

DOCKET NO. SP - 37448, SUB 0Filing Fee Tendered \$ 50**Report of Proposed Construction (RPC) – Commission Rule R8-65**

Pursuant to G.S. 62-110.1(g), any person who seeks to construct an electric generating facility in North Carolina, and is exempt from the requirement to obtain a certificate of public convenience and necessity, is required to file this form and a notice of completion of the construction of the facility. This form may be accompanied by any exhibits or additional responses incorporated by reference thereto and attached to this form. This form must be accompanied by the required filing fee of \$50.00.

This form may be electronically filed. Please see www.ncuc.net for instructions.

If this form is filed by hard copy, the original must be presented at or transmitted to the office of the Chief Clerk. Regardless of the method of delivery, this form is not deemed filed until it is received by the Chief Clerk, along with the required filing fee.

The mailing address is:

Chief Clerk
NC Utilities Commission
4325 Mail Service Center
Raleigh, NC 27699-4300

Exhibits required by Rule R8-64(b)		Applicant's Response
(1)(i)	Full and correct name of the owner of the facility	Christopher R Fehling
	Facility name	
	Business address	395 Timberlands Dr, Louisville, NC 27549
	E-mail address	fehlingchris@gmail.com
	Telephone number	(919) 521-2963
(ii)	The owner is (check one)	<input checked="" type="checkbox"/> Individual <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation
	If a partnership, the name and business address of each general partner	n/a
	If a corporation, the state and date of incorporation	n/a
	If a partnership, the name and address of each general partner (add additional sheets if necessary)	n/a

	Owner's agent for purposes of this report, if applicable:	Moxie Solar
	Agent's business address	PO Box 703, North Liberty, IA 52317
	Agent's e-mail address	wendy.ferguson@moxiesolar.com
	Agent's telephone number	319-499-7281
(iii)	The full and correct name of the site owner and, if the site owner is other than the applicant, the applicant's legal interest in the site	Christopher R Fehling - Owner
(2)(i)	Attach a color map or aerial photo showing the location of the generating facility site in relation to local highways, streets, rivers, streams, and other generally known local landmarks with the proposed location of major equipment indicated on the map or photo, including: the generator, fuel handling equipment, plant distribution system, startup equipment, the site boundary, planned and existing pipelines, planned and existing roads, planned and existing water supplies, and planned and existing electric facilities. A U.S. Geological Survey map or an aerial photo map prepared via the State's geographic information system (found at www.gis.ncdcr.gov/hpoweb/) is preferred. Rooftop solar installations are not required to file a map or photo.	
(ii)	E911 street address of the proposed facility	395 Timberlands Dr, Louisville, NC 27549
	County in which the proposed facility will be physically located	Franklin
	GPS coordinates of the approximate center of the proposed facility site to the nearest second or one thousandth of a degree	36.05, -78.42
(3)(i)	The nature of the facility, including its technology, and the source of its power and fuel(s)	Residential, Wake Electric Coop
(ii)	A description of the buildings, structures and equipment comprising the generating facility and the manner of its operation	Home
(iii)	The gross and net projected maximum dependable capacity of the facility in megawatts – Alternating Current	Install 17.01 kW roof mounted solar & battery

	The facility's nameplate capacity in megawatts – Alternating Current	17.01
(iv)	The projected date on which the facility will come on line	10/29/2021
(v)	The applicant's general plan for sale of the electricity to be generated, including the name of utility to which the applicant plans to sell the electricity	Net Metering , Wake Electric Coop
(vi)	Any provisions for wheeling of the electricity, if applicable	n/a
(vii)	Arrangements for firm, non-firm, or emergency generation, if applicable	n/a
(viii)	The service life of the project	25 years
(ix)	The projected annual sales in kilowatt-hours	n/a
(x)	Whether the applicant intends to produce renewable energy certificates that are eligible for compliance with the State's renewable energy and energy efficiency portfolio standard <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
(4)	The expected cost of the proposed facility	\$91,965.00

Confidentiality

If an applicant considers certain of the required information above to be confidential and entitled to protection from public disclosure, it may designate said information as confidential and file it under seal. Documents marked as confidential will be treated pursuant to applicable Commission rules, procedures, and orders dealing with filings made under seal and with nondisclosure agreements.

Verification

All reports shall be signed and verified (notarized) by the applicant or by an individual duly authorized to act on behalf of the applicant for the purpose of the report. A blank verification page is attached below.

VERIFICATION

STATE OF North Carolina COUNTY OF Franklin

Dany Garcia CFO
Signature of Owner's Representative or Agent Title of Representative or Agent

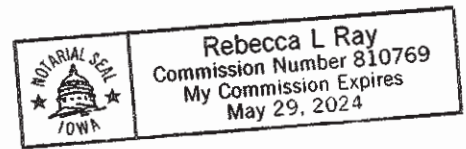
Darcy Garcia
Typed or Printed Name of Representative or Agent

The above named person personally appeared before me this day and, being first duly sworn, says that the facts stated in the foregoing report and any exhibits, documents, and statements thereto attached are true as he or she believes.

WITNESS my hand and notarial seal, this 1st day of September, 20 21

My Commission Expires: 5/29/24

Rebecca L Ray
Signature of Notary Public











Rebecca L Ray
Name of Notary Public – Typed or Printed

PROJECT NAME: FEHLING, CHRISTOPHER NC-4491-1

DESIGN SUMMARY

- **SIZE:** 19.440 kW PV Solar System (54 modules)
- **STYLE:** Residential, asphalt shingle roof, flush mount, grid tied, net-metered
- **LOCATION:** South & West facing roof of home
- **ORIENTATION:** Portrait, 18° pitch, 180°/270° azimuth
- **MODULE:** SunPower X22-360-E- AC 360W, 61.3"x 41.2"x 1.8" thick, 41 lbs
- **RACKING:** SunPower Invisimount with asphalt shingle roof flashings
- **INVERTER:** SunPower Type E (IQ7XS) Integrated Microinverter
- **VOLTAGE:** 120/240V, 1Φ
- **MONITORING:** Online mySunPower Monitoring
- **ADDITIONAL WORK:** None

-  **PV Solar Array**
Roof of building
-  **SunPower Integrated Microinverter**
Array
-  **PV Solar Dedicated Load Center**
Building Exterior
-  **AC Solar Disconnect**
Building Exterior
-  **Utility Meter**
Building Exterior
-  **SunPower Hub+**
Building Exterior
-  **SunVault ESS**
Building Interior
-  **Main Service Panel**
Building Interior

THIS DISTRIBUTED GENERATION FACILITY WAS INSTALLED
IN ACCORDANCE WITH THE CURRENT STATE ADOPTED
NATIONAL ELECTRICAL CODE



1 SITE MAP
01 NO SCALE



CONTRACTOR

MOXIE SOLAR
(855) 669-4387
INFO@MOXIESOLAR.COM
323 W CHERRY ST
NORTH LIBERTY, IA 52317

OWNER

CHRISTOPHER FEHLING
(919) 521-2963
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A H J

FRANKLIN COUNTY

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UTILITY

WAKE ELECTRIC
(800) 474-6300

REVISIONS

07/28/21	PLAN SET	KK
08/06/21	REV 1	GG

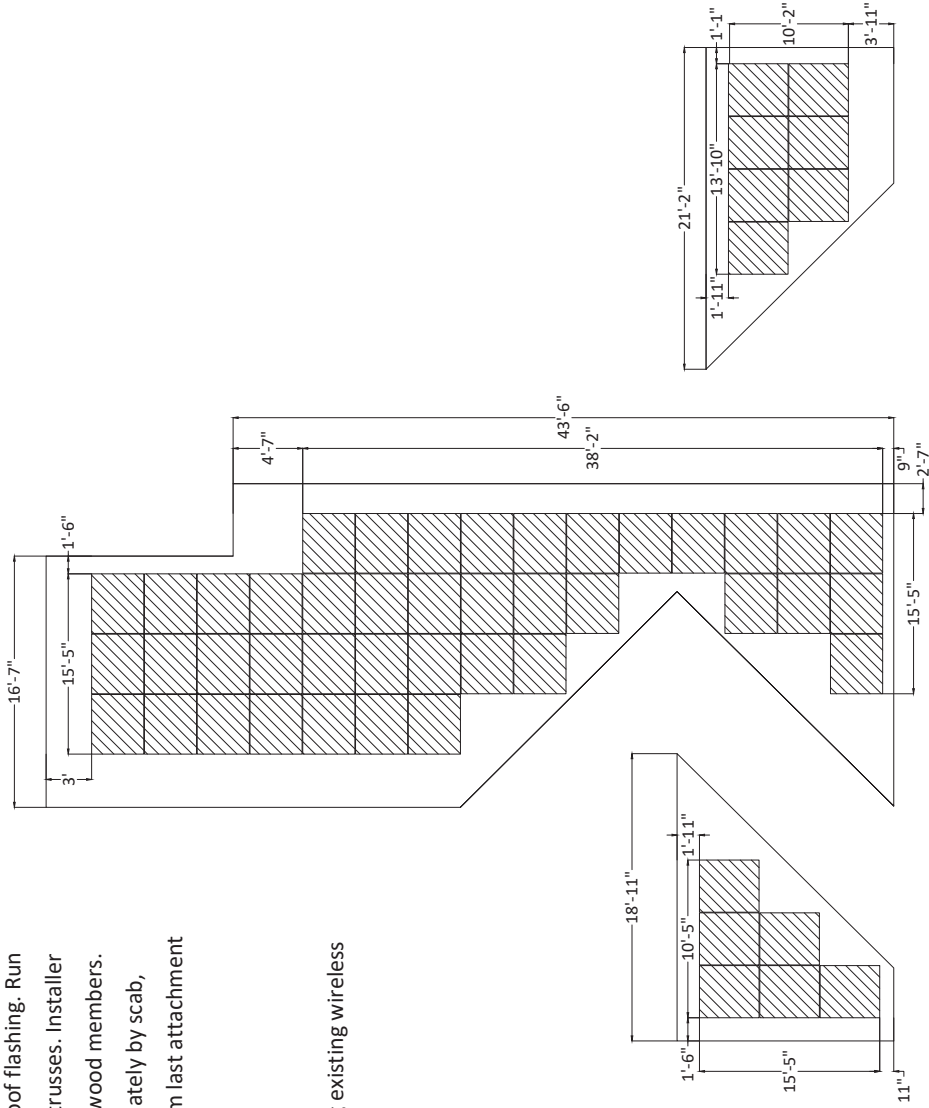
DESIGN SUMMARY

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PROJECT NAME: FEHLING, CHRISTOPHER NC-4491-1

BUILD SUMMARY

- **MODULE:** QTY (54) X22-360-E- AC 360W, 61.3"x 41.2"x 1.8" thick, 41 lbs
- **STRUCTURE:** Wood prefabricated 2"x 4" trusses @ 24" OC
- **RACKING:** SunPower Invisimount with asphalt shingle roof flashing. Run rails across the trusses. Penetrate every 4ft or less into trusses. Installer must verify all penetrations are secure and centered in wood members. Any damaged wood members must be repaired immediately by scab, sister, or full replacement. Max Rail Overhang = 19" from last attachment point. Module Overhang = 18"
- **ACCESS:** 2-story residence
- **INVERTERS:** Factory installed microinverters
- **MONITORING:** Online mySunPower Monitoring utilizing existing wireless router
- **ADDITIONAL WORK:** None



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REVISIONS

07/28/21 PLAN SET KK
08/06/21 REV 1 GG

BUILD SUMMARY

MOXIE
AMERICA'S SOLAR COMPANY

CONTRACTOR

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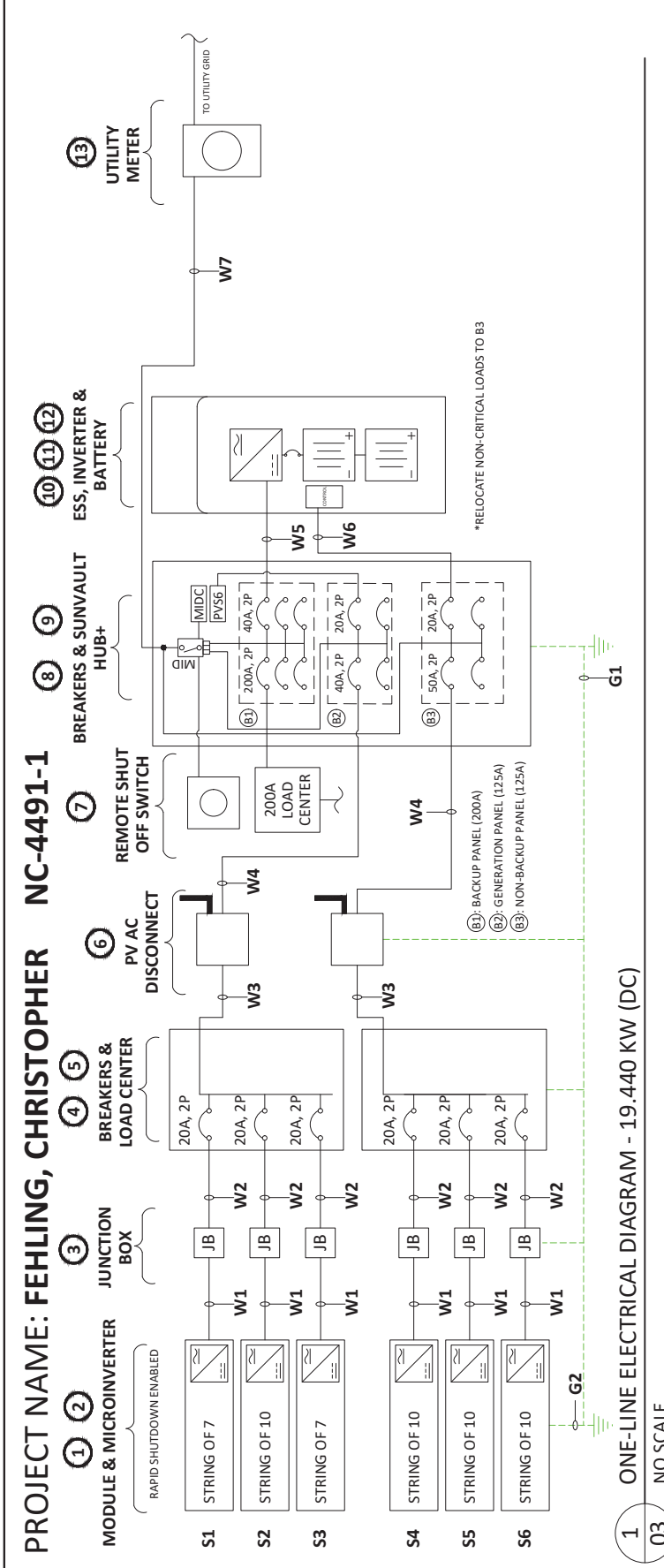
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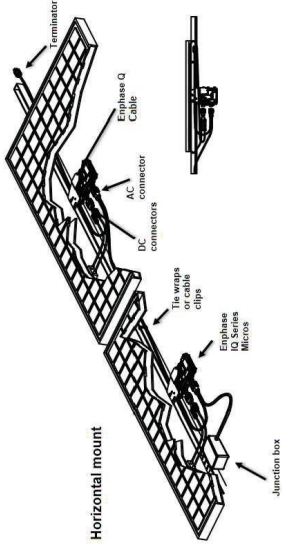
ELECTRICAL

03



EQUIPMENT SCHEDULE				WIRE SCHEDULE			
TAG	ITEM	MAKE	MODEL	VOLTAGE	QTY	LOCATION	
1	MODULE	SUNPOWER	X22-360-E-AC 360W	DC	54	ROOF TOP	
2	MICROINVERTER	SUNPOWER	TYPE E (IQ7XS) 315W (AC)	120/240V, 1Ø	54	ROOF TOP	
3	JUNCTION BOX	SUNPOWER	XL-530167	120/240V, 1Ø	6	ROOF TOP	
4	BREAKERS	EATON	20A, 2-POLE BR220	120/240V, 1Ø	6	LOAD CENTER	
5	LOAD CENTER	EATON	125A ENCLOSURE LUG ONLY BR16L125RP	120/240V, 1Ø	2	BLD EXTERIOR	
6	DISCONNECT	EATON	60A ENCLOSURE NON FUSED DG222URB, DG100NB	120/240V, 1Ø	2	BLD EXTERIOR	
7	REMOTE POWER OFF SWITCH	SUNPOWER	533401	120/240V, 1Ø	1	BLD EXTERIOR	
8	BREAKER	EATON	40A, 2-POLE BR240	120/240V, 1Ø	1	HUB+	
8	BREAKER	EATON	50A, 2-POLE BR250	120/240V, 1Ø	1	HUB+	
8	BREAKER	EATON	125A, 2-POLE BR2125	120/240V, 1Ø	1	HUB+	
9	HUB+	SUNPOWER	SV-HUB-01-A	120/240V, 1Ø	1	BLD INTERIOR	
10	ESS	SUNPOWER	SUNVAULT 13 SV-BASE13-12-A SV-ENERGY13-12-A	120/240V, 1Ø	1	BLD INTERIOR	
11	BATTERY	SUNPOWER	SPWR-M001X	120/240V, 1Ø	1	ESS	
12	BATTERY INVERTER	SCHENIDER	XW PRO 6848 NA	120/240V, 1Ø	1	ESS	
13	UTILITY METER	ITRON	CL200	120/240V, 1Ø	1	BLD EXTERIOR	

TAG	RUN	CONDUCTOR TYPE	GAUGE	CONDUIT	RUN LENGTH
W1	PV HOMERUNS	Q-CABLE Q-12-10-240-PORT	#12	-	60 FT
W2	JUNCTION BOX TO LOAD CENTER	THWN-2, Cu	#10	3/4"	30 FT
W3	LOAD CENTER TO DISCONNECT	THWN-2, Cu	#8	1"	10 FT
W4	DISCONNECT TO PV INPUT	THWN-2, Cu	#8	1"	5 FT
W5	BACKUP PANEL TO ESS	THWN-2, Cu	#8	1"	5 FT
W6	GRID SENSE TO ESS	THWN-2, Cu	#12	1"	5 FT
W7	HUB+ TO UTILITY METER	THWN-2, Cu	3/0	1 1/2"	20 FT
G1	GROUND ELECTRODE EQUIPMENT GROUND (as per NEC 250.122)	BARE, Cu	#4	-	-
G2		THWN-2, Cu	#10 - #4	-	100 FT



1 MODULE AND MICROINVERTER CONNECTION DETAIL

04 NO SCALE



2 SUNPOWER INVISIMOUNT ROOF FLASHING DETAIL

04 NO SCALE

SYSTEM AC DISCONNECT AT SERVICE

PHOTOVOLTAIC SYSTEM AC DISCONNECT
MAXIMUM OPERATING AC CURRENT: 70.74 AMPS
NOMINAL OPERATING AC VOLTAGE: 120/240 VAC

3 PHOTOVOLTAIC MARKING AND LABELING

04 NO SCALE

CODE REVIEW & CALCULATIONS

SOLAR PHOTOVOLTAIC (PV) SYSTEM WITH SUNPOWER

Inverter Type: Type E (IQ7XS) Microinverter
Minimum String Length: N/A
Maximum String Length: 12
Nominal String AC Voltage: 240V (AC)
Nominal Output Current (Per Microinverter): 1.31A

SunPower X22-360-E- AC 360W

NEC 690.7 MAXIMUM VOLTAGE

690.7(A): Maximum Photovoltaic System Voltage
X22-360-E- AC 360W Module $V_{oc} = 69.50V$
Module $V_{max} = ((-40^{\circ}C) - 25^{\circ}C)(-0.0017/^{\circ}C)(69.50V) + (69.50V) = 77.18V$ (DC)
Module V_{max} Output = 77.18V (DC) < TYPE E (IQ7XS) MAX Input = 80V (DC)

NEC 690.8 CIRCUIT SIZING AND CURRENT

690.8(A)(1): Photovoltaic Source Circuit Currents
Module to Microinverter $I_{max} = 1.31A \times 54 \times 125\% = 88.43A$

690.8(A)(3): Inverter Output Circuit Current.
Microinverter Rated Continuous Output Power = 315W
Microinverter rated Continuous Output Current = 1.31A
System $I_{max} = 88.43A$

NEC 690.9 OVERCURRENT PROTECTION

690.9(B): Overcurrent Device Ratings
Disconnect Fuse: $1.31A \times 54 \times 125\% = 88.43A \rightarrow 90A$ OCPD

NEC 690.12 RAPID SHUTDOWN OF PV SYSTEMS ON BUILDINGS

PLAN: Rapid Shutdown enabled disconnect shall be located next to the service and be labeled in accordance with 690.56(B) and (C).



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DETAILS & CALCULATIONS

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