

LAKE COUNTY ZONING NOTICE CUP-000948-2024

FREMONT TOWNSHIP

The Lake County Zoning Board of Appeals has scheduled a public hearing on March 25, 2024, at 1:00 P.M. at the Lake County Public Works Training Facility, 648 W. Winchester Road, Libertyville, Illinois, on the petition of William J. McCarthy and Julie K. Crowe-McCarthy, record owners, who seek a Conditional Use Permit to allow an accessory small-scale solar energy system.

Please note that quantitative values may be subject to minor alterations due to surveyed conditions. The subject property is located at 24007 W. Meadow Ln., Grayslake, Illinois.

PIN: 10-06-201-008

This application is available for public examination online at <https://www.lakecountyil.gov/calendar.aspx?EID=11586> or at the office of the Lake County Zoning Board of Appeals, 500 W. Winchester Rd, Libertyville, Illinois, attn: Brad Denz, Project Manager 847-377-2127

**Gregory Koeppen
Chair**

LAKE COUNTY ZONING BOARD OF APPEALS
CONDITIONAL USE PERMIT APPLICATION

Applicant(s): William J. Mccarthy and
(please print) Owner(s) Julie K. Crowe-McCarthy

Subject Property: Present Zoning: Rural Estates
Present Use: Single Family Dwelling
Proposed Use: Solar Addition to Single Family Dwelling
PIN(s): 1006201008
Address: 24007 W MEADOW LN, GRAYSLAKE, IL, 60030

Legal description: See Deed
(see deed)

Request: I/we request a conditional use permit be approved to allow:

- The installation of 25.28 kw DC Solar System, to be ground-mounted and enclosed via fencing, which can be locked by owner. 500+ Sqft is needed for the project.
- Allowing up to 1,400 sqft for project size, as follows:
64 Solar Panels (21.8 sqft each) Grouped together make up 1,400 sqft.

Explain why this conditional use permit is justified:

- Roof will not fit all the Solar Panels, Roof cannot bear load of Solar Panels without re-roof.
 - Owner prefers to keep panels grouped together for aesthetics to the property.
 - Solar Panel system of 1400 sqft will allow the customer to cover their current electrical usage
 - Owner's large usage of electricity comes from having electric fences to protect property and livestock
 - Solar panels will be able to produce and save the Owner money on rising Electricity Costs
 - Owner will want to cover their potential future EV Vehicles, Livestock, and Agriculture plans.
-

Approval Criteria*

The Lake County Zoning Board of Appeals is required to make findings of fact on your request. You should "make your case" by specifically explaining how your proposed request relates to each of the following criteria:

A. The use in its proposed location will be consistent with the stated purpose and intent of the Lake County Code ("Purpose and Intent", Section 151.005);

- 1400 sqft Project will not deviate from the designation of the Intended and Proposed use of this permit, which is to provide Renewable Solar Energy for the Homeowner.

B. The proposed use in its proposed location complies with all applicable standards of the Lake County Code, including any applicable standards of Section 151.111; and

- Installation of 1400 sqft system complies with all applicable codes set forth by the county.
- Placement of System allows plenty of space for other projects, if necessary.
- Placement of System is able to be closed off, per Lake County codes.
- Placement of System does not violate setback requirements of property lines.

C. The proposed use in its proposed location will not have a substantial adverse impact on any of the following, either as they exist at the time of the application or as they may be developed in the future due to implementation of the Comprehensive Plan;

1. adjacent property,

- 1400 sqft Project does not infringe on neighboring properties
- Project does not violate setback requirements of property lines
- Project to be enclosed via fences and under lock by homeowner, thus making it a secure system

2. the character of the neighborhood,

- Placement of the solar panels will be located in a spot where it won't impact other residential users visually
- Project will not impede on community character, other than becoming a beacon and example for using Renewable energy, thus saving the planet over time.
- Project is willing to comply to any and all regulations set forth by County and HOA codes in order to avoid inhibiting future development.

3. natural resources,

- Homeowner's system will not infringe on natural resources.
- Project will make best attempt to not disturb utility or septic lines while trenching through dirt
- Homeowner would not like to trim or remove trees for the sake of getting better energy production on an unsuitable roof, which will also not fit all solar panels.

4. infrastructure,

- Homeowner currently owns livestock and has electric fences
- 1400 sqft project will not disturb nature preserves, and system will provide energy for the electric grid, thus the project will build and add on to the existing infrastructure.
- Project will be retained to use for Homeowner's personal needs, thus will not infringe on others' projects or personal developments.

5. public site, or

- 1400 sqft Project will be permanently placed on Homeowner's property, thus will not infringe on any commercial developments and is willing to comply with any setback requirements set forth in order to comply with applicable codes.

6. any other matters affecting the public health, safety, or general welfare.

- 1400 sqft Project will mark landlines and septic lines prior to digging trenching path.
- Project will diligently work to avoid utility and septic lines as best as possible.
- Project will be fenced off and locked on customer property, thus avoiding as much unnecessary possible contact with other people.
- Department of Health Approval will be needed during permitting process, other parties will be notified accordingly

**Conditional use permits for commercial solar energy systems shall be approved if found to be in compliance with the requirements of Lake County Code Sections 151.112 (WW) and 151.112 (CCC). Please refer to the Addendum for more details.*

APPLICANT INFORMATION

Owner (include all fee owners listed on deed):	Authorized Agent: I/we hereby authorize this person to represent me/us in all matters related to this application:
Name: JULIE K. CROWE - MCCARTHY	Name: Jesus Pacheco
Name: WILLIAM J. MCCARTHY	Address: [REDACTED]
Address: 24007 W MEADOW LN, GRAYSLAKE	State/Zip: [REDACTED]
State/Zip: IL, 60030	Daytime Phone: [REDACTED]
Daytime Phone: [REDACTED]	Email: [REDACTED]
Email: [REDACTED]	

Applicant (if other than owner):	Contract Purchaser (if any):
Name: Jesus Pacheco (see above)	Name: _____
Address: _____	Address: _____
State/Zip: _____	State/Zip: _____
Daytime Phone: _____	Daytime Phone: _____
Email: _____	Email: _____

I/We hereby attest that all information given above is true and complete to the best of my/our knowledge.

Owner's Sign: [REDACTED]

Own: [REDACTED]

N/A

Signature(s) of contract purchasers (If applicable)

I, LESTER GRAY a Notary Public aforesaid, do hereby certify that JESUS PACHECO personally known to me is (are) the person(s) who executed the foregoing instrument bearing the date of 5 DECEMBER, 2023 and appeared before me this day in person and acknowledged that he/she/they signed, sealed and delivered the same instrument for the uses and purposes therein set forth.

Given under my hand and Notarial Seal this 5th day of DECEMBER, 2023.

(Seal)

My Commission expires

9/22/2023



COURT REPORTER AGREEMENT

CHECK ONE OF THE FOLLOWING:



I authorize the County to act on my behalf to retain a Certified Shorthand Reporter to transcribe the public hearing and provide a transcript to the Zoning Board of Appeals. I further agree to pay the Reporter reasonable fees for his/her services. If I do not pay the Reporter and the County is invoiced and pays the Reporter, I agree to reimburse the County. If the County sues to obtain reimbursement, I agree to pay the County its reasonable attorney's fees in bringing suit and obtaining a judgment.



I will furnish a Certified Shorthand Reporter to transcribe the public hearing and provide a transcript to the Zoning Board of Appeals. I realize that the failure to do so may result in the continuation of the public hearing in which case I agree to reimburse the County for all additional expenses caused by such continuation.

Signature



Billing Contact Information:

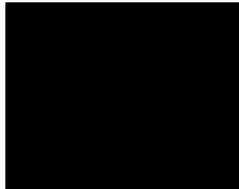
Print Name Jesus Pacheco (Tron Solar)



Email



Phone Number



THIS SIGNED AGREEMENT MUST ACCOMPANY YOUR APPLICATION



Scott E. Wyssling, PE
Coleman D. Larsen, SE, PE
Gregory T. Elvestad, PE



October 16, 2023
Revised November 3, 2023

Tron Solar



Re: Engineering Services
McCarthy Residence
24007 West Meadow Lane, Grayslake IL
25.280 kW System

To Whom It May Concern:

Pursuant to your request, we have reviewed the following information regarding ground mount solar panel installation at the above referenced location:

1. Product documentation prepared by Sunmodo detailing the ground mount system being utilized for the proposed ground mount system.
2. Design drawings of the proposed system including a site plan, and details for the solar panels. This information will be utilized for approval and construction of the proposed system.

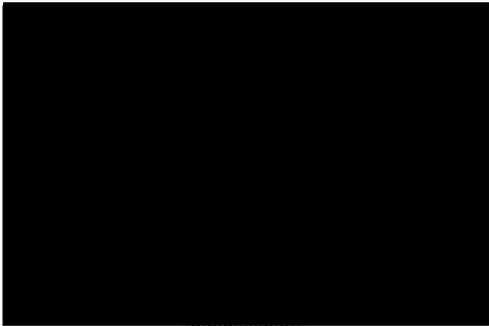
Based on our review of the Photovoltaic Array installed at 4 modules high and 16 modules wide, the PV array shall have a maximum screw/auger spacing of 9'-4" east/west and 7'-1" north/south. Based on a wind speed of 90 mph, Exposure C and a ground snow load of 30 PSF, it was determined that the minimum required depth of the auger/screw shall be 63" inches below grade. The auger/screw shall be tested in the field after installation to provide minimum 2,000 lbs pull out and this information shall be provided to this office.

The above values are within acceptable limits of recognized industry standards for similar structures in accordance with the 2009 International Building Code. Analysis performed of the existing roof structure utilizing the above loading criteria indicates that the existing rafters will support the additional panel loading without damage, if installed correctly.

This certification is specific to the screw/auger for the solar system and does not include the racking system. Racking system and components designed and specified by the manufacturer (Sunmodo).

Should you have any questions regarding the above or if you require further information do not hesitate to contact me.

Scott E. Wyssling, PE
Illinois License No. 008886-0006
Illinois COA # 184.008886-0006



Wyssling Consulting, PLLC



Illinois COA #184.008886-0006

Signed 11/03/2023

FIDELITY NATIONAL TITLE

V# 19008906

1072

WARRANTY DEED ILLINOIS STATUTORY

THE GRANTORS (NAME AND ADDRESS)

Donald Kekstadt and Lori Beth Kekstadt
24007 W. Meadow Lane
Grayslake, IL 60030



Image# 058664990003 Type: DW
Recorded: 10/08/2019 at 12:33:49 PM
Receipt#: 2019-00052504
Page 1 of 3
Fees: \$630.00
IL Rental Housing Fund: \$9.00
Lake County IL Recorder
Mary Ellen Vanderverter Recorder
File **7598607**

REAL ESTATE TRANSFER TAX



County: \$190.00
Illinois: \$380.00
Total: \$570.00

Stamp No: 0-511-546-976
Declaration ID: 20190904986029
Instrument No: 7598607
Date: 8-Oct-2019

(The Above Space for Recorder's Use Only)

THE GRANTORS **Donald Kekstadt, Divorced and not since remarried and Lori Beth Kekstadt, Divorced and not since remarried**, for and in consideration of TEN AND 00/100 DOLLARS (\$10.00), and other good and valuable considerations in hand paid, CONVEY AND WARRANT to **William J McCarthy and Julie K Crowe-McCarthy*** of not as tenants in common, nor as joint tenants, but as tenants by the entirety, the following described real estate situated in the County of Lake, in the State of Illinois, to wit: *husband and wife

SEE ATTACHED LEGAL DESCRIPTION ATTACHED AS EXHIBIT "A"

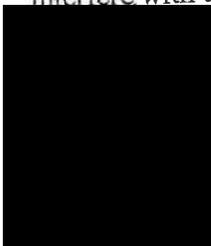
Permanent Index Number(s): 10-06-201-008-0000

Property Address: 24007 W. Meadow Ln, Grayslake, IL 60030

SUBJECT TO: Hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Laws of the State of Illinois, SUBJECT TO Covenants, conditions and restrictions of record and building lines and easements, if any, provided they do not interfere with the current use and enjoyment of the Real Estate; and general real estate taxes

payable at the time of Closing.

____ day of Sept, 2019.



ad

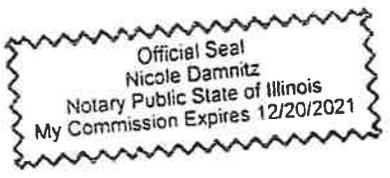
Lori Beth Kekstadt

3 mm

STATE OF IL)
COUNTY OF Cook) SS,
)

I, the undersigned, a Notary Public in and for said County, in the State aforesaid, CERTIFY THAT Donald Kekstadt and Lori Beth Kekstadt personally known to me to be the same persons whose names are subscribed to the foregoing instrument, appeared before me this day in person, and acknowledged that they signed, sealed and delivered in the instrument as their free and voluntary act, for the uses and purposes therein set forth, including the release and waiver of the right of homestead.

Given under my hand and notarial seal, this 10th day of Sept, 2019.



Notary [Redacted Signature]

THIS INSTRUMENT PREPARED BY
Gardi & Haught Ltd
[Redacted]

MAIL TO:
Martin & Mennecke
[Redacted]

SEND SUBSEQUENT TAX BILLS TO:
William J McCarthy & Julie K. Crowe -
24007 W. Meadow Ln
Grayslake, IL 60030
McCarthy

EXHIBIT A
LEGAL DESCRIPTION

LOT 2 IN HAMPSHIRE FARMS-WEST, BEING A SUBDIVISION OF THE EAST HALF OF GOVERNMENT LOT 1 OF THE NORTHEAST QUARTER OF SECTION 6 AND PART OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF SECTION 5, TOWNSHIP 44 NORTH, RANGE 10, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED JULY 27, 1979 AS DOCUMENT 2010340, IN BOOK 71 OF PLATS, PAGE 44, AND CORRECTED BY CERTIFICATE OF CORRECTION RECORDED AUGUST 21, 1979 AS DOCUMENT 2015419, IN LAKE COUNTY, ILLINOIS.

Permanent Index Number(s): 10-06-201-008-0000

Property Address: 24007 W. Meadow Ln, Grayslake, IL 60030

Natural Resource Information Report Application

McHenry-Lake County Soil and Water Conservation District

1648 S. Eastwood Dr., Woodstock, IL 60098 Voice: (815) 338-0444 x 3 www.mchenryswcd.org

For office use only

File Number: _____ - _____ - _____ Date Received: _____ 20

Fee: _____ (Please make check payable to McHenry-Lake County SWCD.)

The McHenry-Lake County SWCD has thirty (30) days to complete this report after receipt of **ALL** the following items and after presentation to SWCD Board of Directors at their regularly scheduled meeting: Board meetings are scheduled for the first Tuesday of each month at the SWCD office.

Application Check List: (Include your Tentative Plat, Intensive Soil Survey, Tile Investigation, & Certified Wetland Determination if available)

Plat of Survey:

Petition:

Fee:

Tentative plat:

Intensive Soil Survey:

Tile Investigation:

Certified Wetland Determination/Delineation:

Processing of the NRI report will not begin until **all** of the required items have been received by the MLCSWCD (office unless otherwise indicated by SWCD Staff)

Fee: Full report: \$400.00 for 1-3 acres and \$25.00 for each additional acre or part thereof.

Letter: \$100.00 SWCD will determine when letter or full report format will be necessary.

Petitioner's Name: William Mccarthy

Phone: [REDACTED]

Address: 24007 W MEADOW LN, GRAYSLAKE, IL, 60030

Contact Person: Jesus Pacheco

Phone: [REDACTED]

Address: [REDACTED]

Parcel Index Number(s): (1) 10 -06 -201 -008

(2) _____ - _____ - _____ - _____

(3) _____ - _____ - _____ - _____

Aggregate parcel size 4.5 (acres)

Current Zoning: Rural Estates

Requested Zoning: Rural Estates, Solar PV, Permanent

Description of Zoning Request: Solar PV, 1,400 sqft of Solar Panels in-ground and connected via trenching in ground to main structure

Proposed Improvements:

- Dwellings on Slabs
- Dwellings with Basements
- Commercial Buildings
- Park/Playground Areas
- Conservation Easements

- Common Open Space
- Sewers
- Individual Wells
- Community Water
- Septic Systems

- Drainage Ditches/Swales
- Wet Retention Basin
- Storm Sewers
- Dry Detention Basin
- Other Solar PV

Unit of Government Responsible: County of McHenry

County of Lake

City/Town of Grayslake

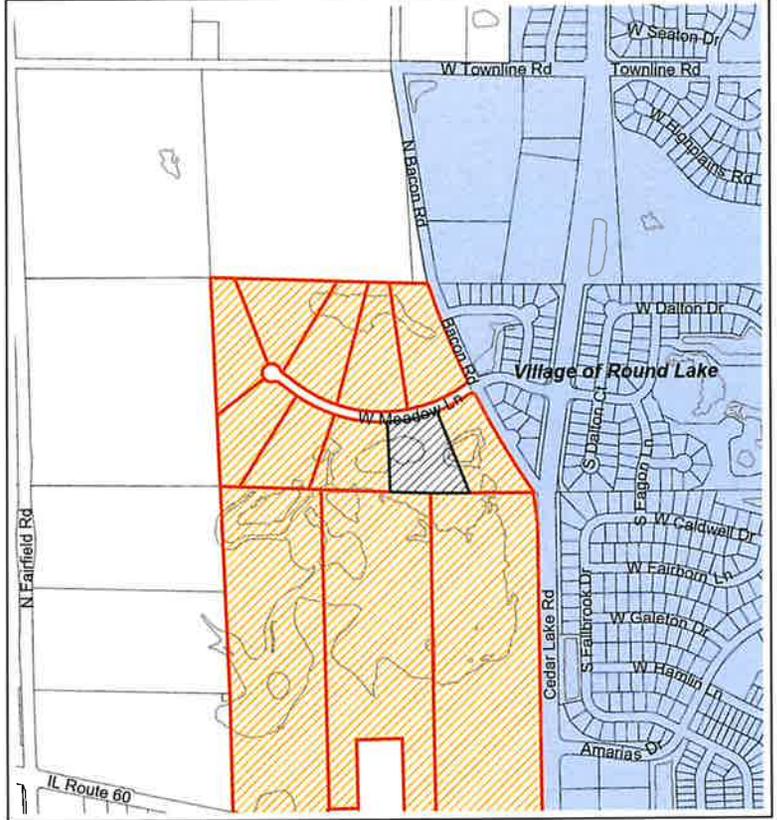
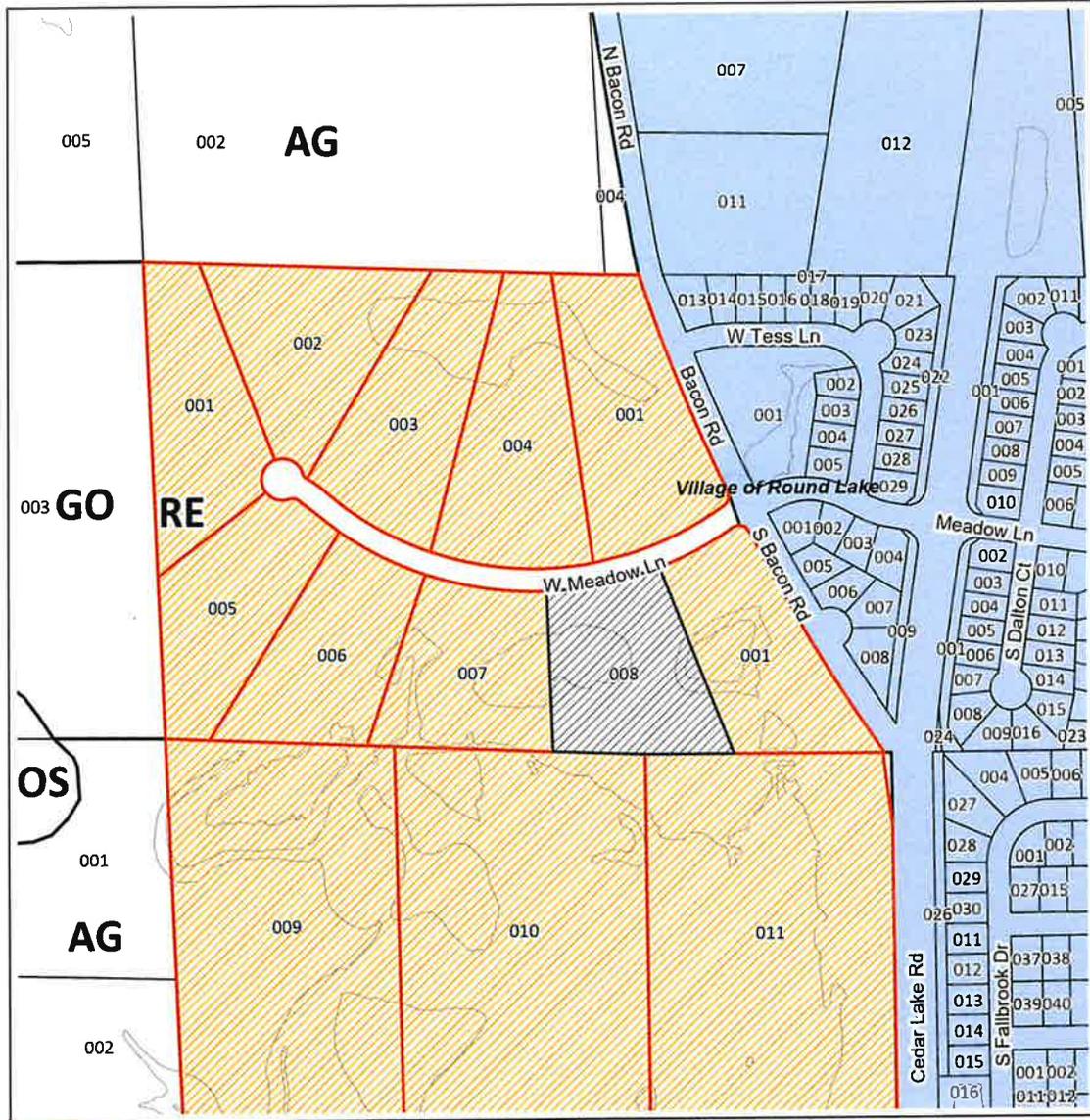
Is the parcel within 1 mile of a Village or City Boundary? Yes No

If yes, which (City/Town/Village)? n/a

It is understood that filing this application allows a district representative the right to conduct an onsite investigation of the parcel(s) described above. Furthermore, this report becomes subject to the Freedom of Information Act after presentation to the District Board of directors at their regularly scheduled meeting.

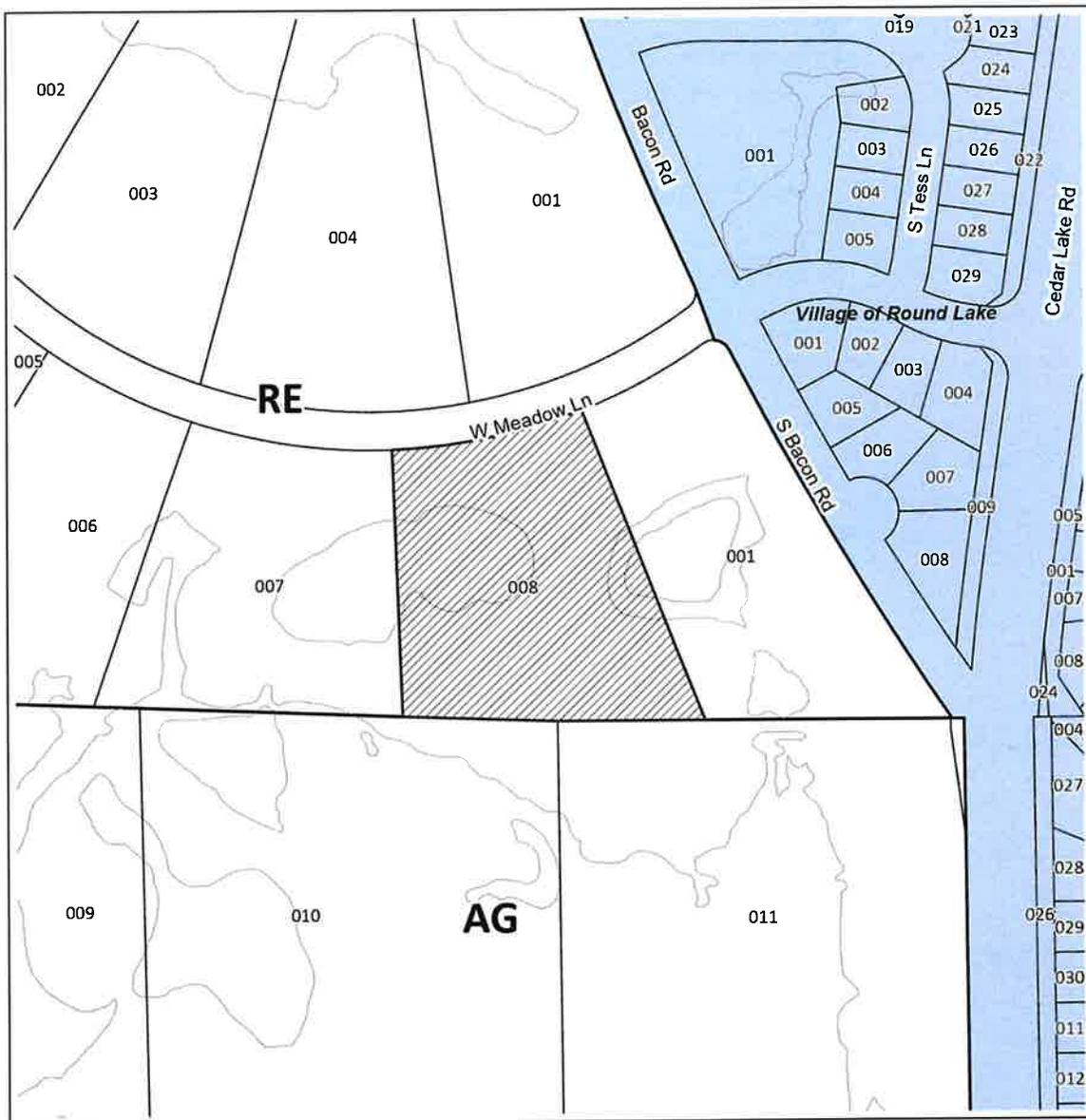
Contact person or Petitioner's signature: [REDACTED]

Date: 1 /25 /20 24

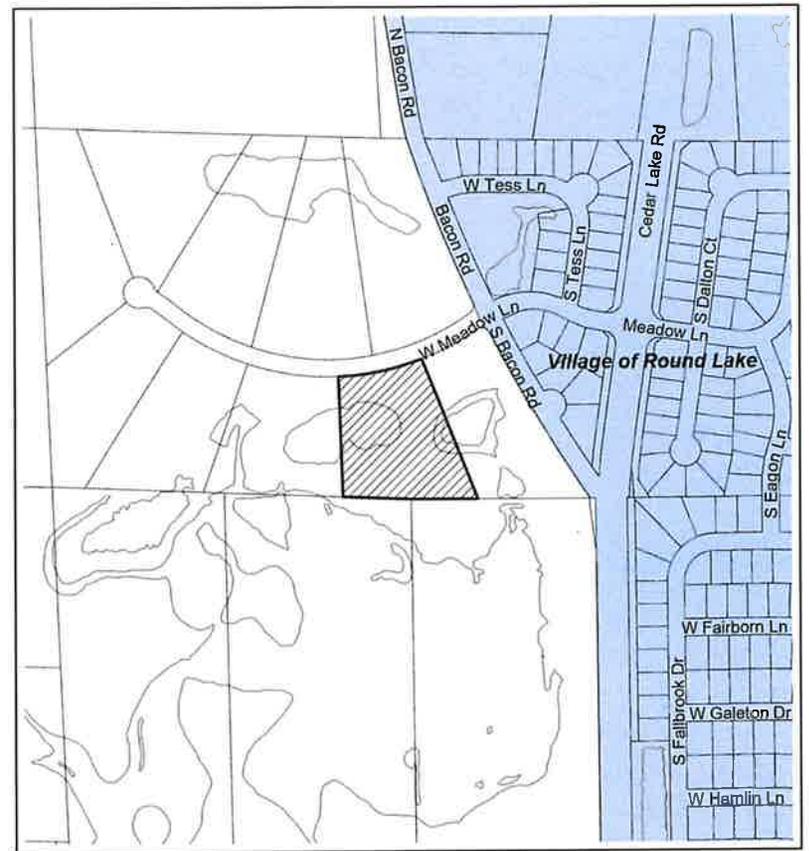


Zoning Board of Appeals
Case #CUP-000948-2024

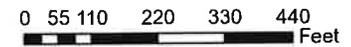




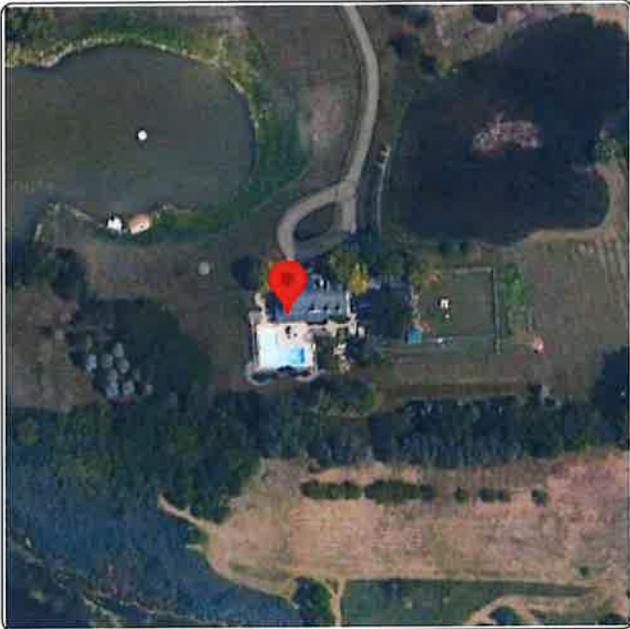
 Incorporated Lake County  Subject Parcel



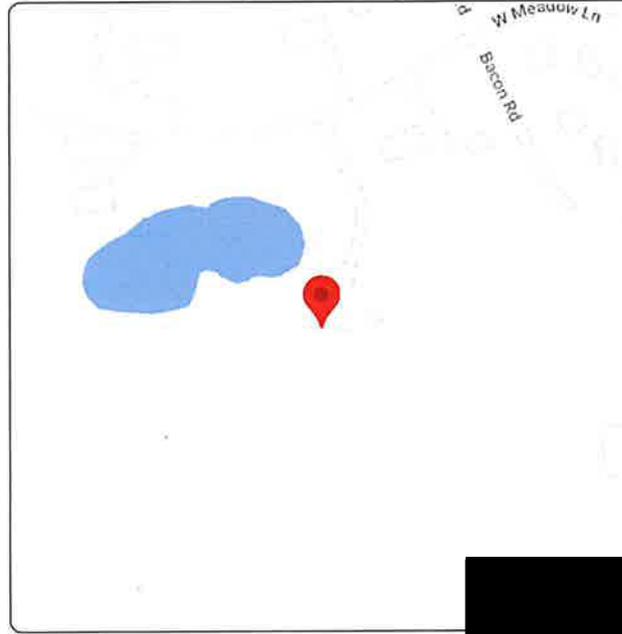
Zoning Board of Appeals
Case #CUP-000948-2024



AERIAL VIEW:



STREET VIEW:



CONTRACTOR INFORMATION:

Tron Solar LLC

License #: TGC110144

SITE INFORMATION

WILLIAM MCCARTHY
24007 W. MEADOW LANE,
GRAYSLAKE, IL 60030
LAT, 42.3209,
LONG, -88.1016
DC SYSTEM SIZE: 25.28 KW DC
AC SYSTEM SIZE: 18.56 KW AC

(64) MSE PERC 66 MSE395SX9R 395W
PV MODULES
(64) ENPHASE ENERGY IQ8PLUS-72-2-US
MICRO-INVERTER

COMED UTILITY

GENERAL NOTES

1. INSTALLATION OF SOLAR PHOTOVOLTAIC SYSTEM SHALL BE IN ACCORDANCE WITH NEC ARTICLE 690, AND ALL OTHER APPLICABLE NEC CODES WHERE NOTED OR EXISTING.
2. PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL COMPLY WITH NEC ARTICLE 110.
3. ALL WIRES, INCLUDING THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE IN ACCORDANCE WITH NEC ARTICLE 250
4. THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE; THIS SYSTEM IS UTILITY INTERACTIVE PER UL 1741 AND DOES NOT INCLUDE STORAGE BATTERIES OR OTHER ALTERNATIVE STORAGE SOURCES.
5. ALL DC WIRES SHALL BE SIZED ACCORDING TO [NEC 690.8]
6. DC CONDUCTORS SHALL BE WITHIN PROTECTED RACEWAYS IN ACCORDANCE WITH [NEC 690.31]
7. ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL JURISDICTIONAL BUILDING CODE.

PHOTOVOLTAIC (PV) SYSTEM SPECIFICATIONS

EQUIPMENT:

DC SYSTEM SIZE: 25.28 kW DC
AC SYSTEM SIZE: 18.56 kW AC
(64)MSE PERC 66 MSE395SX9R 395W PV MODULES
(64) ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTER
RACKING: SUNMODO SUN TURF - GROUND SCREWS

Wyssling Consulting, PLLC
76 N Meadowbrook Drive, Alpine UT 84004
Illinois COA #184.008886-0006
Signed 11/03/2023

APPLICABLE GOVERNING CODES

2017 NATIONAL ELECTRIC CODE (NEC)
2018 INTERNATIONAL FIRE CODE (IFC)
2018 INTERNATIONAL BUILDING CODE (IBC)
2018 INTERNATIONAL RESIDENTIAL CODE (IRC)
2018 ILLINOIS ENERGY CODE

SITE SPECIFICATIONS

OCCUPANCY: R-4
ZONING: RESIDENTIAL

SHEET INDEX:

- PV01 COVER PAGE
- PV02 SITE PLAN
- PV03 ROOF ATTACHMENTS
- PV04 MOUNTING DETAIL
- PV05 LINE DIAGRAM
- PV06 LABELS
- PV07 PLACARD
- PV08 SITE PHOTOS

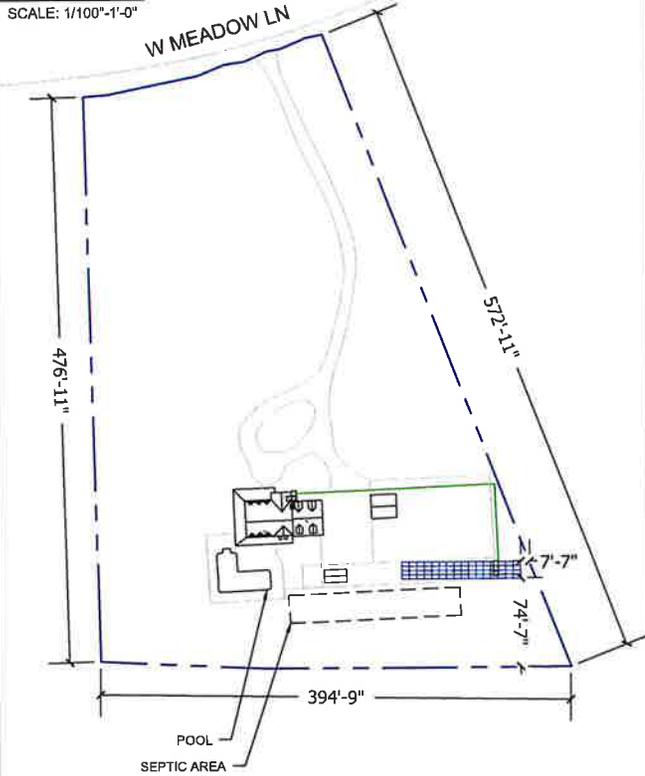
DRAWN BY: SOLAROFIX

DATE:
OCT, 26, 2023 REV B

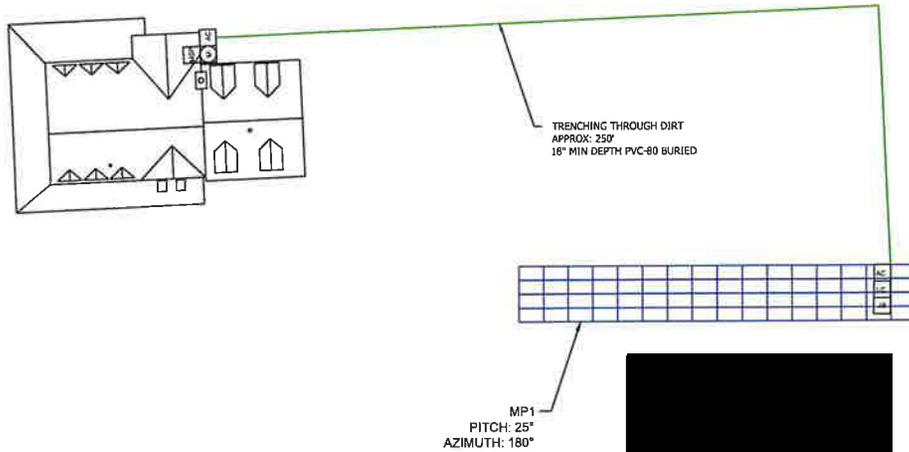
COVER PAGE - PV01



SCALE: 1/100"=1'-0"



SCALE: 1"=30'-0"



CONTRACTOR INFORMATION:

Tron Solar LLC

License #: TGC110144

SITE INFORMATION

WILLIAM MCCARTHY
 24007 W. MEADOW LANE,
 GRAYSLAKE, IL 60030
 LAT, 42.3209,
 LONG, -88.1016
 DC SYSTEM SIZE: 25.28 KW DC
 AC SYSTEM SIZE: 18.56 KW AC

(64) MSE PERC 66 MSE395SX9R 395W
 PV MODULES
 (64) ENPHASE ENERGY IQ8PLUS-72-2-US
 MICRO-INVERTER

COMED UTILITY

Wyssling Consulting, PLLC

Illinois COA #184.00886-0006
Signed 11/03/2023

EQUIPMENT LEGEND:

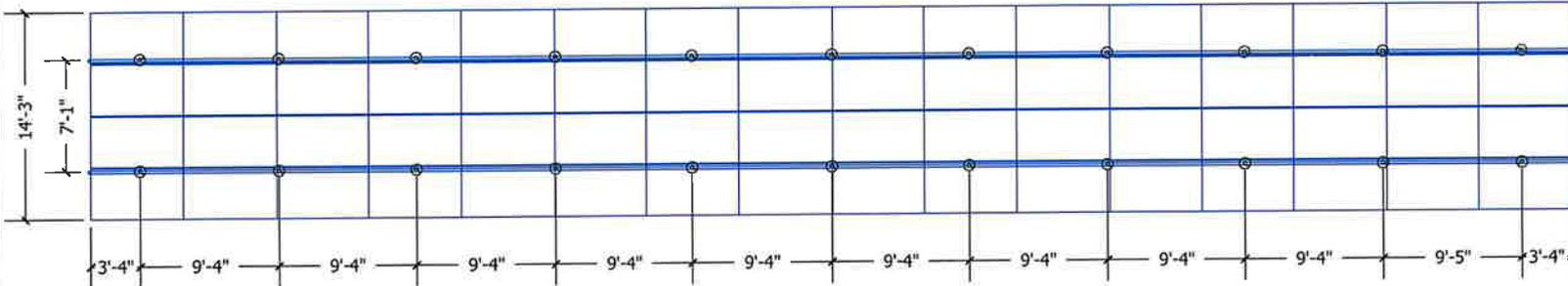
- | | | | | | |
|--------------------|--|-----------------|-------------|------------------------------|---------------|
| UTILITY METER | VISIBLE, LOCKABLE, LABELED AC DISCONNECT | INVERTER | SUB PANEL | FIRE ACCESS PATHWAY (3' TYP) | BATTERY(IES) |
| MAIN SERVICE PANEL | METER SOCKET (FOR UTILITY PV METER) | IQ COMBINER BOX | LOAD CENTER | PROPERTY LINE | DC DISCONNECT |

VISIBLE, LOCKABLE, LABELED AC DISCONNECT LOCATED WITHIN 10' OF UTILITY METER

DRAWN BY: SOLAROFIX

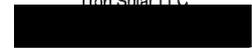
DATE: OCT. 26, 2023 **REV B**

SITE PLAN - PV02



CONTRACTOR INFORMATION:

Tron Solar LLC



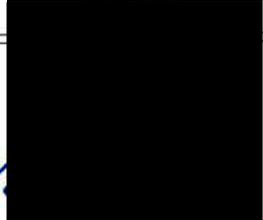
License #: TGC110144

SITE INFORMATION

WILLIAM MCCARTHY
24007 W. MEADOW LANE,
GRAYSLAKE, IL 60030
LAT, 42.3209,
LONG, -88.1016
DC SYSTEM SIZE: 25.28 KW DC
AC SYSTEM SIZE: 18.56 KW AC

- (64) MSE PERC 66 MSE3955X9R 395W PV MODULES
- (64) ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTER

COMED UTILITY



Wyssling Consulting, PLLC

Illinois COA #184.008886-0006

Signed 11/03/2023

DRAWN BY: SOLAROFIX

DATE: OCT. 26, 2023 REV B

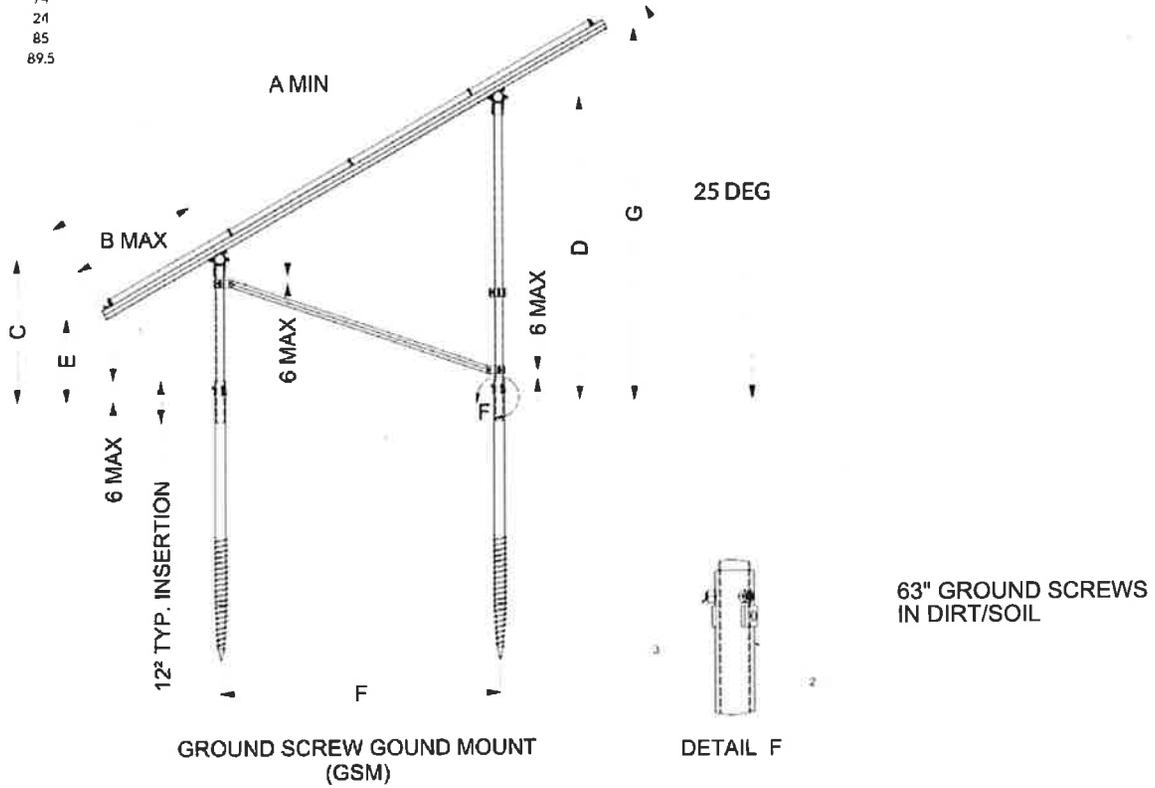
ROOF ATTACHMENTS - PV03

NOTES

- 1 MAX DENOTES MAXIMUM PERMISSIBLE DIMENSIONS
- 2 PIPE IS DESIGNED TO TELESCOPE IN AND OUT OF SCREW/WAUGER FOR FIELD ADJUSTABILITY 12" IS RECOMMENDED

DIMENSIONS

A	170.5
B	39
C	34.5
D	74
E	24
F	85
G	89.5



CONTRACTOR INFORMATION:

Tron Solar LLC



License #: TGC110144

SITE INFORMATION

WILLIAM MCCARTHY
24007 W. MEADOW LANE,
GRAYSLAKE, IL 60030
LAT, 42.3209,
LONG, -88.1016
DC SYSTEM SIZE: 25.28 KW DC
AC SYSTEM SIZE: 18.56 KW AC

(64) MSE PERC 66 MSE3955X9R 395W
PV MODULES
(64) ENPHASE ENERGY IQ8PLUS-72-2-US
MICRO-INVERTER

COMED UTILITY



Wyssling Consulting, PLLC

Illinois COA #184.008886-0006

Signed 11/03/2023

DRAWN BY: SOLAROFIX

DATE: OCT, 26, 2023 **REV B**

MOUNTING DETAIL - PV04

EQUIPMENT SCHEDULE:

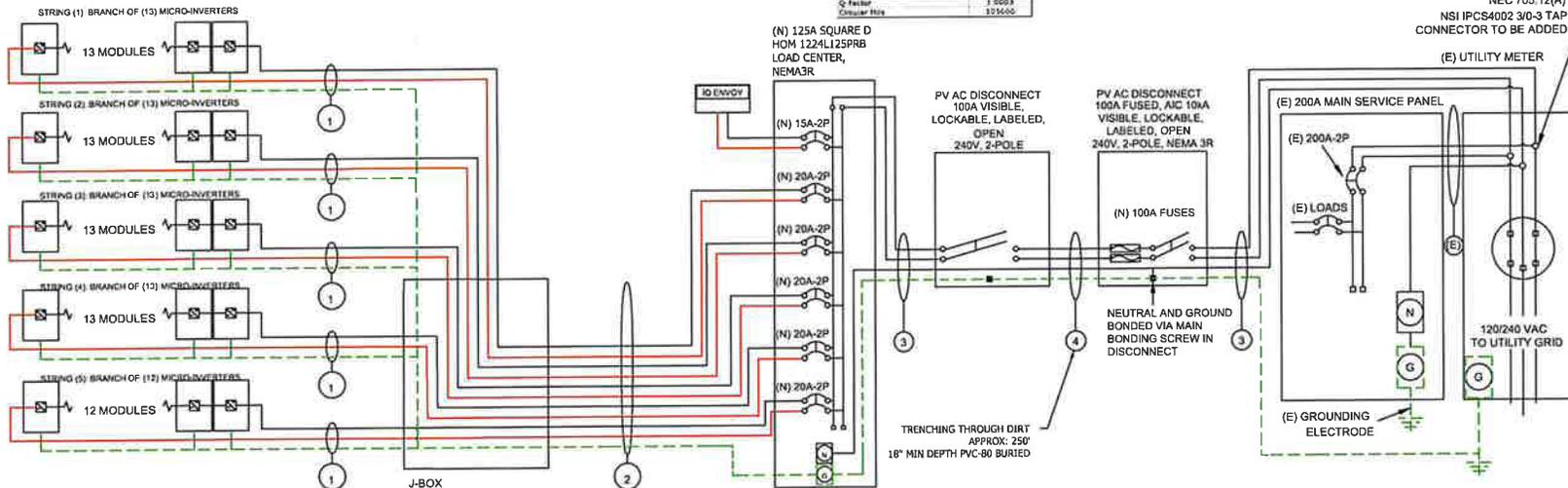
TYPE:	QTY:	DESCRIPTION:	RATING:
MODULES:	(64)	MSE PERC 66 MSE3955X9R 395W PV MODULES	395 W
INVERTERS:	(64)	ENPHASE ENERGY: IQ8PLUS-72-2-US	290 W
AC DISCONNECT(S):	(1)	PV AC DISCONNECT, 240V, 2-POLE(D223UR8)	100A
AC DISCONNECT(S):	(1)	PV AC DISCONNECT, 240V, 2-POLE(D223NR8)	100A
AC COMBINER BOX:	(1)	100A SQUARE D HOM 1224L125PRB LOAD CENTER	125A, 240V
IQ ENVOY:	(1)	ENPHASE IQ ENVOY AND CT'S	
SOLAR BREAKER:	(5)	SQUARE D HOM 20A SOLAR BREAKER	20A, 240V
TAP CONNECTOR KIT	(1)	NSI IPCS4002 3/0-3 TAP CONNECTOR	

Conduit & Conductor Schedule

TAG	WIRE GAUGE	DESCRIPTION	QTY	CONDUIT SIZE	CONDUCTOR RATING	# OF CONDUCTORS OVERLAP	TEMP. DERATE	CONDUCTOR RATING W/DERATE	CONDUIT FILL
1	12 AWG	ENPHASE Q CABLE BRANCH	(2)	N/A - FREE AIR	30A	N/A - FREE AIR	0.96	28 BA	N/A - FREE AIR
	8 AWG	NAPE COPPER (GROUND)	(1)						
	10 AWG	THWN-2, or THHN, or 10/2 NM-B COPPER - (L1, L2)	(10)						
2	8 AWG	THWN-2, or THHN, or 10/2 NM-B COPPER - (GROUND)	(1)	1" IMC	40A	0.7	0.96	38 40A	27.23%
	3 AWG	THWN-2 COPPER - (L1, L2, NEUTRAL)	(3)						
	5 AWG	THWN-2 COPPER - (GROUND)	(1)						
3	8 AWG	THWN-2, or THHN, or 10/2 NM-B COPPER - (GROUND)	(1)	1" IMC	110A	1	0.96	105 60A	35.65%
	3 AWG	THWN-2 COPPER - (L1, L2, NEUTRAL)	(3)						
	5 AWG	THWN-2 COPPER - (GROUND)	(1)						
4	1/0 AWG	THWN-2 COPPER - (L1, L2, NEUTRAL)	(3)	2" PVC 80	170A	1	0.96	163 20A	72.22%
	4 AWG	THWN-2 COPPER - (GROUND)	(1)						

VOLTAGE DROP CALCULATION

Select Material	Cu
Select Wire Size	1/0
Select Conduit Type	PVC
Select Voltage & Phase	240 1-∅-WYE
Enter Distance to Load (ft)	250
Enter Load (Amps)	77.44
OUTPUTS	
Voltage Drop (V/D)	4.77
% Voltage Drop	1.97
VARIABLES	
Phase Factor	1
K	12.5
Q Factor	1.5593
Conductor Size	300000



SUPPLY SIDE CONNECTION:
NEC 230.46, NEC 230.79,
NEC 705.12(A)
NSI IPCS4002 3/0-3 TAP
CONNECTOR TO BE ADDED

GROUNDING & GENERAL NOTES:

1. PV INVERTER IS UNGROUNDED, TRANSFORMER-LESS TYPE.
2. DC GEC AND AC EGC TO REMAIN UNSPLICED, OR SPLICED TO EXISTING ELECTRODE
3. ANY EXISTING WIRING INVOLVED WITH PV SYSTEM CONNECTION THAT IS FOUND TO BE INADEQUATE PER CODE SHALL BE CORRECTED PRIOR TO FINAL INSPECTION.
4. JUNCTION BOX QUANTITIES, AND PLACEMENT SUBJECT TO CHANGE IN THE FIELD - JUNCTION BOXES DEPICTED ON ELECTRICAL DIAGRAM REPRESENT WIRE TYPE TRANSITIONS.
5. AC DISCONNECT NOTED IN EQUIPMENT SCHEDULE OPTIONAL IF OTHER AC DISCONNECTING MEANS IS LOCATED WITHIN 10' OF SERVICE DISCONNECT.

INTERCONNECTION NOTES

1. GROUND FAULT PROTECTION IN ACCORDANCE WITH [NEC 215.9] & [NEC 230.95]
2. SUPPLY SIDE INTERCONNECTION ACCORDING TO [NEC705.12(A)] WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH [NEC 240.21(B)]

DISCONNECT NOTES

1. DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS)
2. AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH.
3. FUSED AC DISCONNECT TO BE USED.

VISIBLE, LOCKABLE,
LABELED AC DISCONNECT
LOCATED WITHIN 10'
OF UTILITY METER



CONTRACTOR INFORMATION:

Tron Solar LLC

License #: TGC110144

SITE INFORMATION

WILLIAM MCCARTHY
24007 W. MEADOW LANE,
GRAYSLAKE, IL 60030
LAT, 42.3209,
LONG, -88.1016
DC SYSTEM SIZE: 25.28 KW DC
AC SYSTEM SIZE: 18.56 KW AC

(64) MSE PERC 66 MSE3955X9R 395W
PV MODULES
(64) ENPHASE ENERGY IQ8PLUS-72-2-US
MICRO-INVERTER

COMED UTILITY

DRAWN BY: SOLAROFIX

DATE:
OCT, 26, 2023 REV B

LINE DIAGRAM - PV05

WARNING
ELECTRIC SHOCK HAZARD.
THE DC CONNECTIONS OF THE
PHOTOVOLTAIC SYSTEM ARE ENERGIZED
AND MAY BE ENERGIZED.

LABEL 1
AT EACH JUNCTION BOX, COMBINER BOX,
DISCONNECT AND DEVICE WHERE ENERGIZED
UNGROUND CONDUCTORS MAY BE EXPOSED
DURING SERVICE [NEC 690.35(F)]

WARNING
ELECTRIC SHOCK HAZARD.
DO NOT TOUCH TERMINALS.
TERMINALS ON BOTH LINE AND LOAD SIDES
MAY BE ENERGIZED IN THE OPEN POSITION.

LABEL 2
AT BUILDING OR STRUCTURE MAIN
DISCONNECTING MEANS. [NEC 690.17(E), NEC
705.22]

**PHOTOVOLTAIC
AC DISCONNECT**
MAX. AC OPERATING CURRENT: **77.44**
NOMINAL AC OPERATING VOLTAGE: **240**

LABEL 4
AT POINT OF INTERCONNECTION, MARKED AT
DISCONNECTING MEANS [NEC 690.54]

WARNING
DUAL POWER SOURCES.
SECOND SOURCE IS PV SYSTEM.

LABEL 5
AT POINT OF INTERCONNECTION.
[NEC 705.12(D)(3)]

**PHOTOVOLTAIC
DC DISCONNECT**

LABEL 6
AT EACH DC DISCONNECTING MEANS
[NEC 690.13(B)]

**PHOTOVOLTAIC
AC DISCONNECT**

LABEL 8
AT EACH AC DISCONNECTING
MEANS
[NEC 690.13(B)]

**WARNING: PHOTOVOLTAIC
POWER SOURCE**

LABEL 9
AT EXPOSED RACEWAYS, CABLE
TRAYS, AND OTHER WIRING
METHODS; SPACED AT MAXIMUM
10FT SECTION OR WHERE
SEPARATED BY ENCLOSURES,
WALLS, PARTITIONS, CEILINGS, OR
FLOORS [NEC 690.31(G)(3)]

**INTERACTIVE PHOTOVOLTAIC SYSTEM
CONNECTED
PHOTOVOLTAIC SYSTEM DISCONNECT
LOCATED AT NORTH SIDE OF HOUSE**

**DIRECTORY PLAQUE
PERMANENT PLAQUE OR DIRECTORY PROVIDING THE
LOCATION OF THE SERVICE DISCONNECTING MEANS
AND THE PHOTOVOLTAIC SYSTEM DISCONNECTING
MEANS IF NOT IN THE SAME LOCATION [NEC 690.56(B)]**

WARNING
PV INVERTER OUTPUT CONNECTION.
DO NOT RELOCATE THIS OVERCURRENT DEVICE.

LABEL 10
PLACED ADJACENT TO THE BACK-FED BREAKER FROM
THE INVERTER IF TIE IN CONSISTS OF LOAD SIDE
CONNECTION TO BUSBAR. [NEC 705.12(D)(2)(3)(b)]

**PHOTOVOLTAIC SYSTEM
EQUIPPED WITH RAPID
SHUTDOWN**

LABEL 11
SIGN LOCATED AT UTILITY SERVICE
EQUIPMENT [NEC 690.56(C)]

**PHOTOVOLTAIC
RAPID SHUTDOWN
DC DISCONNECT**

LABEL 12
SIGN LOCATED AT RAPID SHUT DOWN
DISCONNECT CONTROLLER [NEC 690.13(B)]

WARNING
THE EQUIPMENT FED BY MULTIPLE SOURCES
TOTAL RATING OF ALL SOURCE CURRENTS (DC OR AC)
EXCLUDING MAIN SUPPLY OVERCURRENT
DEVICE SHALL NOT EXCEED AMPLACITY OF
BUSBAR.

LABEL 13
SIGN LOCATED AT LOAD CENTER IF CONTAINS 3 OR
MORE POWER SOURCES [NEC 705.12(D)(2)(3)(C)]



CONTRACTOR INFORMATION:

Tron Solar LLC

License #: TGC110144

SITE INFORMATION

WILLIAM MCCARTHY
24007 W. MEADOW LANE,
GRAYSLAKE, IL 60030
LAT, 42.3209,
LONG, -88.1016
DC SYSTEM SIZE: 25.28 KW DC
AC SYSTEM SIZE: 18.56 KW AC

(64) MSE PERC 66 MSE3955X9R 395W
PV MODULES
(64) ENPHASE ENERGY IQ8PLUS-72-2-US
MICRO-INVERTER

COMED UTILITY

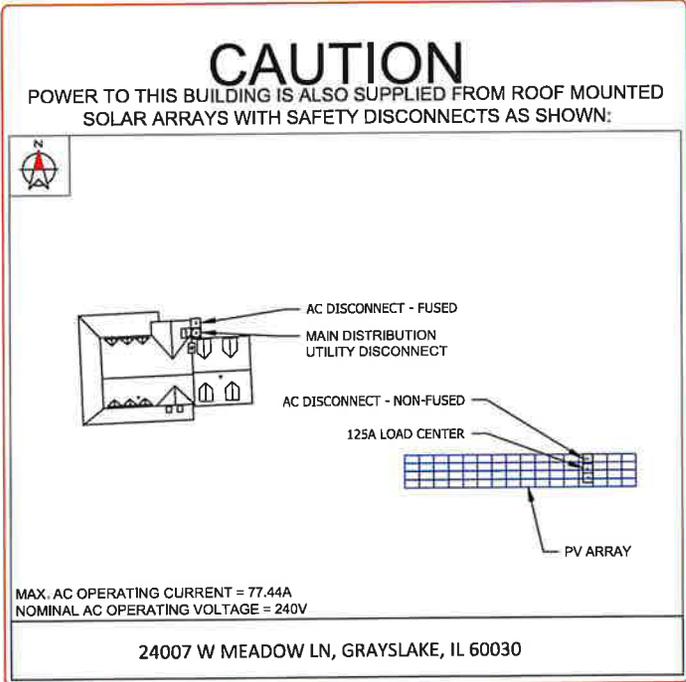
DRAWN BY: SOLAROFIX

DATE: **REV B**
OCT, 26, 2023

LABELS - PV06

LABELING NOTES:

1. LABELING REQUIREMENTS BASED ON THE 2011 NATIONAL ELECTRIC CODE, OSHA STANDARD 19010.145, ANSI Z535.
2. MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
3. LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED [NEC 110.21]
4. LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8", WHITE ON RED BACKGROUND; REFLECTIVE, AND PERMANENTLY AFFIXED [IFC 605.11.1.1]



DIRECTORY
 PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM.

(ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS OUTLINED WITHIN:
 NEC 690.56(B)&(C), [NEC 705.10])



CONTRACTOR INFORMATION:

Tron Solar LLC



License #: TGC110144

SITE INFORMATION

WILLIAM MCCARTHY
 24007 W. MEADOW LANE,
 GRAYSLAKE, IL 60030
 LAT, 42.3209,
 LONG, -88.1016
 DC SYSTEM SIZE: 25.28 KW DC
 AC SYSTEM SIZE: 18.56 KW AC

(64) MSE PERC 66 MSE395SX9R 395W
 PV MODULES
 (64) ENPHASE ENERGY IQ8PLUS-72-2-US
 MICRO-INVERTER

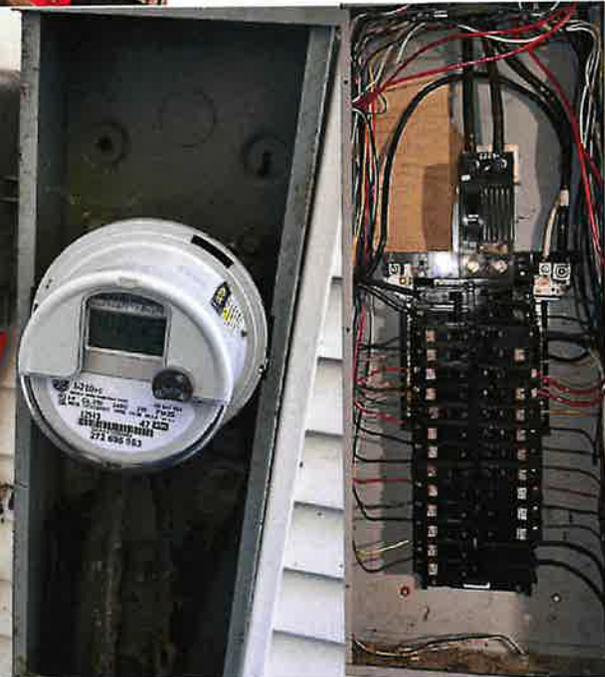
COMED UTILITY

DRAWN BY: SOLAROFIX

DATE: OCT, 26, 2023 REV B

PLACARD - PV07

SITE PHOTOS:



CONTRACTOR INFORMATION:

Tron Solar LLC

License #: TGC110144

SITE INFORMATION

WILLIAM MCCARTHY
24007 W. MEADOW LANE,
GRAYSLAKE, IL 60030
LAT, 42.3209,
LONG, -88.1016
DC SYSTEM SIZE: 25.28 KW DC
AC SYSTEM SIZE: 18.56 KW AC

(64) MSE PERC 66 MSE395SX9R 395W
PV MODULES
(64) ENPHASE ENERGY IQ8PLUS-72-2-US
MICRO-INVERTER

COMED UTILITY

DRAWN BY: SOLAROFIX

DATE: OCT, 26, 2023 REV B

SITE PHOTOS - PV08

MSE PERC 66



395W Positive Power Tolerance
Class leading power output -0 to +3%



True American Quality True American Brand

Mission Solar Energy is headquartered in San Antonio, Texas where we manufacture our modules. We produce American, high-quality solar modules ensuring the highest-in-class power output and best-in-class reliability. Our product line is tailored for residential, commercial and utility applications. Every Mission Solar Energy solar module is certified and surpasses industry standard regulations, proving excellent performance over the long term.

Demand the best. Demand Mission Solar Energy.



- Certified Reliability**
- Tested to UL 61730 & IEC Standards
 - PID resistant
 - Resistance to salt mist corrosion



- Advanced Technology**
- 9 Busbar
 - Passivated Emitter Rear Contact
 - Ideal for all applications



- Extreme Weather Resilience**
- Up to 5,400 Pa front load & 3,600 Pa back load
 - Tested load to UL 61730
 - 40 mm frame



- BAA Compliant for Government Projects**
- Buy American Act
 - American Recovery & Reinvestment Act

FRAME-TO-FRAME WARRANTY
Degradation guaranteed not to exceed 2% in year one and 0.58% annually from years two to 30 with 84.08% capacity guaranteed in year 25.
For more information, visit www.missionsolar.com/warranty

CERTIFICATIONS

CEC



UL 61730 / IEC 61215 / IEC 61730 / IEC 61701

If you have questions or concerns about certification of our products in your area, please contact Mission Solar Energy.



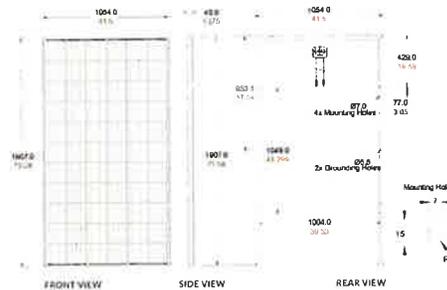
www.missionsolar.com | info@missionsolar.com

Class Leading
390-400W

MSE PERC 66

BASIC DIMENSIONS

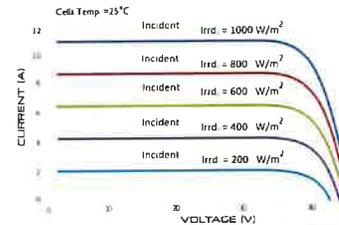
[UNITS: MM/IN]



CURRENT-VOLTAGE CURVE

MSE3855XPR: 385WP, 66 CELL SOLAR MODULE

Current-voltage characteristics with dependence on irradiance and module temperature



CERTIFICATIONS AND TESTS

IEC	61215, 61730, 61701
UL	61730



CEC



Mission Solar Energy

Mission Solar Energy reserves the right to make specification changes without notice.
C SA2 MKTG 0027 Rev 4 U3/18/2022

ELECTRICAL SPECIFICATION

PRODUCT TYPE	MSE3855XPR (P _{max})	390	395	400	
Power Output	P _{max}	W _p	390	395	400
Module Efficiency	%	19.4	19.7	19.9	
Tolerance	%	0/+3	0/+3	0/+3	
Short Circuit Current	I _{sc}	A	11.19	11.24	11.31
Open Circuit Voltage	V _{oc}	V	45.04	45.18	45.33
Rated Current	I _{mp}	A	10.63	10.68	10.79
Rated Voltage	V _{mp}	V	36.68	36.99	37.07
Fuse Rating	A	20	20	20	
System Voltage	V	1,000	1,000	1,000	

TEMPERATURE COEFFICIENTS

Normal Operating Cell Temperature (NOCT)	43.75°C (±3.7%)
Temperature Coefficient of P _{max}	-0.367%/°C
Temperature Coefficient of V _{oc}	-0.259%/°C
Temperature Coefficient of I _{sc}	0.033%/°C

OPERATING CONDITIONS

Maximum System Voltage	1,000Vdc
Operating Temperature Range	-40°F to 145°F (-40°C to 63°C)
Maximum Series Fuse Rating	20A
Fire Safety Classification	Type 1*
Front & Back Load (UL Standard)	Up to 5,400 Pa front and 3,600 Pa back load. Tested to UL 61730
Hail Safety Impact Velocity	25mm at 23 m/s

*Mission Solar Energy uses durable mounting materials that result in a Type I fire rating. Please note, the fire class rating is designed for the fully-installed system, which includes, but is not limited to, the module, the type of mounting used, and related components.

MECHANICAL DATA

Solar Cells	P type mono-crystalline silicon
Cell Orientation	66 cells (6x11)
Module Dimension	1,907mm x 1,054mm x 40mm
Weight	48.5 lbs (22 kg)
Front Glass	3.2mm Tempered, low-iron, anti-reflective
Frame	40mm Anodized
Encapsulant	Ethylene vinyl acetate (EVA)
Junction Box	Protection class IP67 with 3 bypass-diodes
Cable	1.2m, Wire 4mm ² (12AWG)
Connector	Standard PV-KBTA/AM-UR and PV-KST4/AM-UR, MC4, Renhe DS-8

SHIPPING INFORMATION

Container Feet	Ship To	Pallet	Panel's	390W Bin
53'	Most States	30	780	304.20 kW
Double Stack	CA	26	676	263.64 kW

PALLET (26 PANELS)

Weight	Height	Width	Length
1,300 lbs (572 kg)	47.56 in (120.80 cm)	46 in (116.84 cm)	77 in (195.58 cm)

www.missionsolar.com | info@missionsolar.com



IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.



IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.



IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

© 2022 Enphase Energy. All rights reserved. Enphase, the Enphase logo, IQ8 Microinverters, and other names are trademarks of Enphase Energy, Inc. Data subject to change.

IQ8SP-DS-0002-01-EN-US-2022-03-17

Easy to Install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

* Only when installed with IQ System Controller 2, meets UL 1741.

** IQ8 and IQ8Plus supports split phase, 240V installations only.

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)	IQ8-48-12-US	IQ8PLUS-72-2-US
Commonly used module pairings ⁽¹⁾	235 – 350	235 – 440
Module compatibility	60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell
MPPPT voltage range	V: 27 – 37	28 – 45
Operating range	V: 25 – 48	25 – 58
Min/max start voltage	V: 30 / 48	30 / 58
Max input DC voltage	V: 50	60
Max DC current* (module Isc)	A: 15	15
Overvoltage class DC port	II	II
DC port backfeed current	mA: 0	0
PV array configuration	1x1 Ungrounded array. No additional DC side protection is required. AC side protection requires max 20A per branch circuit.	
OUTPUT DATA (AC)	IQ8-48-12-US	IQ8PLUS-72-2-US
Peak output power	VA: 245	300
Max continuous output power	VA: 240	290
Nominal (L-L) voltage/range ⁽²⁾	V: 240 / 211 – 284	240 / 211 – 284
Max continuous output current	A: 1.0	1.21
Nominal frequency	Hz: 60	60
Extended frequency range	Hz: 50 – 88	50 – 88
AC short circuit fault current over 3 cycles	Amps: 2	2
Max units per 20 A (L-L) branch circuit ⁽⁴⁾	10	13
Total harmonic distortion	%: < 5%	< 5%
Overvoltage class AC port	III	III
AC port backfeed current	mA: 30	30
Power factor setting	1.0	1.0
Grid-tied power factor (adjustable)	0.85 (leading) – 0.85 (lagging)	0.85 (leading) – 0.85 (lagging)
Peak efficiency	%: 97.5	97.5
CEC weighted efficiency	%: 97	97
Night-time power consumption	mW: 60	60
MECHANICAL DATA		
Ambient temperature range	-40°C to +60°C (-40°F to +140°F)	
Relative humidity range	4% to 100% (condensing)	
DC Connector type	MC4	
Dimensions (HxWxD)	212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight	1.08 kg (2.38 lbs)	
Cooling	Natural convection – no fans	
Approved for wet locations	Yes	
Pollution degree	PD3	
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating	NEMA Type 6 / outdoor	
COMPLIANCE		
	CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01	
Certifications	This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 sections 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.	

(1) No enforced DC/AC ratio. See the compatibility calculator at <https://int.enphase.com/module-compatibility>
 (2) Maximum continuous input DC current is 10 SA (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-DS-0002-01-EN-US-2022-03-17

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C



X-IQ-AM1-240-4C

X-IQ-AM1-240-4



To learn more about Enphase offerings, visit enphase.com

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway (for communication and control)
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKUs
- UL listed



Enphase IQ Combiner 4/4C

MODEL NUMBER

IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 1.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug and play industrial grade cell modem for systems up to 60 micrometers. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller, and to deflect heat.

ACCESSORIES AND REPLACEMENT PARTS

ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit	Includes COMMS KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites.
COMMS CELL MODEM M1-06	4G base LTE-M1 cellular modem with 5-year Sprint data plan
CELL MODEM M1-06-SP-05	4G base LTE-M1 cellular modem with 5-year AT&T data plan
CELL MODEM M1-06-A1-05	
Circuit Breakers	Supports Eaton BR210, BR215, BR220, BR230, BR240, BRH50, and BR260 circuit breakers.
BRK-10A-2-240V	Circuit breaker, 2 pole, 10A, Eaton BR210
BRK-15A-2-240V	Circuit breaker, 2 pole, 15A, Eaton BR215
BRK-20A-2P-240V	Circuit breaker, 2 pole, 20A, Eaton BR220
BRK-15A-2P-240V-B	Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support
BRK-20A-2P-240V-B	Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA ENV-PLUG-A	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws

ELECTRICAL SPECIFICATIONS

Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of unswitched generation / 95A with IQ Gateway breaker included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (for 200 SPLH)	A pair of 200 A split core current transformers

MECHANICAL DATA

Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63") Height is 21.06" (53.5 cm) with mounting brackets
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	40° C to +46° C (104° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	<ul style="list-style-type: none"> • 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 50 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)

INTERNET CONNECTION OPTIONS

Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-A1-05 (4G based LTE-M1 cellular modems). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6), UTP Ethernet cable (not included).

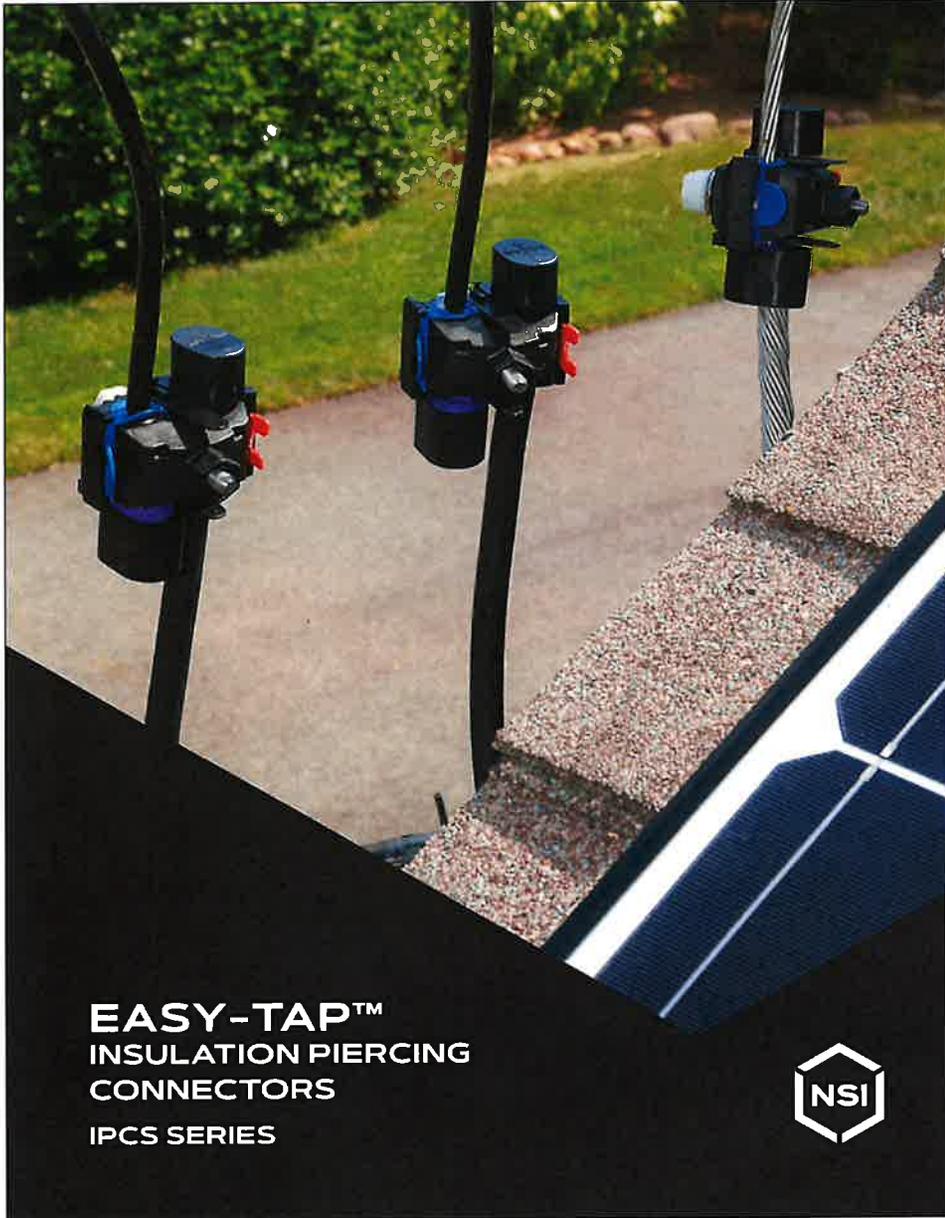
COMPLIANCE

Compliance, IQ Combiner	UL 1741, CAN/CSA C22.7 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/IEC60601-1 2.2 No. 87010-1

To learn more about Enphase offerings, visit enphase.com

© 2021 Enphase Energy. All rights reserved. Enphase, the Enphase logo, IQ Combiner 4/4C, and other names are trademarks of Enphase Energy, Inc. Data subject to change: 10/21/2021





EASY-TAP™
INSULATION PIERCING
CONNECTORS
IPCS SERIES



EASY-TAP™
INSULATION PIERCING CONNECTORS
IPCS SERIES

- No need to strip wire
- No tape or cover needed
- Can be installed on energized conductors
- No spacer required between connections
- "Turbo spacer" keeps tabs open during tightening
- Watertight and corrosion-free
- Connectors handle a large wire range (#14 AWG-750 MCM)
- Double shear-head bolts ensure a perfect connection every time
- Use as a splice or tap
- No special tools required
- For any combination of copper and/or aluminum wires
- Suitable for solid and/or stranded wires
- Four sizes approved for use with bare wire (4/0 to #10)
- Blue insert re-creates insulation to avoid conductor
- UL486B Listed
- Meets ANSI C119.4 requirements
- 600 V, 90° C Rated



CATALOG NUMBER	UPC CODE	CONDUCTOR RANGE		CURRENT RATING		DIMENSIONS (IN)			NO. OF BOLTS	CARTON QTY.	SHIPPING WT. LB/100
		MAIN AWG	TAP AWG	CU AMP	AL AMP	HEIGHT	WIDTH	LENGTH			
IPCS2001*	08260	2/0-4	10-14	55	40	3	1.8	2.2	1	6	.23
IPCS7501	08261	750-3/0	10-14	55	40	3.7	2.4	2.6	1	6	.35
IPCS1002	08262	1/0-8	2-10	190	150	3.1	1.8	2.2	1	6	.30
IPCS1010	08263	1/0-8	1/0-8	190	150	3.1	1.8	2.2	1	6	.30
IPCS4002*	08264	4/0-3	2-10	190	150	3.1	1.8	2.2	1	6	.26
IPCS4020	08265	4/0-2	2/0-6	300	235	3.3	2.2	2.6	1	4	.41
IPCS4040	08266	4/0-2	4/0-4	405	315	3.3	2.4	3.5	1	4	.43
IPCS2540**	08272	250-1	4/0-4	405	315	3.5	2.2	2.6	1	4	.56
IPCS3535**	08267	350-1/0	350-1/0	570	445	4.5	3	3.9	2	2	1.11
IPCS5040**	08268	500-2/0	4/0-4	405	315	4.5	3	3.9	2	2	1.16
IPCS5035**	08269	500-4/0	350-1/0	570	445	4.5	3	3.9	2	2	1.11
IPCS7550**	08270	750-250	500-250	700	545	4.7	3.3	4.3	2	2	1.66

*Cannot be used with bare wire or as a splice

**Cannot be used with bare wire

All sizes can be installed on an energized main conductor when the tap is not under load

Not recommended for use with extra-flexible cables

Not approved for submersible applications

©2022 NSI Industries
 NSI Electrical, Insulation, Piercing, 0422

nsiindustries.com
 800.321.5847





FIELD WORK DATE: 9/27/19 REVISION DATES: (REV) 9/30/19

19085216
BOUNDARY SURVEY
LAKE COUNTY

LOT 2 IN HAMPSHIRE FARMS WEST, BEING A SUBDIVISION OF THE EAST HALF OF GOVERNMENT LOT 1 OF THE NORTHEAST QUARTER OF SECTION 5 AND PART OF THE SOUTH HALF OF THE NORTHEAST QUARTER OF SECTION 5, TOWNSHIP 44 NORTH, RANGE 10, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED JULY 27, 1979 AS DOCUMENT 2010040, IN BOOK 71 OF PLATS, PAGE 44, AND CORRECTED BY CERTIFICATE OF CORRECTION RECORDED AUGUST 21, 1979 AS DOCUMENT 2015419, IN LAKE COUNTY, ILLINOIS.

78007 W. MEADOW LANE, GRAYS LAKE, ILLINOIS 60030



CLIENT ORDER NUMBER: DATE: 09/30/19
BUYER:
SELLER:
CERTIFIED TO:

LOT 2 IN HAMPSHIRE FARMS WEST, BEING A SUBDIVISION OF THE EAST HALF OF GOVERNMENT LOT 1 OF THE NORTHEAST QUARTER OF SECTION 5 AND PART OF THE SOUTH HALF OF THE NORTHEAST QUARTER OF SECTION 5, TOWNSHIP 44 NORTH, RANGE 10, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED JULY 27, 1979 AS DOCUMENT 2010040, IN BOOK 71 OF PLATS, PAGE 44, AND CORRECTED BY CERTIFICATE OF CORRECTION RECORDED AUGUST 21, 1979 AS DOCUMENT 2015419, IN LAKE COUNTY, ILLINOIS.

NONE VISIBLE

FLOOD INFORMATION

ILLINOIS LICENSE NUMBER: 194006059-0003

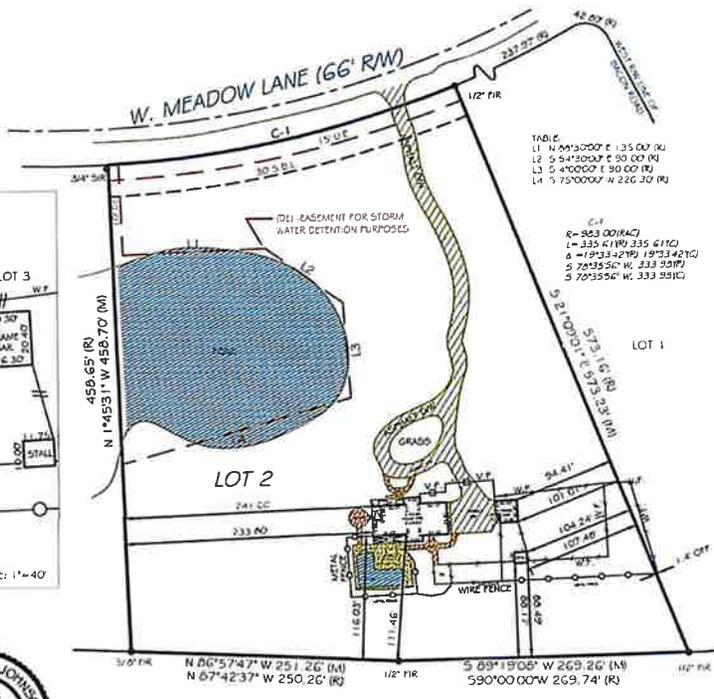
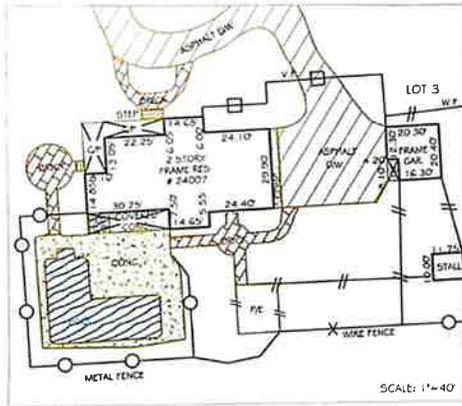


TABLE
L1 N 84°30'00" E 135.00' (R)
L2 S 94°30'00" E 30.00' (R)
L3 S 4°00'00" E 30.00' (R)
L4 S 75°00'00" W 226.30' (R)

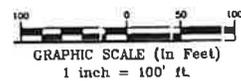
C-1
R=263.00'(R47)
L1=335.6119(335.6110)
L2=19133.2789(19133.4210)
L3=78235.50' W. 333.5017'
L4=79235.50' W. 333.5017'

STATE OF ILLINOIS } ss
COUNTY OF DUPAGE

THIS IS TO CERTIFY THAT THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY, AS SET FORTH IN THE ILLINOIS SURVEYING ACT, 1979, CHAPTER 120, SECTION 1-1, 1-2, 1-3, 1-4, 1-5, 1-6, 1-7, 1-8, 1-9, 1-10, 1-11, 1-12, 1-13, 1-14, 1-15, 1-16, 1-17, 1-18, 1-19, 1-20, 1-21, 1-22, 1-23, 1-24, 1-25, 1-26, 1-27, 1-28, 1-29, 1-30, 1-31, 1-32, 1-33, 1-34, 1-35, 1-36, 1-37, 1-38, 1-39, 1-40, 1-41, 1-42, 1-43, 1-44, 1-45, 1-46, 1-47, 1-48, 1-49, 1-50, 1-51, 1-52, 1-53, 1-54, 1-55, 1-56, 1-57, 1-58, 1-59, 1-60, 1-61, 1-62, 1-63, 1-64, 1-65, 1-66, 1-67, 1-68, 1-69, 1-70, 1-71, 1-72, 1-73, 1-74, 1-75, 1-76, 1-77, 1-78, 1-79, 1-80, 1-81, 1-82, 1-83, 1-84, 1-85, 1-86, 1-87, 1-88, 1-89, 1-90, 1-91, 1-92, 1-93, 1-94, 1-95, 1-96, 1-97, 1-98, 1-99, 1-100.



ILLINOIS LICENSE NUMBER: 194006059-0003
EXACTA LAND SURVEYORS
PROFESSIONAL DESIGN FIRM 184006059-0003



Use of this Survey other than intended, without Written Verification, will be at the User's Sole Risk, and without Liability to the Surveyor. Nothing herein shall be construed to give ANY Rights or Benefits to Anyone other than those Certified

THE CARA PROGRAM transforming lives
www.thecaraprogram.org

EXACTA LAND SURVEYORS, LLC
LBA 184008059
316 East Jackson Street, Morris, IL 60450
Phone: 773 305 4011

EXACTA LAND SURVEYORS, LLC
LBA 184008059
316 East Jackson Street, Morris, IL 60450
Phone: 773 305 4011

UNUSUAL LEGEND

Symbol	Description
...	...