



TOLLAND GREEN HISTORIC DISTRICT COMMISSION

Application for a Certification of Appropriateness

Updated 03/05/24

Property Information

Property Address: 95 Tolland Green, Tolland, Connecticut 06084

Property Owner: John Hughes

Phone Number: [REDACTED]

Applicant Information

Applicant Name: Venture Home solar - Marilu Medina (permit coordinator)

Applicant Address: 327 Captain Lewis Dr. Southington CT 06489

Phone Number: [REDACTED]

Email Address: [REDACTED]

Project Information

Type of Building: Residential - Single house

Nature and description of work to be done as it affects exterior appearance. Attach appropriate drawing or plans giving the position of the house or structure on the site, ground plan of house with proposed addition, and all pertinent elevations showing size and style of windows, dormers, doors, exterior wall finishes, roofing material, chimneys, vents and ornamentation. (If more space needed, attach sheet to application.)

PV Solar panels roof mounted installation 13.60kw - 32 panels- Not structural upgrades

Estimated Start and Completion Dates:

Start: _____

Complete: _____

1. Attach a photograph of the existing structure or place to be changed as viewed from the street showing that portion of the structure to be altered, together with a drawing of the proposed alteration or change.
2. Application fee of \$75.00 must accompany application (make checks payable to Town of Tolland).
3. Application form, fee, plans, photograph and drawing must be submitted to **Planning & Building Department**. Public Hearings will be scheduled within not more than sixty-five days after the filing of an application.

Certificate of Appropriateness will expire 1 year from date of approval.

This application form and all accompanying plans and materials are accurate and complete:

Applicant Signature: _____

Date: 03/05/24

Property Owner Signature: _____

John Hughes

Date: 03/05/24

OFFICE-USE ONLY

Received & Fee Paid:		Hearing Scheduled:	
Hearing Advertised:		Action:	
Notice of Action to Applicant:		HDC Due Date:	

Service Report

Prepared for:

Work Order Number 00074211

Prepared By:

Name Venture Home Solar

Company Address United States



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Service Report

Prepared for:

Work Order 00074211
Number

Prepared By:

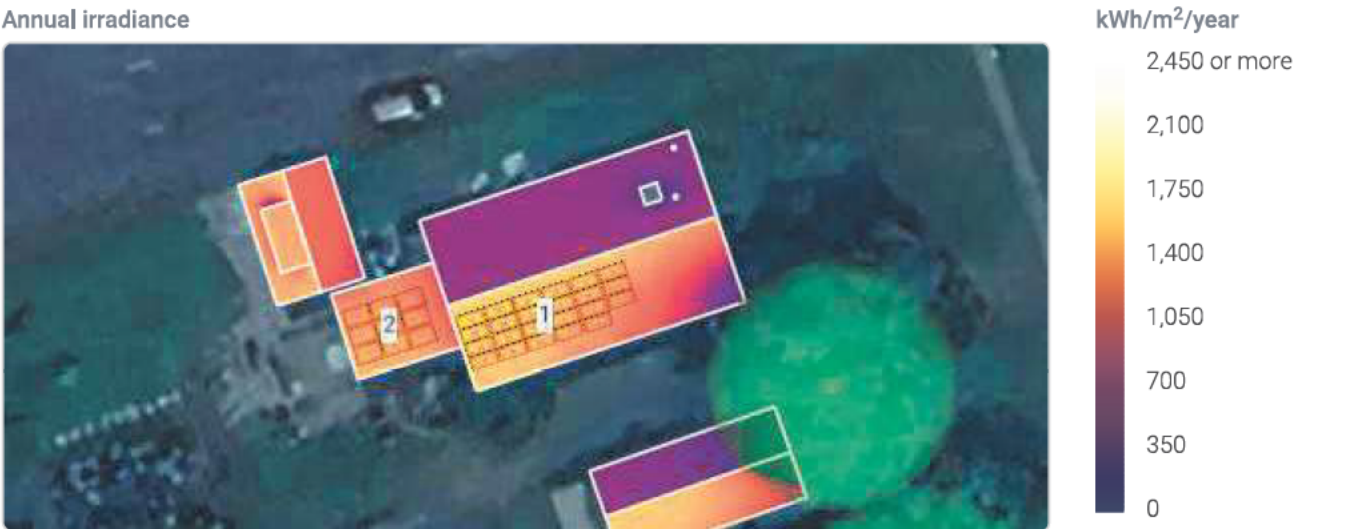
Name Venture Home Solar

Company Address United States



Aurora Shade Report

Customer John Hughes	Designer Gunjan Singh	Organization Venture Solar LLC
Address 95 Tolland Grn Tolland, CT 06084, USA	Coordinates (41.874286, -72.370815)	Date 2 March 2024



 Summary

Array	Panel Count	Azimuth (deg.)	Pitch (deg.)	Annual TOF (%)	Annual Solar Access (%)	Annual TSRF (%)
1	23	162	43	99	88	87
2	9	252	20	85	94	80
Weighted average by panel count	-	-	-	-	89.7	85.1

Monthly solar access (%) across arrays

Array	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	85	87	85	87	91	94	93	88	85	86	86	87
2	97	96	95	94	92	91	92	93	95	97	97	97

Customer
John Hughes

Address
95 Tolland Grn
Tolland, CT 06084, USA

Designer
Gunjan Singh

Coordinates
(41.874286, -72.370815)

Organization
Venture Solar LLC

Date
2 March 2024

Zoomed out satellite view



3D model



3D model with LIDAR overlay  25 ft



Customer

John Hughes

Designer

Gunjan Singh

Organization

Venture Solar LLC

Address

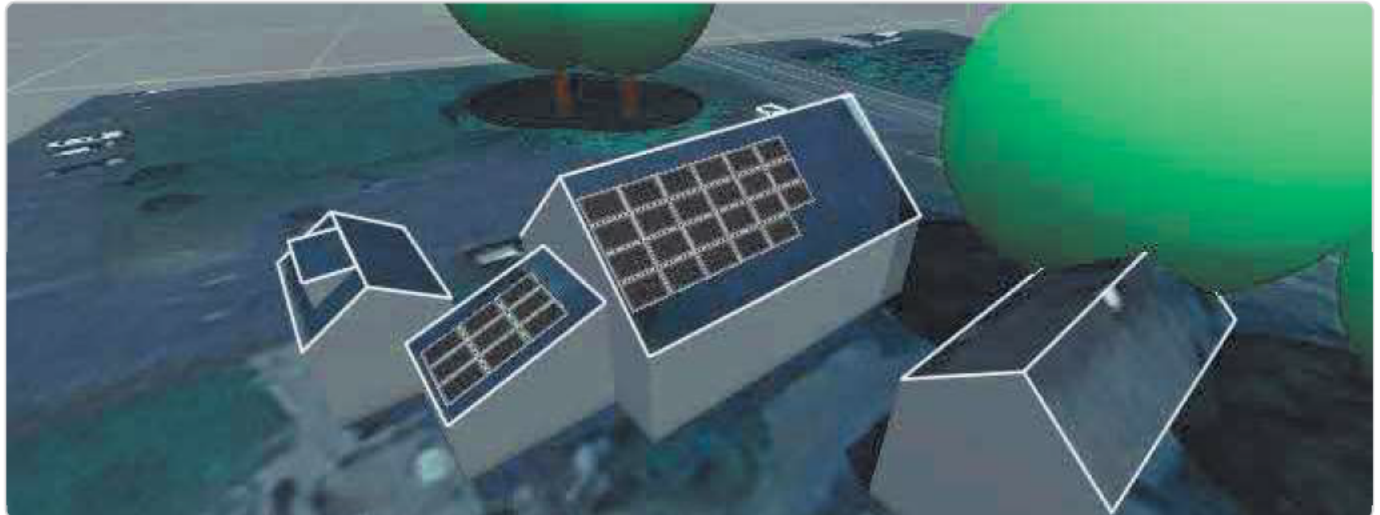
95 Tolland Grn
Tolland, CT 06084, USA

Coordinates

(41.874286, -72.370815)

Date

2 March 2024

Street view and corresponding 3D model

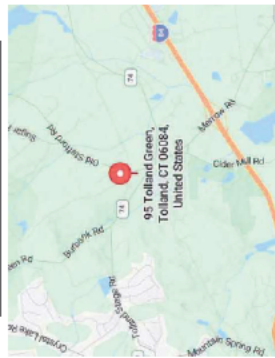
I, **Gunjan Singh**, certify that I have generated this shading report to the best of my abilities, and I believe its contents to be accurate.

95 Tolland Grn, Tolland, CT
06084-3040, USA
John Hagler's Residence
Solar Panels: (32) Hanwha Q-Cell Q.TRON BLK
M42-451 Modules
Inverters: (2) QPDL327250/13 Micro-Inverters
Solar System: DC Size: 15.60KW AC Size: 9.26KW
Solar Annual Production: 15,971.00 KWH
Designed By: UNIRAC
Date: 3/2/2024
Revision #
Approval Date
Description

AERIAL SITE VIEW



MAP OF BLOCK DISTRICTS



GPS COORDINATES

41.874286, -72.370815

DRAWING INDEX

1	Site Plan	Z-000.00
2	Electrical and System Layout	A-000.00
3	Roofing and Load Calculations	S-000.00
4	Spreadsheet	S-001.00
5	Labels & Solar Map Plans	G-000.00
6	String Diagram	E-000.00
7	Label Sheet	E-001.00
8	Electrical 3-Line & Labels	E-002.00
9	BOM	G-001.00
10	Roofing	G-001.01
11	Roofing	G-001.02

	Proposed Panel
	Existing Building
	Fire Streets/Access Path
	Obstruction

LEGEND

SOLAR ELECTRIC GENERATION INSTALLATION ON EXISTING RESIDENCE: 95 Tolland Grn, Tolland, CT 06084-3040, USA

SITE PLAN Scale: 1/8" = 1'-0"

SCOPE OF WORK

SCOPE OF WORK IS SOLICIT FOR THE INSTALLATION OF THE SOLAR ELECTRIC GENERATING SYSTEM. ALL OTHER WORK IS NOT TO BE RELIED UPON AS BEING APPROVED AND/OR PERMITTED BY THE BUILDINGS DEPARTMENT.

NOTES

The existing roof system for this project is as is, with the structural references specified on sheet S-000.00, has been thoroughly analyzed and has been determined to be capable of supporting the loads imposed by the installation of the proposed solar electrical generating system as described in these design documents.

There is no tree, utility line or any other potential hazard that could come into contact with any part of the solar electric generating system.

APPLICABLE CODES

All proposed work shall meet the standards specified in the 2025 Connecticut State Building Codes With The 2023 Connecticut Amendments
2021 International Building Code
2021 International Residential Code
2021 International Energy Conservation Code
2020 National Electrical Code (NFPA 70)
2025 Connecticut State Fire Safety Code
2017 ICC A117.1 Accessible and Usable Buildings & Facilities

Tolland Grn

Front of House

Existing Chimney

Existing Driveway

EXISTING SERVICE PANEL

Existing Main Service Panel Location: Inside

Existing Utility Meter Location: Outside

Proposed Location AC Disconnect: Outside

Proposed Location Production Meter: Outside

Proposed Location Combiner Box: Outside

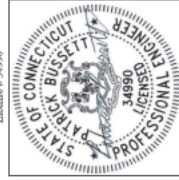
Proposed Micro-Inverters Integrated Solar Panel Installations

Existing Tree (Typ.)

Existing Structure



Patrick Bussett
Venture Solar
67 West 26, Brooklyn, NY 11222
Toll-free: 800.252.4158
License # 3-0950



P.E.R.A. Stamp Signatures

Patrick Bussett
3/2/2024

DOB Stamp Signatures

Patrick Bussett
3/2/2024

SITE PLAN

Z-000.00

Scale: 1/8" = 1'-0"

Page 1 of 9

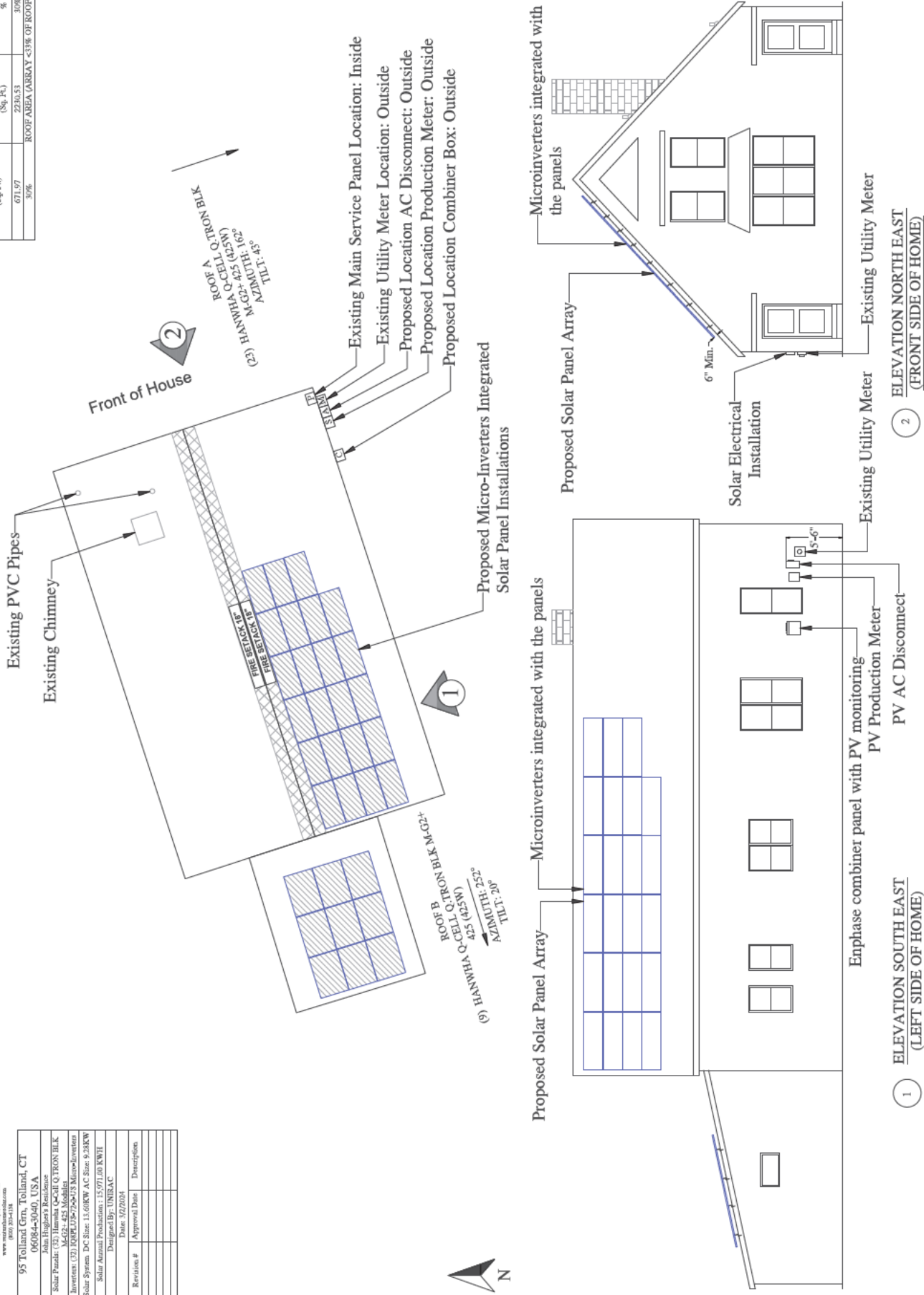
95 Tolland Grn, Tolland, CT	06084-1040, USA
John Hagler's Residence	
Solar Panels: (32) Hanwha Q-Cell Q.TRON BLK M-62+ 451 Modules	
Inverters: (32) KOPF US-7500/13 Micro-Inverters	
Solar System DC Size: 13.60KW AC Size: 9.28KW	
Solar Annual Production: 15,971.00 KWH	
Designed By: UNIRAC	
Date: 3/2/2024	
Revision #	Approval Date Description

SYSTEM LAYOUT

Scale: 3/16" = 1'-0"

ARRAY AREA & ROOF AREA CALC'S		
AREA OF NEW ARRAY (Sq. Ft.)	AREA OF ROOF/PLAN VIEW (Sq. Ft.)	TOTAL ROOF AREA COVERED BY ARRAY %
671.97	2230.53	30%
30%	ROOF AREA (ARRAY <30% OF ROOF AREA)	

ELEVATION LEGEND	
	Vent Pipes 44", 16", 12" Tall
	Vent Box
	Vent Fan
	S Skylight



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Venture Solar
67 West 26, Brooklyn, NY 11222
License # 34980



P.E.R.A. Stamped Signatures
3/2/2024
DOB Stamped Signatures

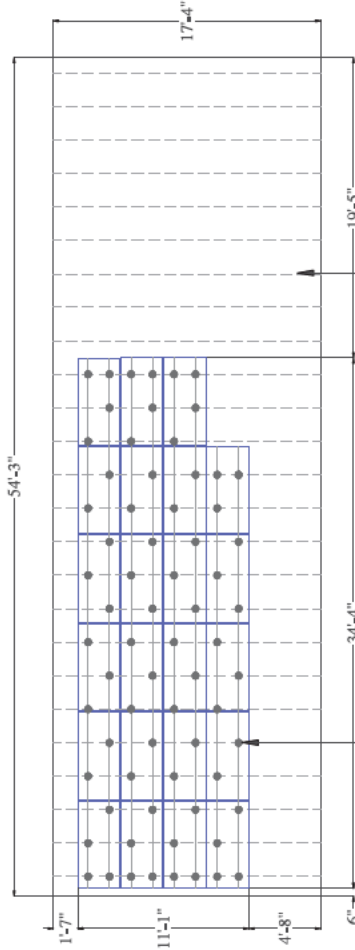
ELEVATIONS, SYSTEM LAYOUT	
A-000.00	Scale: 3/16" = 1'
	Page 2 of 9

95 Tolland Grn, Tolland, CT 06084-3040, USA John Higgins's Residence
Solar Provider: Venture Solar LLC Inverter: (3) LGF110Z-72-2418 Micro-Inverters Solar System DC Size: 13.69KW AC Size: 9.24KW Solar Annual Production: 15,971.00 KWH Designed By: UNIRAC
Date: 3/2/2024
Revision #
Approval Date
Description

UNIRAC PARALLEL STRONGHOLD
ROOF ATTACHMENT

Scale: 67/256" = 1'-0"

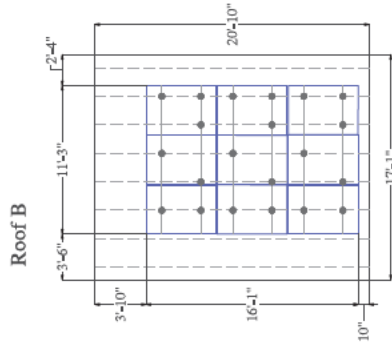
Roof A



Unirac Stronghold Attachments @26" O.C.

2"X6" Rafters @26" O.C.

Acceptable Rail Mounting Area
L-Feet Rail Supports shall be installed at each end of rail and every 26" there after to support all Solar array wind and snow loads. Roof attachments shall be parallel.

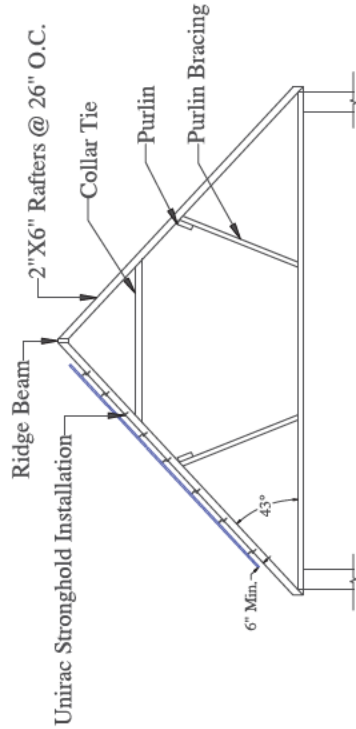


Roof B

ROOF STRUCTURAL DETAILS:

Scale: 1/8" = 1'-0"

ROOF TILT: 43°



The PV modules will be maximum 6" off the roof surface.

LEGEND

Unirac Q-Cell Q-TERRON Solar Panels
RAILS
ATTACHMENTS
RAFTERS

Patrick Baurett
Professional Engineer
67 West St, Brooklyn, NY 11222
License # 34990



P.E.B.A. Baurett's Signature

DOB Stamp/Signature
3/2/2024

DOB Stamp/Signature

RACKING AND LOAD
CALCULATIONS

S-000.00

Scale: SEE SCALE

Page 3 of 9

95 Tolland Gtn, Tolland, CT 06084-3040, USA John Huggins Resilience Solar Panelist, 1000 Main Street, Q-TREN BLK Inverters: (32) IQ8P-L12-72-2-318 Micro-Inverters Solar System DC Size: 13.69KW AC Size: 9.24KW Solar Annual Production: 15,971.00 KWH Designed By: UNIRAC	Date: 3/2/2024	
Revision #	Approval Date	Description

UNIRAC
 BETTER SOLAR STAYS HERE

25
 YEAR
 ANNIVERSARY

DISCOVER YOUR NXT UMount
 The calculation of over two decades of experience. Through design, optimal engineering, and close support, we're a reliable supply chain in the foundation of your solar system. UNIRAC. 800.335.4510

FOR EXISTING OR CUSTOMER SERVICE QUEST UNIRAC.COM OR CALL 800-335-4511

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NXT UMount RAIL

STRONGHOLD INSTALLATION

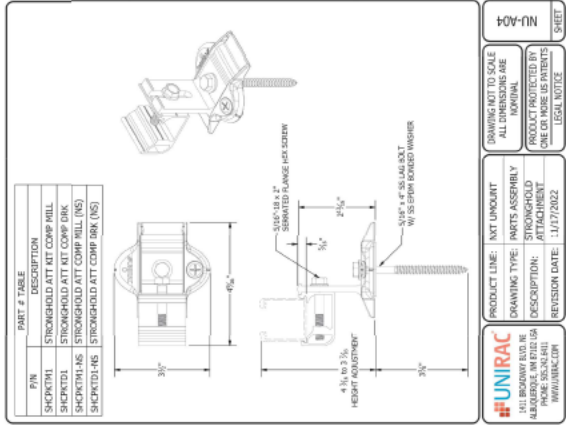
NXT UMount RAILS MAX. SPAN

Maximum Continuous Spliced Rail Length for NXT UMount Rail with Stronghold Attachments (ft.)/Maximum Reaction Force (lbs)

ΔT (°F)	24"	48"	72"
40	67 / 155	94 / 218	117 / 272
50	59 / 171	86 / 250	105 / 305
60	55 / 191	78 / 272	93 / 324
70	51 / 207	70 / 285	81 / 329
80	47 / 218	62 / 288	80 / 372
90	43 / 225	62 / 324	69 / 361
100	43 / 250	54 / 314	64 / 372
120	39 / 272	53 / 369	53 / 369
140	35 / 285	45 / 366	45 / 366

Maximum Continuous Spliced Rail Length for NXT UMount Rail with Flashkit Pro Attachments (ft.)/Maximum Reaction Force (lbs)

ΔT (°F)	24"	48"	72"
40	75 / 139	102 / 239	129 / 371
50	67 / 155	94 / 218	117 / 271
60	63 / 175	86 / 239	105 / 292
70	55 / 178	78 / 253	93 / 302
80	51 / 189	70 / 259	93 / 345
90	51 / 213	70 / 308	81 / 338
100	47 / 218	62 / 287	80 / 371
120	43 / 239	62 / 345	66 / 367
140	39 / 253	54 / 350	57 / 370



COMBINER BOX 4 SPEC-SHEET

IQ Combiner 4/4C	
PRODUCT DESCRIPTION The IQ Combiner 4/4C is a 4-way combiner box designed for use with 4x4 solar panels. It features 4 input terminals, 4 output terminals, and a 4-way output terminal. The combiner box is made of aluminum and is designed to be weather-resistant. It is also designed to be easy to install and maintain. FEATURES 4-way input terminals 4-way output terminals 4-way output terminal - Weather-resistant - Easy to install and maintain TECHNICAL SPECIFICATIONS - Material: Aluminum - Color: Silver - Weight: 1.5 lbs - Dimensions: 4" x 4" x 4" - Input Voltage: 12VDC - Output Voltage: 12VDC - Input Current: 4A - Output Current: 4A - Input Power: 48W - Output Power: 48W	UNIRAC UNIRAC is a leading manufacturer of solar mounting systems. We have been in business for over 25 years and have a proven track record of providing high-quality products and excellent customer service. Our products are designed to be durable, reliable, and easy to install. We are committed to providing our customers with the best possible experience. CONTACT INFORMATION UNIRAC 67 West St., Brooklyn, NY 11222 800.335.4510

INVERTER IQ8 PLUS SPEC-SHEET

IQ8 and IQ8+ Microinverters	
PRODUCT DESCRIPTION The IQ8 and IQ8+ Microinverters are designed for use with 12VDC solar panels. They are designed to be weather-resistant and easy to install. The IQ8+ Microinverter is designed to be used with 12VDC solar panels that have a maximum power of 100W. The IQ8 Microinverter is designed to be used with 12VDC solar panels that have a maximum power of 80W. FEATURES - Weather-resistant - Easy to install - Designed for use with 12VDC solar panels TECHNICAL SPECIFICATIONS - Material: Aluminum - Color: Silver - Weight: 0.5 lbs - Dimensions: 2" x 2" x 2" - Input Voltage: 12VDC - Output Voltage: 12VDC - Input Current: 8A - Output Current: 8A - Input Power: 96W - Output Power: 96W	UNIRAC UNIRAC is a leading manufacturer of solar mounting systems. We have been in business for over 25 years and have a proven track record of providing high-quality products and excellent customer service. Our products are designed to be durable, reliable, and easy to install. We are committed to providing our customers with the best possible experience. CONTACT INFORMATION UNIRAC 67 West St., Brooklyn, NY 11222 800.335.4510

Peter B. Baur
 67 West St., Brooklyn, NY 11222
 License # 34990

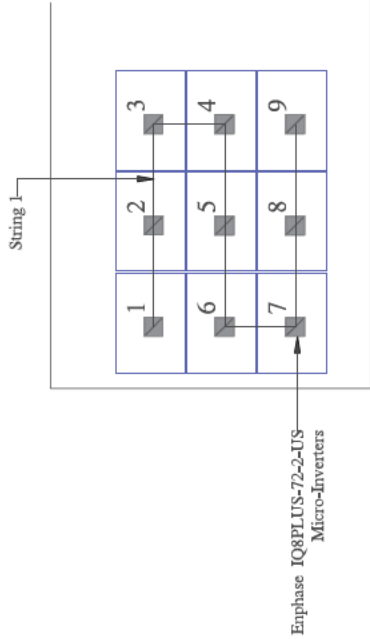


P.E.B.A. Baur
 3/2/2024

DOB Stamp: Signature

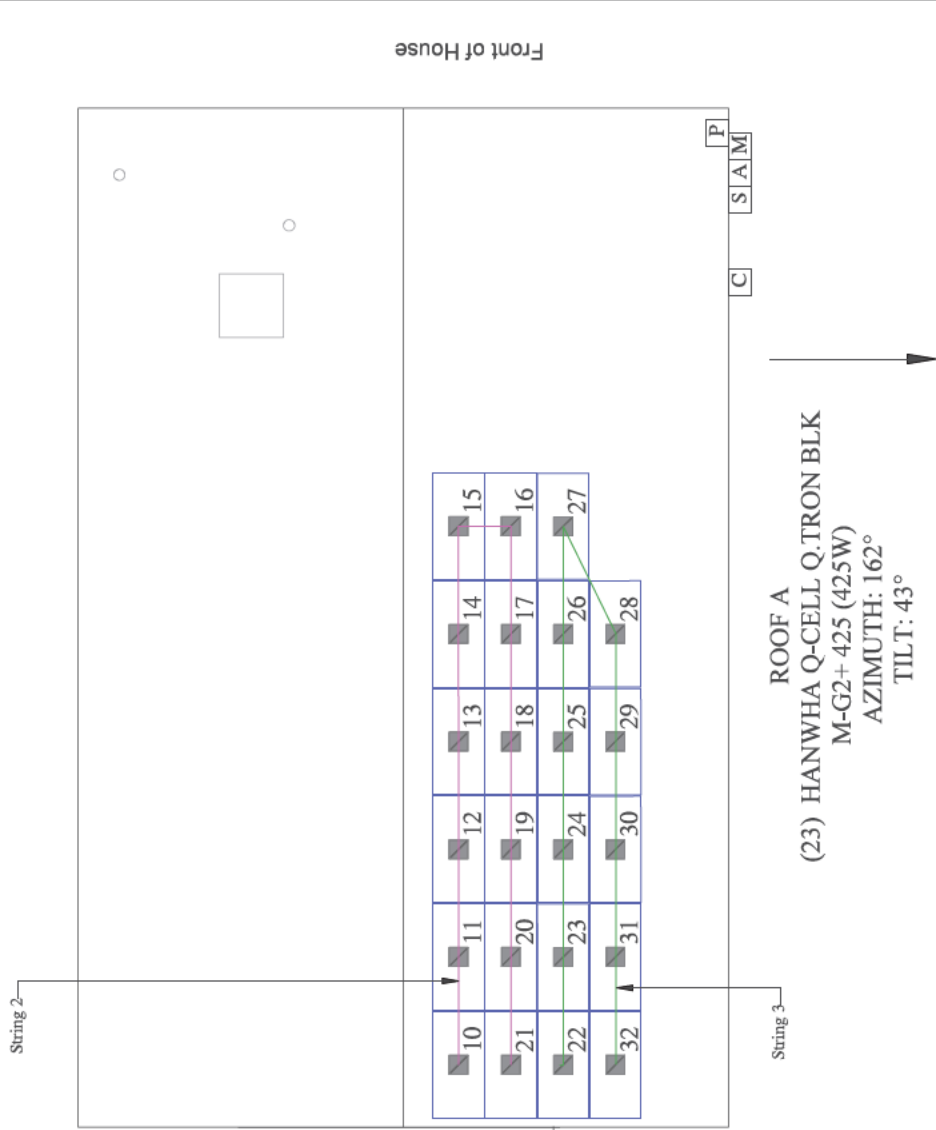
SPREADSHEET
 S-001.00
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 Page 4 of 9

95 Toland Cir, Toland, CT
06084-1040, USA
John Hagler's Residence
Solar Panels: (32) Hanwha Q-Cell Q.TRON BLK
M-G2+ 425 Modules
Inverters: (32) IQ8PLUS-72/2-US Micro-Inverters
Solar System DC Size: 13.60KW AC Size: 9.28KW
Solar Annual Production: 15,971.00 KWH
Designed By: UNIRAC
Date: 3/2/2024
Revisions #
Approval Date
Description



ROOF B
(9) HANWHA Q-CELL Q.TRON BLK M-G2+
425 (425W)

AZIMUTH: 252°
TILT: 20°



ROOF A
(23) HANWHA Q-CELL Q.TRON BLK
M-G2+ 425 (425W)
AZIMUTH: 162°
TILT: 43°



Patrick Buscetti
Venture Solar
67 West 26, Brooklyn, NY 11222
Licenses: E-36960



P.E.R.A. Stamp Signatures

Patrick Buscetti
3/2/2024

DOB Stamp Signatures

3/2/2024

String Diagram

E-000.00

Scale: NTS

Page 6 of 9

95 Tolland Grn, Tolland, CT 06084-1040, USA	
John Hagler's Residence	
Solar Panels: (32) Hanwha Q-Cell Q.TRON BLK	
Inverters: (2) KOPF 157500/18 Mono-Inverters	
Solar System DC Size: 13.60KW AC Size: 9.28KW	
Solar Annual Production: 15,971.00 KWH	
Designed By: UNIRAC	
Date: 3/2/2024	
Revision #	Description

Labels Sheet

String Number	Module Number	Sticker
1	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
2	11	
	12	
	13	
	14	
	15	
	16	
	17	
	18	
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	22	

3	23	
	24	
	25	
	26	
	27	
	28	
	29	
	30	
	31	
	32	

Patrick Buscetti
Venture Solar
67 West 26, Brooklyn, NY 11222
Licenses # 36950



P.E.R.A. Stamped Signatures

Patrick Buscetti

3/2/2024

DOB Stamped Signatures

Label Sheet
E-001.00
Scale: NTS
Page 7 of 9

95 Tolland Gm, Tolland, CT 06084-3040, USA
Solar Panels: 360 Wp, 1800 Wp, 3600 Wp, 7200 Wp, 14400 Wp, 28800 Wp, 57600 Wp, 115200 Wp, 230400 Wp, 460800 Wp, 921600 Wp, 1843200 Wp, 3686400 Wp, 7372800 Wp, 14745600 Wp, 29491200 Wp, 58982400 Wp, 117964800 Wp, 235929600 Wp, 471859200 Wp, 943718400 Wp, 1887436800 Wp, 3774873600 Wp, 7549747200 Wp, 15099494400 Wp, 30198988800 Wp, 60397977600 Wp, 120795955200 Wp, 241591910400 Wp, 483183820800 Wp, 966367641600 Wp, 1932735283200 Wp, 3865470566400 Wp, 7730941132800 Wp, 15461882265600 Wp, 30923764531200 Wp, 61847529062400 Wp, 123695058124800 Wp, 247390116249600 Wp, 494780232499200 Wp, 989560464998400 Wp, 1979120929996800 Wp, 3958241859993600 Wp, 7916483719987200 Wp, 15832967439974400 Wp, 31665934879948800 Wp, 63331869759897600 Wp, 126663739519795200 Wp, 253327479039590400 Wp, 506654958079180800 Wp, 1013309916158361600 Wp, 2026619832316723200 Wp, 4053239664633446400 Wp, 8106479329266892800 Wp, 16212958658533785600 Wp, 32425917317067571200 Wp, 64851834634135142400 Wp, 129703669268270284800 Wp, 259407338536540569600 Wp, 518814677073081139200 Wp, 1037629354146162278400 Wp, 2075258708292324556800 Wp, 4150517416584649113600 Wp, 8301034833169298227200 Wp, 16602069666338596454400 Wp, 33204139332677192908800 Wp, 66408278665354385817600 Wp, 132816557330708771635200 Wp, 265633114661417543270400 Wp, 531266229322835086540800 Wp, 1062532458645670173081600 Wp, 2125064917291340346163200 Wp, 4250129834582680692326400 Wp, 8500259669165361384652800 Wp, 17000519338330722769305600 Wp, 34001038676661445538611200 Wp, 68002077353322891077222400 Wp, 136004154706645782154444800 Wp, 272008309413291564308889600 Wp, 544016618826583128617779200 Wp, 1088033237653166257235558400 Wp, 2176066475306332514471116800 Wp, 4352132950612665028942233600 Wp, 8704265901225330057884467200 Wp, 17408531802450660115768934400 Wp, 34817063604901320231537868800 Wp, 69634127209802640463075737600 Wp, 139268254419605280926151475200 Wp, 278536508839210561852302950400 Wp, 557073017678421123704605900800 Wp, 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95 Tolland Gm, Tolland, CT 06084-3040, USA
John Hughes 95 Tolland Gm, Tolland, CT 06084-3040, USA
Solar Panels: (32) HQRTJ35-72-2-118 Mono-Inverters
Inverters: (32) HQRTJ35-72-2-118 Mono-Inverters
Solar System DC Size: 13.60KW AC Size: 9.20KW
Solar Annual Production: 13,971.00 KWH
Designed By: UNIRAC
Date: 3/22/24
Revisions #
Approval Date
Description

VENTURE SOLAR						
Customer Name	John Hughes					
Customer Address	95 Tolland Gm, Tolland, CT 06084-3040, USA					
Team	UNIRAC					
ROOF		ELECTRICAL				
Description	Qty.	Bar Code	Description	Qty.	Bar Code	
Hanwha 425	32		Enphase IQ Combiner 4	1		
Portrait Q Cable - #Conn	24		Enphase Mobile Connect	1		
Landscape Q Cable- #Conn	14		Enphase IQ7 + Micro	0		
Q Term	3		Enphase IQ7X Micro	0		
Q Seal	6		Eaton 20 A Breaker	3		
Q-Conn 10M	2		IPC - 4/0 - #6 (Taps)	2		
Q-Conn 10F	2		60 A Disconnect	1		
Micro Inverter T Bolt	34		60A Set of Fuses	1		
Wire Restraints	3		100 AMP Disconnect	0		
Ground Lug	4		100A Set of Fuses	0		
Pitched ROOF			125 A Solar Load Center	0		
Strong Hold Box (Qty:20)	4		Square D 100 A Main Breaker	0		
Unirac Rail	22		Square D 20 A Breaker	0		
Unirac Splice	6		Square D 15 A Breaker	0		
Unirac Ends	17		Enphase IQ Envoy	0		
Unirac Mids	4		Enphase IQ7A Micro	0		
Solar Seal	4		Enphase IQ8 Micro	0		
Solar Deck	1		Enphase IQ8+ Micro	32		
Consumption CT x 1Sets	200		Enphase IQ8M/C Micro	0		
Fire and Smoke detector x 1 No	No		Enphase IQ8H Micro	0		
Battery Details						
Manufacturer	Type	Mfr. Part No. & Description			Qty	
Enphase Energy Inc	Battery	Enphase Encharge 10			0	
Enphase Energy Inc	Other	ENCHARGE-10-1P-NA-AC Battery			0	
Enphase Energy Inc	Monitor	COMMS-KIT-01 (Ensemble)			0	
FLAT ROOF						
Chemlink 6" E-curb Kit		CONFIRMATION				
L- Foot Box w/ Nut & Bolt (Qty:24)	0					
4" Stand Off	0					
Unirac Tilt 18 - 30"	0					
Unirac Tilt 26 - 44"	0					
Unirac Tilt 40 - 72"	0					
Silver Unirac Rail	0					
Silver Unirac Splice	0					
Silver Unirac End	0					
Silver Unirac Mid	0					
4" Lag	0					
8"x8"x4" Junction Box	0					
		Procurement Team Signature				
		Crew Foreman Signature				

DOB Stamp/ Signature

BOM

G-001.00

Scale: NTS

Page 9 of 9

95 Tolland Grn, Tolland, CT
06084-3040, USA
Attn: Tigran's Renewable
Solar Panels: Q11-KON BLK
Model: 402L-483 Module
Inverters: (3)21 KWP/2187-72-2-118 Micro-Inverters
Solar System: DC Size: 11.60KW AC Size: 9.20KW
Solar Annual Production: 11,597.100 KWH
Designed By: UNIRAC
Date: 3/22/24
Revisions #
Approval Date
Description

LEFT SIDE OF HOUSE



Petrick Blawie
Venture Solar
67 West St., Brooklyn, NY 11222
License # 34990



P.E.R.A. Stamp Signature
Petrck Blawie

DOB Stamp Signature

ROOM
G-001.02
Scale: NTS
Page 9 of 9

95 Tolland Grn, Tolland, CT 06084-3040, USA			
Attn: Tigran's Associates			
Solar Panels: 10000 Watts Q1-KON BLK			
Inverters: (3) RPT258-72-018 Micro-Inverters			
Solar System DC Size: 13.60KW AC Size: 9.20KW			
Solar Annual Production: 13,971.00 KWH			
Designed By: UNIRAC			
Date: 3/22/24			
Revision #	Approval Date	Description	

BACK OF HOUSE



Patrick Blawie
Venture Solar
67 West St., Brooklyn, NY 11222
License # 34990



P.E.R.A. Stamp Signature
Patrick Blawie

DOB Stamp Signature

BOM
G-001.03
Scale: NTS
Page 9 of 9