174	Spitzley Dairy Farm, LLC	35	42.875778	-84.816972
322	WPMB252	150-174	SPITZLEY, TIMOTHY	40	42.805861	-85.130833
323	WPGT907	450-470	STATE SYSTEMS RADIO INC	113	42.215333	-85.610278



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ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
324	WPSZ490	800/900	STATE SYSTEMS RADIO INC	113	42.215278	-85.610278
325	WQBD601	800/900	Station Casinos, Inc. Debtor in Possession	113	42.631389	-85.656389
326	WPMH935	450-470	STEENBLIK, ALBERT	20	43.041417	-84.835000
327	WPMH935	450-470	STEENBLIK, ALBERT	24	43.043889	-84.833056
328	KRC350	450-470	T & W ELECTRONICS INC	121	42.376694	-85.664167
329	KRC350	450-470	T & W ELECTRONICS INC	121	42.796694	-85.650028
330	KRC350	450-470	T & W ELECTRONICS INC	121	42.796139	-85.649472
331	KRC350	450-470	T & W ELECTRONICS INC	121	42.737250	-85.621139
332	WNLN664	450-470	T & W ELECTRONICS INC	121	43.442778	-85.801944
333	WNLN664	450-470	T & W ELECTRONICS INC	121	42.737222	-85.621111
334	WNLN664	450-470	T & W ELECTRONICS INC	121	43.041694	-85.587528
335	WNLN664	450-470	T & W ELECTRONICS INC	121	43.291694	-85.361694
336	WNWH438	450-470	T & W ELECTRONICS INC	121	42.645556	-84.560833
337	WPCX268	220-222	T & W ELECTRONICS INC	80	42.645583	-84.560528
338	WPES401	450-470	T & W ELECTRONICS INC	121	42.737250	-85.621139
339	WPES401	450-470	T & W ELECTRONICS INC	121	43.887250	-85.593944
340	WPES401	450-470	T & W ELECTRONICS INC	121	43.524472	-85.391417
341	WPIJ821	150-174, 450-470	T & W ELECTRONICS INC	121	42.982806	-85.665306
342	WPIS323	450-470	T & W ELECTRONICS INC	121	42.982806	-85.665306
343	WNNG673	800/900	TAYLOR, MICHAEL J	113	42.247500	-84.405278
344	WQSE632	450-470	THELEN, LEON J	30	43.096667	-84.584333
345	KPG376	450-470	Townsquare License, LLC	80	42.675861	-84.499972
346	WQWY919	450-470	TRT PARTNERS, LLC	32	43.022889	-85.339278
347	WPLT467	450-470	TTWN Networks, LLC	95	42.963361	-85.670028
348	WQDH998	450-470	VAN ALSTINE, ROLAND C	35	42.874444	-84.779000



ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
349	WPBI927	450-470	VAN HOVEN, DAVID	100	42.827250	-85.926417
350	WPCD730	450-470	VAN HOVEN, DAVID	80	42.811139	-85.821139
351	WPIB561	450-470	VAN HOVEN, DAVID	100	42.827250	-85.926417
352	WPIB561	450-470	VAN HOVEN, DAVID	100	42.811139	-85.821139
353	WQFH265	450-470	VON MAUR	79	42.915139	-85.589722
354	WQYJ791	450-470	WAGNER, ZACHARY	35	43.019222	-84.601611
355	WPCI732	450-470	Waste Management Holdings, Inc	120	43.714167	-84.825833
356	KNIN883	25-50	WAYLAND UNION SCHOOLS	72	42.664472	-85.631417
357	WNCR960	150-174	WEBER BROTHERS SAWMILL INC	80	43.680583	-84.908083
358	WQVQ630	150-174	Whitmore Farms	40	43.254306	-84.523139
359	WQSC753	450-470	Wiles, Richard H	32	43.144806	-84.846417
360	WQRW436	450-470	Wilson Centennial Farm	32	43.134000	-84.827611
361	WQDI277	450-470	WITTENBACH, MIKE E	32	43.109333	-85.333611
362	WPDQ955	450-470	WM LIMITED PARTNERSHIP - 1998 dba: WENDY'S OF MICHIGAN	121	42.963361	-85.668083
363	WQHE752	450-470	Wolverine Power Supply Cooperative Inc	32	43.405833	-84.909722
364	WQIZ347	450-470	Wolverine Power Supply Cooperative Inc	32	43.153278	-84.552222
365	WQBR222	150-174	YOUNG, JIM	40	43.293611	-85.213889

Table A: Mobile Licenses Intersecting Project Area

APPENDIX G -  
ENVIRONMENTAL IMPACT ANALYSIS





## **ENVIRONMENTAL IMPACT ANALYSIS**

### **FISH CREEK SOLAR PROJECT EVERGREEN TOWNSHIP, MICHIGAN**

*Prepared for*

**Evergreen Township**  
3044 E Sidney Road  
Sheridan, MI 48884

*Prepared on Behalf of*

**DTE Electric Company**  
One Energy Plaza  
Detroit, MI 48226

*Submitted by Atwell, LLC*

**Atwell Project No. 20003245**

**September 22, 2023**

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## **ACRONYMS AND ABBREVIATIONS**

Atwell	Atwell, LLC
BMPs	best management practices
DTE	DTE Electric Company
EGL	Michigan Department of Environment, Great Lakes and Energy
EIA	Environmental Impact Assessment
ESA	Endangered Species Act
GIS	Geographic Information Systems
IPaC	Information, Planning, and Consultation
MNFI	Michigan Natural Features Inventory
NREPA	Natural Resources and Environmental Protection Act
PV	photovoltaic
SESC	Soil Erosion and Sedimentation Control
TES	Threatened or Endangered species
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

# 1 INTRODUCTION

This Environmental Impact Analysis (EIA) is intended to fulfill the environmental and ecological impact study requirement of Evergreen Township Ordinance No. 2022-1 ("Ordinance"). It summarizes a review the surrounding natural resources, environment, utilities, and infrastructure associated with the proposed Fish Creek Solar Project (Project) that will be partially located in Evergreen Township, Montcalm County, Michigan (hereafter referred to as the "Project Area"). Atwell, LLC (Atwell) was engaged on behalf of DTE Electric Company (DTE) to conduct environmental desktop and field studies within a 2,291-acre study area. The studies consisted of a desktop Critical Issues Analysis, field delineations for wetlands, inland lakes, streams, and floodplains, a threatened and endangered species habitat review, and a cultural resource study. The environmental data developed through these analyses was referenced in siting the proposed solar project and developing a layout for the facility.

The resources addressed in this EIA for the Project are summarized below in **Table 1 – Summary of Environmental Studies**.

**Table 1 – Summary of Environmental Studies**

<b>Site Name</b>	<b>Critical Issues Analysis</b>	<b>Wetland and Waterway Delineation Report</b>	<b>Threatened and Endangered Species Review</b>	<b>Cultural Resources Study</b>
Fish Creek Solar	April 2021	June 2023	June 2023	February 2023

The EIA included a review of natural resources within the Project Area that could be impacted by Project construction or operation activities.

A summary of the environmental information reviewed and prepared to date is provided in the sections below.

## 1.1 CRITICAL ISSUE ANALYSIS

A Critical Issues Analysis (CIA) for the Fish Creek Project was completed in April 2021. The CIA was conducted through desktop research utilizing publicly available datasets, including state and federal agency websites, Geographic Information System (GIS) databases, state and federal environmental databases, and literature reviews. No field reconnaissance or agency consultation was conducted as a part of this initial study. A summary of the data reviewed as part of this study included:

1. Threatened and Endangered Species (TES)
2. Cultural Resources
3. Geology/Soils
4. Wetlands, Waterways, Flood Zone
5. Land Use
6. Other Notable Encumbrances

A review of the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation website (IPaC) and Michigan Natural Features Inventory database (MNFI) indicate the Project may contain habitat for TES.

Based on desktop analysis of land cover, physical, biological, environmental, and cultural factors, Atwell did not identify critical constraints that would prevent construction of a solar facility within the reviewed Project area. DTE conducted further investigations to verify the potential environmental constraints identified in the CIA report. Relevant studies are summarized below.

## **2 IMPACT ANALYSIS**

### **2.1 WATER RESOURCES**

In Michigan, inland lakes, streams, and wetlands are regulated by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) under Part 301, Inland Lakes and Streams, and Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act (NREPA). Design of the solar facility will avoid impacts to regulated water resources wherever practicable. If during final design development it appears that regulated water resources cannot be avoided during construction or operation of the Project, DTE will pursue additional coordination with the appropriate regulatory authority, implement best management practices (BMPs), and seek confirmation of regulatory compliance as appropriate.

Part 31, Water Resources Protection, of the NREPA regulates activities within the 100-year floodplain and floodway of a river or stream with an upland drainage area of two square miles or larger. Design of the solar facility will avoid impacts to regulated floodplains wherever practicable. If during final design development it appears that regulated floodplains cannot be avoided during construction or operation of the Project, DTE will pursue additional coordination with the appropriate regulatory authority, implement BMPs, and seek confirmation of regulatory compliance as appropriate.

#### **2.1.1 Wetlands and Waterways**

Wetland and waterway delineations were performed by Atwell as easement agreements were signed within the Project Area. On-site assessments were conducted on September 9-10, October

8, and December 16-18, 2021; January 31, February 2, June 6-7, July 11-13 and 18, and October 5 and 10, 2022. Atwell also conducted an additional site visit during the 2023 growing season to verify previously identified features and current site conditions on April 24-28, 2023. The purpose of these delineations was to identify wetlands and waterways within the available land in order to inform the design layout.

As a result of these assessments, there were no wetlands identified within the Project Area. A total of 12 waterways (8 perennial and 4 ephemeral) were identified within the Project Area. All of the waterways were determined to be regulated by EGLE.

DTE avoids and minimizes potential impacts to wetlands, waterways, and floodplains to the extent practicable. However, to the extent necessary, DTE will seek any necessary permits from EGLE if potentially regulated features are proposed for impact. It is anticipated that the layout will cross streams because of the installation of the collection lines and access roads. Collection lines that cross streams will be installed utilizing horizontal directional drill or boring techniques to avoid direct impacts to these features to the extent practical. An EGLE Part 301 inland lakes and streams permit for these crossings of streams will be obtained, if required.

### **2.1.2 Floodplains**

The Federal Emergency Management Agency has not completed flood hazard studies for Evergreen Township; therefore, a flood hazard map has not been published.

Atwell conducted a preliminary desktop drainage review for the Project Area to determine if any waterways with an upstream drainage area greater than two square miles from their most downstream intersection were present, indicating the presence of potentially state regulated floodplains. Based on Atwell's preliminary desktop drainage review, one watercourse (Baker Drain) was found to have a drainage area larger than two square miles from the most downstream location within the Project Area. Therefore, state regulated floodplains under Part 31 of NREPA are likely present within the Project Area. If Project plans require impacts within regulated floodplains, a Part 31 permit from EGLE will be obtained.

## **2.2 THREATENED AND ENDANGERED SPECIES REVIEW**

This section provides information that aids in documenting compliance with Part 365 of the NREPA and Section 7 of the Endangered Species Act (ESA) of 1973. The potential presence of TES or potential suitable TES habitat within the Project Area was assessed by obtaining agency lists and performing on-site evaluations of general habitat characteristics.

The data reviewed as part of this study consisted of data provided by the following sources:

1. MNFI database;

## 2. USFWS IPaC database

The USFWS provides information regarding federally threatened, endangered, proposed, and candidate species on a project location basis through the online USFWS IPaC database. The MNFI manages a database of state listed endangered and threatened plant and animal species on a township/section basis.

Refer to **Table 2 – State and Federally Listed Species Potentially Within or Near the Project Area.**

### 2.2.1 Federally Listed Species

Atwell reviewed the USFWS IPaC System information regarding federally listed TES and other resources such as critical habitat on a project location basis. The USFWS IPaC species list for the Project indicates four (4) federally listed species identified within the range of the Project Area (**Table 2**) (USFWS 2023a). In addition, the Bald Eagle (*Haliaeetus leucocephalus*), a species that has been delisted under ESA but is still federally protected under the Bald and Golden Eagle Protection Act (BGEPA) has also been included in the TES review due to its federal protections and habitat range overlap with the Project Area. USFWS critical habitat has not been designated within Evergreen Township for any of the previously identified species (USFWS 2023b).

Preliminary habitat assessments were conducted concurrently during the wetland and waterway delineations and field verifications conducted on September 9-10, October 8, and December 16-18, 2021, January 31, February 2, June 6-7, July 11-13, 18, October 5 and 10, 2022, and April 24-28, 2023. Based on the results of these assessments, potentially suitable habitat for the federally protected Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), eastern massasauga (*Sistrurus catenatus*) rattlesnake, and Bald Eagle were identified within the Project Area.

The Project layout will avoid impacts to protected species habitat; therefore, impacts to listed bat species, the eastern massasauga rattlesnake, and Bald Eagles are not anticipated. If tree clearing is proposed, seasonal restrictions will be implemented in accordance with USFWS recommendations for the bat species.

No USFWS regulated Tier I or Tier II habitat for eastern massasauga rattlesnakes occurs onsite. However, as the Project Area is within the range of the eastern massasauga rattlesnake, construction contractors may be required to implement appropriate Best Management Practices (BMPs) in accordance with the Environmental Screening for Eastern Massasauga Rattlesnake (EMR) in Michigan USFWS guidance, such as utilizing wildlife safe erosion control measures and watching the Michigan Department of Natural Resources' "60-second snakes: The Eastern Massasauga Rattlesnake."

### 2.2.2 State Listed Species

A review of MNFI’s electronic database was completed to identify information related to state listed TES. The MNFI review of township, range, and section species locations information for the Project Area indicated one (1) documented occurrence of state threatened or endangered species, the yellow-flowered leafcup (*Smallanthus uvedalia*), within sections overlapped by the Project Area. In addition, the federally listed species included in Section 2.2.1 also have state-designations (Table 2) (USFWS 2023a).

Based on the results of these assessments, potentially suitable habitat for the state listed Indiana bat, northern long-eared bat, eastern massasauga rattlesnake, and yellow-flowered leafcup were identified within the Project Area.

The Project layout will avoid impacts to potentially suitable habitat for these species; therefore, impacts to listed bat species, the eastern massasauga, and the yellow-flowered leafcup are not anticipated. If tree clearing is proposed, seasonal restrictions will be implemented in accordance with USFWS recommendations for bat species. See Section 2.2.1 for additional details related to USFWS and MDNR recommendations related to general BMPs for the eastern massasauga rattlesnake.

### 2.2.3 Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act

Although the USFWS removed the Bald Eagle from the federal ESA list of TES, the Bald Eagle is protected under the Migratory Bird Treaty Act (MBTA), BGEPA, and the Lacey Act. During the on-site assessments, trees within and adjacent to the Project Area were reviewed for eagle nests. No bald eagles or potential nests were observed within the Project Area.

### 2.2.4 Summary of Threatened and Endangered Species

Table 2 provides a summary of the state and federally listed species potentially occurring within or near the Project, state and/or federal status, designation and habitat considerations, and the requirement for further consultations for these species based on anticipated Project impacts.

**Table 2 – State and Federally Listed Species Potentially Within or Near the Project Area**

Species	Scientific Name	Federal and State Status	Habitat Within Project Area	Further Consultations Needed/Future Work Planned
Indiana bat	<i>Myotis sodalis</i>	Federally Endangered/State Endangered	Majority of the Project Area is unlikely to support roosting and/or foraging habitat for the species; however, some of the woodlots or hedgerows could	DTE will adhere to tree clearing recommendations by the USFWS as appropriate and would further pursue additional coordination with the appropriate regulatory authority, implementation of

Species	Scientific Name	Federal and State Status	Habitat Within Project Area	Further Consultations Needed/Future Work Planned
			provide potential roosting and/or foraging habitat for this species, notably within woodlots that are intact and continue off-site.	BMPs, and regulatory compliance to the extent necessary.
Northern long-eared bat	Myotis septentrionalis	Federally Endangered/State Threatened	Majority of the Project Area is unlikely to support roosting northern long-eared bats, however, some of the woodlots or hedgerows could provide potential roosting and/or foraging habitat for this species, notably within woodlots that are intact and continue off-site.	DTE will adhere to tree clearing recommendations by the USFWS as appropriate and would further pursue additional coordination with the appropriate regulatory authority, implementation of BMPs, and regulatory compliance to the extent necessary.
Bald Eagle	Haliaeetus leucocephalus	Federally Protected/State Special Concern	No bald eagles or nests were observed within the Project Area. Majority of the Project Area is unlikely to support the species; however, some of the trees/woodlots and hedgerows could provide potential habitat for this species.	If a potential nest is identified within the Project Area, the Project will follow USFWS recommendations to avoid placement of any potential infrastructure within 660 feet of an identified nest.
Eastern massasauga	Sistrurus catenatus	Federally Threatened/State Threatened	Potentially suitable habitat for this species was not identified within the Project Area.	The Project has been designed to avoid regulated wetlands, watercourses, and floodplains to the greatest extent possible. If during final design development it appears that these features cannot be avoided during construction and/or operation of the Project, construction contractors may be required to implement appropriate BMPs in accordance with the Environmental Screening for

Species	Scientific Name	Federal and State Status	Habitat Within Project Area	Further Consultations Needed/Future Work Planned
				EMRs in Michigan USFWS guidance.
Karner blue butterfly	Lycaeides Melissa samuelis	Federally Endangered/State Threatened	While the species could traverse the Project Area, potentially suitable habitat was not identified on-site.	None. No potentially suitable habitat identified.
Yellow-flowered leafcup	Smallanthus uvedalia	State Threatened	Forested wetland features delineated in the Project Area were found to contain some, but not all, of the yellow-flowered leafcup's associated plant species including Virginia creeper (Parthenocissus quinquefolia); therefore, potential habitat for the species may occur within forested areas associated with floodplains, although the likelihood of the species occurrence is low.	None. Impacts to potentially suitable habitat are not anticipated. If species is identified on-site, DTE would further pursue additional coordination with the appropriate regulatory authority, implementation of BMPs, and regulatory compliance to the extent necessary.

In December 2020, the USFWS published recommendations for planning utility-scale solar projects in Michigan. The USFWS recommendations include appropriate siting of solar facilities to minimize potential for wildlife impacts associated with project development.

Species-specific BMPs may be implemented to the greatest extent practicable to avoid or minimize adverse impacts to sensitive species. Development considerations related to TES could include changes in Project infrastructure siting, construction timing such as seasonal vegetation clearing, and additional agency coordination.

### 2.3 AIR QUALITY

Operation of the Project does not involve the emission of air pollutants and the Project is not anticipated to adversely impact air quality. Therefore, a detailed analysis of air quality is not necessary, and the Project will not require a Part 55 air permit to install from EGLE.



## 2.4 UNIQUE FARMLANDS OR SOILS

The intent of site construction and development is to minimize land disturbance while maintaining the slope requirements of the solar tracking equipment, which includes minimizing changes to the natural grade of the site. The Project will maintain historic drainage patterns to the extent practical. Existing agricultural row crops will be replaced with a designed seed mix consisting of meadow grasses and other similar plant species within the footprint of the solar arrays. This change in vegetation will promote on-site infiltration of stormwater and reduce runoff leaving the site. Stormwater best management practices (BMPs) will be implemented during construction and will be designed in accordance with EGLE and County requirements.

Project construction activities will create varying degrees of soil disturbance and will require implementation of Soil Erosion and Sedimentation Control (SESC) BMPs (e.g., silt fence, straw wattles, mulch blanket, check dams, vegetation to promote soil stabilization). Any soil disturbance greater than one (1) acre in total area as a result of any activity (initial solar Project construction, operational maintenance, decommissioning) will require a SESC permit and an approved SESC BMP plan from the Montcalm County Building Department identifying erosion preventing measures under Part 91, Soil Erosion and Sedimentation Control of the NREPA.

During Project construction, temporary impacts to soils are anticipated to be limited to displacing and disturbing soils within the Project footprint after installation of the approved SESC BMPs. All soil disturbance areas would be stabilized (e.g., temporary seed/cover crop, permanent native seed blends, mulch, erosion control blanket or fabric for sloped surfaces). Any soil disturbances required during maintenance activities would follow this same methodology but would be smaller in scale compared to soil disturbances anticipated during construction activities. When the Project is taken out of service, access roads and other solar Project equipment will be removed, and those areas will re-graded.

Table 3 below identifies the soils that are present in the Project area. There are no unique farmland soils in the Project area as defined by the Natural Resources Conservation Service.

**Table 3 – Mapped Soils**

Map Unit Symbol	Soil Series Name	Drainage Class	Hydric Rating	% of Project
CarabA	Carlisle muck, 0 to 2 percent slopes	Very poorly drained	100	66.9
Ec	Epoufette loamy sand and Ronald sandy loam, 0 to 2 percent slopes	Poorly drained	100	16.1
Mc	Mancelona loamy sand, 2 to 6 percent slopes	Somewhat excessively drained	0	5.1
Ga	Gladwin loamy sand and Palo sandy loam, 0 to 2 percent slopes	Somewhat poorly drained	5	5

P1faeB	Plainfield-Spinks sands, 0 to 6 percent slopes	Excessively drained	0	2.8
Rb	Roscommon sand, 0 to 2 percent slopes	Poorly drained	100	2.6
Mb	Mancelona loamy sand, 0 to 2 percent slopes	Somewhat excessively drained	0	0.6
Nb	Onkama loam, Saginaw Lobe, 2 to 6 percent slopes	Well drained	3	0.5
Aa	Alluvial land	Poorly drained	100	0.2
EdwadA	Edwards muck, 0 to 1 percent slopes	Very poorly drained	100	0.1
Md	Mancelona loamy sand, 6 to 10 percent slopes	Somewhat excessively drained	0	0.1

## 2.5 CULTURAL, HISTORIC, AND ARCHAEOLOGICAL RESOURCES

The Project is located on privately owned land and currently does not anticipate the use of federal funding or the need for federal permits. As such, Section 106 of the National Historic Preservation Act (54 U.S.C. 306108) does not apply to the project. Currently, the State of Michigan does not have laws or regulations that require cultural resources review for private projects in instances where a federal trigger for Section 106 review is not present. However, a desktop cultural resources records review was conducted by Atwell, as required by the Ordinance.

Atwell conducted a desktop review of archaeological and historic resources in February 2023. The literature reviewed as part of the desktop assessment consisted of a request to the Michigan State Historic Preservation Office for information regarding the known archaeological sites, historic cemeteries, historic structures or buildings, and previously conducted archaeological and architectural surveys. Additionally, the National Register of Historic Places (NRHP), old county atlases, U.S. Geological Survey 15-minute and 7.5-minute topographic quadrangle mapping, historic aerial photographs, and other appropriate sources were also reviewed.

No historic sites or structures are known to be located within the Project. In an abundance of caution, DTE will develop an Unanticipated Discoveries Plan (UDP) and provide it to construction contractors.

## 2.6 NEIGHBORING PROPERTIES

The Project is designed to protect neighboring property owners from potential impacts. As shown in the site plan in Appendix B of the Solar Farm Permit Application package, the Project will include a seven (7) foot high perimeter fence to restrict unauthorized access. Further, the Project complies with the Ordinance sound limit at non-participating property lines and will prevent concentrated glare at neighboring properties, private roads, and public rights-of-way. The Project

is also designed to minimize visual impacts to neighboring properties through compliance with the Ordinance's landscape screening requirements.

## **2.7 UTILITIES AND INFRASTRUCTURE**

The Project does not require highway access, water or sewer service, or refuse disposal. It does not require improvements to the existing roadways. Existing roadways have been determined to have sufficient capacity to support construction activities.

## **2.8 SOUND**

The Project is designed so that sound pressure levels at the perimeter of the Project (where participating and non-participating parcels abut) will not exceed 45 dB(A)<sub>Leq</sub> (1-minute). See Appendix D of the Solar Farm Permit Application for the sound modeling study prepared for the Project. The anticipated sound levels at non-participating property lines during operations are noted in the sound modeling study.

## **2.9 GLARE**

Use of a single axis tracking system greatly reduces the potential for any focused glare due to the constant motion throughout the day. The solar panels are manufactured with anti-reflective materials that maximize light absorption and minimize glare. The glass of the arrays selected for installation will have an internal coating specifically intended to minimize any concentrated glare. A glare analysis has been conducted for the Project, provided in Appendix E of the Solar Farm Permit Application, which is a conservative model used to analyze potential glare from solar panels. The study shows that the Project will not cause glare.

## **2.10 LIGHTING**

No lighting is proposed as a part of this Project.

## **2.11 WASTE DISPOSAL**

Some solid waste will be generated during the course of routine maintenance throughout the life of the proposed solar farm. Job related materials will include waste rags, non-toxic household cleaning fluids, work gloves, and air filters. Electrical components, wiring, fans and other equipment will be evaluated to determine whether their materials can be recovered or will need to be disposed of as solid waste.

The field technicians will mainly use rechargeable batteries in their electrical tools, although some single use batteries may be found in testing equipment. Used batteries will be separated from any other waste streams and collected. Both varieties will be managed through Universal Waste

programs following all State and Federal regulations. Similarly, any solar photovoltaic modules that are no longer able to be used will be managed through available product recycling programs and in accordance with State and Federal regulations.

There will not be any vehicle maintenance performed on-site, thus eliminating any potential waste streams associated with it.

Oil, used or virgin, will not be permanently stored on-site. In the event that an oil-filled transformer requires service, the oil will remain in the equipment and transported to an off-site service location. If the repair requires in-field service, and only in the event of such a repair, the oil will be transferred to a temporary holding tank in accordance with any applicable State and Federal storage requirements.

Operation of the Project will not generate any emissions, contaminants, or other solid or hazardous waste. The solar panels do not produce any waste or bi-products and are chemically inert. The material layers for the solar panels are composed of crystalline silicon, and these layers are stable, solid, and are encapsulated between thick layers of glass.

### **3 CONCLUSIONS**

DTE has designed the Fish Creek Solar Project to avoid or limit impacts to natural resources associated with the Project Area, including soil resources, land use, water resources, federally or state listed TES, and cultural resources. Natural features of the landscape will be retained wherever practicable to help control erosion and contain stormwater runoff. Reasonable measures are taken during planning, engineering, and construction to avoid or minimize the short-term (construction) and long-term (operation) effects of the Project on the environment and other physical resources. Permanent adverse impacts to these resources are not expected, especially with the implementation of BMPs to minimize potential environmental impacts. Any potential impacts to wetlands or streams will be permitted with EGLE.

USFWS and MDNR recommended best management practices will be followed to ensure the Project is not likely to impact state or federally protected species. No cultural resources are anticipated to be impacted by Project activities. Additionally, the Project will not negatively impact air quality given that solar energy does not require burning of fossil fuels. The Project is also designed to minimize visual impacts to neighboring properties through compliance with the Ordinance's sound, glare, screening, buffering, and lighting requirements. The Project is not anticipated to require improvements to the existing utilities and infrastructure. Finally, the Project will not generate significant solid waste, nor will it generate hazardous waste. Therefore, the Project is not anticipated to adversely affect sensitive species, neighboring properties, or the environment.

## 4 REFERENCES

USFWS [U.S. Fish and Wildlife Service]. 2023a. IPaC - information for planning and consultation. Environmental Conservation Online System (ECOS). <https://ecos.fws.gov/ipac/>.

USFWS [U.S. Fish and Wildlife Service]. 2023b. U.S. Fish & Wildlife Service critical habitat portal. <https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77>.

APPENDIX H -  
DECOMMISSIONING PLAN WITH ESTIMATES



## **I. INTRODUCTION**

The following provisions are intended to ensure that the solar facilities making up the Fish Creek Solar Project are properly removed at the end of commercial operations. DTE Electric Company (“DTE”) will be responsible for this plan that includes provisions for removal of infrastructure. Once the demolition is complete, topsoil and vegetation will be established unless otherwise requested by the landowner due to the resumption of farming activities. A plan ensuring financial resources will be available to decommission the site, according to the conditions described in the Evergreen Township Ordinance No. 2022-01 (“Ordinance”), will be submitted for Township approval.

The Fish Creek Solar Project is a proposed 132 megawatt solar electric generating facility using ground mounted photovoltaic panels that will be partially located in Evergreen Township, Michigan (the Project). The vast majority of the site is currently in agricultural use, most of it farmed in row crops. The land will be returned as near as practicable to its original condition so it can again be used for agricultural purposes.

## **II. DECOMMISSIONING AND RECLAMATION OVERVIEW**

The goal of decommissioning is to remove the installed power generation equipment and return the site to a condition as close to a pre-construction state as is practicable. The major activities required for the decommissioning of components associated with the solar farm may include removing solar panels, solar panel racking, I-beams, inverters, transformers, overhead and shallow underground collection cable and lines, equipment pads and foundations, and ancillary equipment. Standard decommissioning practices will be utilized, including dismantling and repurposing, salvaging/recycling, or disposing of the Fish Creek Solar Project components.

The goal of reclamation is to return the land to as near as practicable to its original condition so it can be used for agricultural purposes.

DTE agreements with the landowners require it to decommission within 365 days of the end of commercial operations.

## **III. DECOMMISSIONING ACTIVITIES**

### **1) TIMELINE**

Decommissioning activities are expected to be completed within one (1) year of the cessation of operation of the Fish Creek Solar Project to remove the installed power generation equipment and return the land as near as practicable to its original condition so it can be used for agricultural purposes. Once DTE has decided to cease commercial operations at the facility, DTE will coordinate with the landowners and Evergreen Township. Any necessary permits will be obtained prior to the start date of construction for which such approvals or permits are necessary or required based on the anticipated soil disturbances for both demolition and new temporary construction required for solar farm component removal. After dismantling and excavating the facility, components will be removed, and restoration will commence in accordance with the easement agreements with the landowners.

### **2) REMOVAL OF COMPONENTS**

Before any demolition begins, the solar farm will first be disconnected from the electrical grid by following all energy industry safety standards and best practices to allow for the safe dismantling of the solar farm components. During decommissioning, required regulated materials may be temporarily stored and utilized

at the site. These regulated materials may consist of fuel, lubricating oil, hydraulic oil, propylene glycol, and other materials required for the decommissioning.

Due to the presence of regulated materials associated with the pad-mounted and grounding transformers that contain cooling fluids, there is the potential for spills and/or leaks. The primary concerns associated with these spills and/or leaks are potential impacts to surface water and groundwater resources and/or soil contamination. The Spill Prevention, Control, and Countermeasure (SPCC) Plan will detail the procedures for appropriate storage, cleanup, and disposal of regulated materials to ensure potential impacts are avoided. Any monitoring, transportation, or handling of regulated materials will be conducted in accordance with state law and completed by trained and qualified personnel utilizing established procedures and proper equipment.

Decommissioning will require the removal of the following components:

- Solar modules;
- Racking systems;
- I-beam posts;
- Electrical system;
- Collection (underground to a depth of four (4) feet);
- Ancillary equipment foundation(s);
- Structures
- Fencing;
- Gravel access road(s);
- Visual screen (i.e. landscaping, earthen berms).

Once all the necessary equipment and materials have been removed, the access road(s) will be removed unless the landowner chooses to leave the access roads in place.

### 3) DISPOSAL OF COMPONENTS

After dismantling and excavating the facility, high-value components will be removed. The bulk of a solar panel's weight is glass and aluminum: materials commonly recycled in the U.S. Other components of the solar farm, such as racking systems and I-beams, are made of mostly aluminum and galvanized steel, which may also be recycled. Collection lines are composed of copper and/or aluminum wiring, which can be easily repurposed or sold as scrap.

Unsalvageable materials will be disposed of at authorized sites in accordance with applicable regulations and recycled to the full extent possible.

### 4) RESTORATION ACTIVITIES

DTE will restore the site to as close to pre-construction conditions as practicable in accordance with landowner agreements and best management practices to minimize erosion. DTE assumes that the site will be restored for agricultural use after decommissioning and will implement appropriate measures to facilitate such uses.

Access roads and other areas compacted by equipment will be de-compacted to ensure drainage of the soil and root penetration prior to fine grading and tilling to a farmable condition or maintaining the existing vegetation. Removed roads will be re-graded to original contours.



All disturbed areas will be seeded with a native seed mix or with a seed mix identified in the landowner agreement unless the landowner would prefer no seed application due to the resumption of farming activities. Reclamation areas shall be compatible with the surrounding land.

#### **5) POST-RECLAMATION ACTIVITIES**

After reclamation activities are complete, any National Pollution Discharge Elimination System permit and/or Soil Erosion and Sedimentation Control permit related control measures will be removed from the site and any remediation activities associated with the SPCC will be completed, if appropriate. DTE will stay in contact with the landowner and the Township until the NPDES permit is closed.

### **IV. FINANCIAL OBLIGATION**

As part of this Decommissioning Plan, Atwell, LLC and Tetra Tech, Inc. have prepared a third-party detailed cost estimates, which are included with this plan (see Attachment A and B, respectively). Atwell's conservative estimated cost for decommissioning the project is approximately \$3,520,000. Tetra Tech's conservative estimated cost for decommissioning the project is approximately \$4,875,000. The estimated costs are presented in current (2023) dollars. The estimate is based on preliminary design information, including solar facility overall layout, solar panel modules, solar array trackers, inverters, transformers, boundaries, fencing, access roads, and MC AC routing. The estimate assumes an offsite landfill is used for disposal of demolition waste. No scrap values were included in the decommissioning estimate. Market conditions may result in cost variations at the time of project decommissioning. Although contingency may be required at the time of decommissioning, no attempt was made to estimate contingency within this estimate.

A surety bond will be delivered to the Township prior to the start of construction in an amount equal to the average of these two cost estimates, plus an additional twenty percent (20%), to assure that no public funds will be needed to fund any aspect of the project's decommissioning.

**ATTACHMENT A – ATWELL DECOMMISSIONING COST ESTIMATE**



Project:	<i>Fish Creek Solar Project</i>	Engineer:	<i>J. Hicks</i>
Client:	<i>DTE Electric Company</i>	Issue Date:	<i>10/2/23</i>
Location:	<i>Evergreen Township, MI</i>	Revision:	<i>3</i>

OPINION OF PROBABLE COST - PV PLANT DECOMMISSIONING - SAT

The Fish Creek Solar Project is a proposed 132 Megawatt (MW) solar electric generating facility using ground mounted photovoltaic panels that will be partially located in Evergreen Township. The vast majority of the site is currently in agricultural use, most of it farmed in row crops. At the end of the project's life, the land will be returned as near as practicable to its original condition so it can be used for agricultural purposes. The site is on approximately 297 acres. DTE will provide a bond for the total cost of decommissioning and reclamation of the project.

This opinion of probable costs is based on the engineer's experience in the design and construction of energy facilities and are subject to final engineering. This opinion is also based on our experience supervising the construction of PV plants and supervising the demolition of other non-PV facilities. Costs are estimated with best practices at today's values. The total opinion of probable costs for the project is approximately \$3,520,000. See Table 2: Opinion of Probable Cost - PV Plant Decommissioning for a detailed breakdown of the project.

This opinion assumes a third-party contractor, experienced in the construction and decommissioning of PV facilities will lead the effort. The reported costs include union labor, permitting, materials, taxes, insurance, transport costs, equipment rental, contractor's overhead, and contractor's profit. Labor costs have been estimated using regional labor rates and labor efficiencies from the Bureau of Labor Statistics.

This opinion of cost has been split between plant disassembly, site restoration, and salvage, which reflects the overall decommissioning process. The PV plant will first be disassembled, with all above and below grade components removed. This includes all buried cables, conduits, and foundations. Costs for disassembly are overall less than those for original assembly of the facility. While PV modules will need to be removed by hand to retain their salvage value, the racks, buried cables, and concrete can be removed by machine to increase efficiency. It is assumed that concrete, gravel, and fiber optic cable do not have salvage value and will be disposed off site. Other materials are assumed to have salvage value and can be sold at market prices. The total disassembly and disposal costs for the project is approximately \$3,303,000. See Table 2: Opinion of Probable Cost - PV Plant Decommissioning for a detailed breakdown of the project. Methodology for disassembly of the PV systems can be found in Table 1.

It is expected that the entire site will be re-seeded with native grasses and vegetation. Planting of trees, shrubs, and other woody vegetation (re-forestation) or other beautification is not included in the costs. It is assumed that mulching and stabilization of seeded areas will only be required where gravel roads or concrete foundations were removed. The remainder of site will already be vegetated and disassembly activities will not significantly disturb the vegetation. Seeding in those areas is included as a precautionary measure. The total costs for site restoration the project is approximately \$217,000 See Table 2: Opinion of Probable Cost - PV Plant Decommissioning for a breakdown of Site Restoration Costs.

Any permits required will be included as part of the decommissioning effort. Erosion and sediment control best management practices will be installed during decommissioning.

Inflation was not included in this estimate. In the event that inflation is included, it will be projected based on the Producer Price Indices for Final Demand Construction, Iron Steel Scrap, and Copper Base Scrap. PPI is a more appropriate measure than CPI as it is targeted to the specific commodity. Detailed assumptions and the total opinion of cost for decommissioning is provided on the next sheets.

This opinion of probable costs is based on the engineer's experience in the design and construction of energy facilities and are subject to final engineering.



Project:	Fish Creek Solar Project	Engineer:	J. Hicks
Client:	DTE Electric Company	Issue Date:	10/2/23
Location:	Evergreen Township, MI	Revision:	3

**TABLE 1: PV PLANT ANTICIPATED DISASSEMBLY METHODS**

ITEM	DISASSEMBLY METHOD
PV Modules	Hand Removal. Place modules face down on pallets, tape wire ends, tied down and transport via skid-steer to staging location. Assumed 5% breakage, salvage value for crystalline, no salvage for thin-film.
Inverters	Removal by crane and transport via flat-bed to staging location. Assume no disassembly. Assumed salvage value.
Transformers	Removal by crane and transport via flat-bed to staging location. Assume no disassembly. Oil removal performed by scrap facility. Assumed salvage value.
Racking Frame	Stabilize w/ machine. Cut legs and lower to ground level. Cut cross beams to appropriate size and transport via dump truck to staging location. Assumed salvage value.
Racking Posts	Remove via post-puller and transport via dump truck to staging location. Assumed salvage value.
Racking Wiring	Disconnect PV connectors, cut cable ties, and remove wires from cable tray. Transport via dump truck to staging area. Assumed salvage value.
Underground Cable	Excavate to cable depth at one end of trench. Use tractor or backhoe pull out all cables in common trench. Cables are direct buried so complete excavation of trenches is not required. Transport via dump truck to staging area. Assumed salvage value.
Fence	Machine roll fence fabric. Remove posts via post-puller and transport via dump truck to staging location. Assumed salvage value.
Concrete	Remove with excavator and jack hammer. Backfill and compact as needed. Transport via dump truck to staging area. Assumed offsite disposal.
Gravel	Remove with skid steer with sweeper. Transport via dump truck to staging area. Assumed offsite disposal.
Offsite Disposal	Assumed disposal at \$95/ton or \$45/CY including tipping fee.
Re-Seeding	Re-seed using an ATV-pulled drill seeder, at 5lbs bulk seed per acre of native grasses. Stabilize and mulch on areas where concrete or gravel was removed only.
Re-Grading	Minor re-grading will be done to restore the site to pre-construction condition.
Erosion & Sediment Control	Install silt fence around project perimeter. Install tracking control at site entrance and replace once during disassembly. Remove at end of disassembly.



Project:	Fish Creek Solar Project	Engineer:	J. Hicks
Client:	DTE Electric Company	Issue Date:	10/2/23
Location:	Evergreen Township, MI	Revision:	3

**TABLE 2 GENERATION SUBSTATION ANTICIPATED DISASSEMBLY METHODS**

ITEM	DISASSEMBLY METHOD
Steel Structures	Disassembled, lowered by crane, and transported via flat-bed to staging location. Assumed salvage value.
Circuit Breakers	Removed from pads and transported via flat-bed to staging location. Assumed no salvage value, and no difference in recycling vs. disposal cost.
Power & Instrument Transformers	Removal by crane and transport via flat-bed to staging location. Assume no disassembly or oil removal of small units, oil drained from main power transformer prior to transport. Assumed salvage value.
Disconnect Switches	Removal by crane, disassemble, and transport via flat-bed to staging location. Assumed salvage value for metal components. Insulators assumed no value.
Insulators and Arresters	Removal from supports. Assumed no salvage value.
Primary Conductor	Cut cable and bus pipe at ends and transport to staging location. Assumed salvage value.
Underground Cable	Excavate to cable depth at one end of trench. Use tractor or backhoe remove all cables and conduits in common trench. Transport via dump truck to staging area. Assumed salvage value.
Pre-Fab Steel Buildings	Rough disassembly on site. Assumed salvage value.
Control Panels	Removal of electronic components. Rough disassembly. Assumed salvage value for electronic and metal components.
Fence	Machine roll fence fabric. Remove posts via post-puller and transport via dump truck to staging location. Assumed salvage value.
Concrete	Remove with excavator and jack hammer. Transport via dump truck to staging area. Assumed offsite disposal.
Gravel	Remove with skid steer with sweeper. Transport via dump truck to staging area. Assumed offsite disposal.
Offsite Disposal	Assumed disposal at \$95/ton or \$45/CY including tipping fee.
Re-Seeding & Re-Grading	Re-seed using an ATV-pulled drill seeder, at 3.2lbs per acre of native grasses. Use rough grading machine to lower substation pad to native elevation.



Project: Fish Creek Solar Project Engineer: J. Hicks  
 Client: DTE Electric Company Issue Date: 10/2/23  
 Location: Evergreen Township, MI Revision: 3

TABLE 2: OPINION OF PROBABLE COST - PV PLANT DECOMMISSIONING - ANNUAL INFLATION=0% - END OF LIFE: YEAR 35				
DISASSEMBLY & DISPOSAL				
ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL
1.0	PV Modules (550W)	153,900	\$ 7.50	\$ 1,154,250.00
1.1	PV Modules Recycling	7,695	\$ 52.00	\$ 400,140.00
2.0	PV Inverter(s) (4.3 MVA)	17	\$ 793	\$ 13,481.00
3.0	PV Transformer(s) (4.3 MVA)	17	\$ 396	\$ 6,732.00
4.0	ESS Inverter(s) (2MVA)	0	-	-
5.0	ESS Container(s)	0	-	-
6.0	ESS Transformer(s) (2MVA)	0	-	-
7.0	Racking Frame (Single Axis)	1,425	\$ 112	\$ 159,600.00
8.0	Racking Posts	21,375	\$ 20	\$ 427,500.00
9.0	Tracker Motors	1,425	\$ 14	\$ 19,950.00
10.0	Racking Wiring	2,490,646 LF	\$ 0.05	\$ 124,532.30
11.0	Underground Cable (LV, MV, Comm)	310,626 LF	\$ 0.44	\$ 136,675.44
12.0	PV Plant Fence	36,115 LF	\$ 1.70	\$ 61,395.50
13.0	Interconnection Facilities	1 LS	\$ 387,603.39	\$ 387,603.39
14.0	Concrete	53 CY	\$ 111	\$ 5,883.00
15.0	Gravel	3,160 CY	\$ 21	\$ 66,360.00
16.0	Offsite Disposal by Volume	3,214 CY	\$ 45	\$ 144,630.00
17.0	General Conditions Buffer (Per MW Est)	71 MW	\$ 2,713	\$ 193,708.20
<b>TOTAL DISASSEMBLY &amp; DISPOSAL COST</b>				<b>\$ 3,302,440.83</b>
SITE RESTORATION				
ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL
18.0	Seeding	297 ACRES	\$ 86	\$ 25,542.00
19.0	Grading	1 LS	\$ 125,000	\$ 125,000.00
20.0	Erosion and Sediment Control	1 LS	\$ 66,663	\$ 66,663.00
<b>TOTAL SITE RESTORATION COST</b>				<b>\$ 217,205.00</b>
<b>TOTAL ESTIMATED DECOMMISSIONING COST</b>				<b>\$ 3,519,645.83</b>

Atwell, LLC

Jared Hicks, PE

Director - Power & Energy  
 (248) 310-8107

10/2/2023

Date

**ATTACHMENT B – TETRA TECH DECOMMISSIONING COST  
ESTIMATE**

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**To:** Mike Herbon, Roncelli Inc. and Matt Christensen, DTE

**Cc:** Bryan Carie, Roncelli Inc.; Chris Jones, Roncelli Inc; Ryan Ahern, CrestCura; Phil; Chris Patselas, Tetra Tech Inc.; Ian McNulty, Tetra Tech Inc.

**From:** Phil Spalding, Tetra Tech, Inc. & Joe Lunn, Tetra Tech Inc.

**Date:** October 3<sup>rd</sup> 2023

**Subject:** Fish Creek Decommissioning Cost Estimate- Evergreen Township

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**Executive Summary:**

The total cost estimate to decommission the Fish Creek Solar Project located in Evergreen Township, at the end of its useful life, based on general assumptions, is estimated to be approximately **\$4,875,368**; a breakdown of these costs is included in the table below.

**Estimated Decommissioning Costs (2023\$)**

<b>Project Facilities</b>	<b>Cost</b>
Contractor Fees	\$302,000
Sitework Removals & Restoration	\$1,370,612
Racking Removal	\$806,085
Solar Module Removal	\$1,870,992
AC&DC Wire Removal	\$55,264
Power Conditioning Equipment Removal	\$27,200
<b>Total Estimated Cost</b>	<b>\$4,432,153</b>
Subcontractor Markup OH&P (10%)	\$443,215
<b>Total Net Cost</b>	<b>\$4,875,368</b>



APPENDIX I -  
FORM OF DECOMMISSIONING BOND



## DECOMMISSIONING SURETY BOND

KNOW ALL PERSONS BY THESE PRESENTS that DTE Electric Company, a Michigan corporation and authorized to do business in the state of Michigan, as Principal ("Principal"), and [X], a corporation duly organized under the laws of [State] and licensed to do business in the State of Michigan, as Surety (the "Surety"), are held and firmly bound unto \_\_\_\_\_ Township, Michigan, as Obligee (the "Obligee"), in the penal sum of \_\_\_\_\_ for the payment of which sum we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that:

WHEREAS, the above-named Principal has been granted approval by \_\_\_\_\_ Township to construct, maintain, and operate a \_\_\_\_\_ ("Project") consisting of, among other things solar panel array, racking systems, a perimeter fence, and other associated improvements (collectively the "Permit"), including a Decommissioning Plan, to decommission the Project in strict accordance with the terms of the [Permit, the Decommissioning Plan, a Decommissioning Agreement signed by the Principal and Obligee (the "Decommissioning Agreement") and the \_\_\_\_\_ Township Zoning Ordinance (the "Ordinance") (the "Decommissioning Obligations")]; and

WHEREAS, a demand has been made upon the Principal for security under the terms of the Permits, the Ordinance and the Decommissioning Agreement to completely satisfy the Decommissioning Obligations; and

WHEREAS, the Principal has chosen to post this Decommissioning Surety Bond as a guarantee that the Decommissioning Obligations will be completed as required by the terms of [the Permit, the Decommissioning Plan, the Ordinance, and the Decommissioning Agreement]; and

WHEREAS, the Surety and its successors and assigns agree to guarantee the Decommissioning Obligations and to indemnify \_\_\_\_\_ Township from the failure of the Principal to complete the Decommissioning Obligations in conformity with the terms of the [Permit, the Decommissioning Plan, the Ordinance and the Decommissioning Agreement]; and

WHEREAS, the Surety, as part of the Decommissioning Obligations secured by this Bond, agrees there shall be included costs and reasonable expenses and fees, including reasonable attorney fees, incurred by the Obligee, in successfully enforcing such Decommissioning Obligations against the Surety, all to be taxed as costs and included in any judgment rendered; provided, however, that Surety's undertaking in regard to such costs and reasonable expenses and fees is limited to the sum of \_\_\_\_\_ Thousand Dollars (\$ \_\_\_\_\_) in addition to the penal sum above; and

WHEREAS, the Decommissioning Obligations guaranteed by this Decommissioning Surety Bond shall be in effect for all land on which Principal's Project is constructed within \_\_\_\_\_ Township or upon which the Project will be constructed, operated, and conducted.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS that, if the Principal faithfully completes all the Decommissioning Obligations set forth in the Decommissioning Plan and the Decommissioning Agreement, then this Bond shall be void; otherwise, it shall remain in full force and effect: (a) beginning on the date of the approval and issuance of the Permits, and extending until all Decommissioning Obligations have been completed to the satisfaction of the Oblige; or (b) the Surety may cancel this bond by giving at least 60 days advance written notice to the Oblige, by certified or registered mail. Such notice shall not discharge the liability of the Surety for any default prior to the effective termination date. If the Principal fails to provide the Oblige with a replacement bond, letter of credit, or any other security in an equal amount and in a form acceptable to the Oblige 30 days prior to the effective termination date of the bond, the Surety shall either rescind its cancellation notice by registered or certified mail, or pay the Oblige the penal sum of the bond less any amounts previously paid hereunder by the Surety or Principal.

If the penal sum of this Bond requires adjustment, it shall be by use of an Increase/Decrease Rider.

In no event shall the Surety's aggregate liability under this bond exceed the bond penalty amount stated above.

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Permits or the Decommissioning Agreement or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this Bond, and it hereby waives notice of any such change, extension of time, alteration or addition to the terms of the Permits or the Decommissioning Agreement or to the work or to the specifications.

The Surety will give prompt notice to the Principal and the Oblige of any notice received or action filed alleging the insolvency or bankruptcy of the Surety or alleging any violations of regulatory requirements which could result in suspension or revocation of the Surety's license to do business in Michigan (not including technical violations of regulatory requirements). In the event the Surety becomes unable to fulfill its obligations under this Bond for any reason, notice shall be given immediately to the Principal and the Oblige. Upon the incapacity of the Surety by reason of bankruptcy, insolvency, or suspension or revocation of its authority to operate and do business in Michigan, the Principal shall be deemed to be without bond coverage in violation of the Permits, the Decommissioning Agreement and the Ordinance, and subject to enforcement actions.

IN WITNESS THEREOF, the Principal and Surety have hereunto set their signatures and seals as of this \_\_\_\_ day of \_\_\_\_\_, 2023.

**DTE Electric Company**  
Principal

(Seal)

By: \_\_\_\_\_ Attest: \_\_\_\_\_

Name:

Title:

**ACKNOWLEDGMENT OF PRINCIPAL**

On this \_\_\_ day of \_\_\_\_\_, 2023, before me, \_\_\_\_\_, the \_\_\_\_\_ of DTE Electric Company, personally appeared, personally known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument DTE Electric Company, executed the instrument.

\_\_\_\_\_  
\_\_\_\_\_  
Notary Public  
State of Michigan, County of \_\_\_\_\_  
My Commission Expires: \_\_\_\_\_  
Acting in the County of \_\_\_\_\_

[X] (Seal)  
Surety

By: \_\_\_\_\_ Attest: \_\_\_\_\_

Name: [NAME]

[X], Witness

Title: Attorney-in-Fact

**ACKNOWLEDGMENT OF SURETY**

State of [STATE]  
County of [County]

On this \_\_\_ day of [MONTH] 2023, before me, [NAME], the Attorney-in-Fact of [Surety Company], personally appeared, personally known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument, [Surety Company] executed the instrument; that he/she knows the corporate seal of said corporation, that the seal affixed to the within instrument is such corporate seal, and that he/she signed the said instrument and affixed the said seal as Attorney-In-Fact of said corporation and by authority of this office under the resolutions thereof.

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[Name], Notary Public  
State of [State], County of [County]  
My Commission Expires: [Date]  
Acting in the County of [County]

APPENDIX J -  
DTE EMERGENCY PROTOCOLS





## **DTE Solar Emergency Response: Fish Creek Solar Park**

### **Project Overview**

The Fish Creek Solar Park, which will be owned by DTE Electric Company (DTE) is an 132MW<sub>AC</sub> solar photovoltaic (PV) array located at 3524 E Condensery Road, Sheridan, MI 48884

This system has a rated nameplate capacity of 132MW<sub>AC</sub> / 172MW<sub>DC</sub>. Maximum continuous output power at each inverter is 4.914 MW<sub>DC</sub> at a nominal output voltage of 34.5kV, 3 phase.

The project has a total of 318,518 ZNShine 540W solar PV modules.

### **Emergency Response**

In the event of a fire, the following steps shall be followed:

- Contact DTE's Solar Hotline at 313-235-4040 to inform them of the emergency. The appropriate response team will be able to assist in assessing the situation. Emergency responders should wait for DTE personnel to enter the site.
- DTE personnel will disconnect power from the site. This will force an immediate shutdown of the solar inverter and help to minimize electrical current present in the array and equipment. This can be achieved for either sections or for the entire site.
- The primary goal for any emergency responders should be to minimize and protect adjacent landowners and the public from possible fire spread.