

2024

Proposal for Solar Photovoltaic Projects – Mission Springs Water District



STATEN

Prepared By: STATEN SOLAR

6/18/2024

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1. Cover Letter & Executive Summary

1.1 Cover Letter

Mission Springs Water District,
66575 Second Street,
Desert Hot Springs, CA 92240.

Kind Attention: Amanda Lucas

Subject: Proposal for implementation of Solar Photovoltaic power purchase agreement at Mission Springs Water District

Dear Amanda,

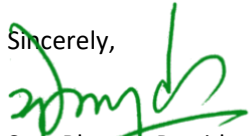
Thanks so much for the opportunity to collaborate with the Mission Springs Water District (“MSWD”) on the Solar PV PPA RFP. Our capabilities align seamlessly with your requirements, and we are confident in our ability to contribute positively to the project's success.

Staten Solar Corporation (“Staten”) is a distinguished developer and EPC contractor specializing in design and installation of Solar, Storage, and EV Chargers projects. As a leading firm based in the Bay Area California, Staten holds Class B, C-10, and C-46 California licenses, demonstrating our commitment to excellence in electrical and solar construction. We have been in business for over fifteen (15) years and have successfully executed numerous projects for both public and private clients with a focus on sustainability, innovation, and environmental responsibility across the length and breadth of California.

We pride ourselves on delivering high-quality projects on schedule and within budget, with a particular emphasis on design build experience, design management, and expertise in Solar PV systems, BESS & Microgrid constructed from the highest quality system components with best-in-class performance, reliability, and warranties.

We have thoroughly reviewed the RFP and all addenda and look forward to meeting the MSWD’s representatives during the interview process where we can provide more information on Staten Solar, answer any questions you may have about our proposal, and start contract negotiations. We will strive to make this project a shining example of sustainable energy innovation.

Sincerely,



Sam Bhanot, President
Staten Solar Corporation
Phone: (408) 480-3137 (mobile)
Email: sb@statensolar.com

1.2 Executive Summary

Staten Solar appreciates the opportunity to work with the Mission Springs Water District (“**MSWD**”) and is very pleased to provide the proposal in response to Solar Photovoltaic Power Purchase Agreement RFP for Design, Installation, Operations, and Maintenance of Solar photovoltaic (PV) systems at various MSWD sites. The proposal includes procurement of materials, permitting, installation, interconnection, and all associated documentation, financing, maintenance, and warranties of Solar PV systems at site.

Here are some key points that we would like to highlight:

- **Dual Developer and EPC role:** Staten is a California General Building (B), Electrical (C-10) and Solar (C-46) contractor and consistent with our trade we deliver high quality construction projects. What sets us apart is that we have in-house capabilities to develop, finance, own and operate these systems. Currently we have several iconic systems owned and operated directly by us such as Lake Tahoe Airport solar, Judicial Council of California (Bay Area) solar and South Tahoe Public Utilities District solar. Having financing, development, construction and Operations and Maintenance (O&M) under one roof uniquely positions us to optimize decisions across the board which cannot be done by a grouping of compartmentalized firms.
- **Water District and Pond Basin experience:** As mentioned above we have been working with the Tahoe Public Utilities district, Fairfield utilities district and several others across the state. As a result, we have had a chance to understand and absorb the unique characteristics of the Districts’ load profile, soil composition and subgrade pipework. We have also done extensive work with the Agricultural community of the Central Valley – and were one of the pioneers of the Levee Mount system to avoid installing in the irrigation pond’s basin.
- **Strong financial backing:** For this project, we will be bringing to the fore one of the nation’s premier Real Estate Management firms with assets under management of over \$45B. We have a long history of collaboration and delivering a smooth and seamless process.
- **Project Design:** We designed the project to maximize the District's benefit by using normalized PPA rates. While some sites offer greater savings than others, the overall package delivers significant cost reductions. For better optimization and production, we evaluated RES-BCT systems both with tracking and fixed-tilt mounting options. The tracking system yields 20% more energy generation capabilities, and better returns. We proposed the tracking system at RES-BCT project site.

If given the opportunity, we will work on project implementation with diligence and rigor.

2. Background

2.1 Company Background – Staten Solar Corporation

[Staten Solar](#) is a leading EPC contractor and developer of solar PV, Storage and EV charger projects. Founded in 2008, with offices in San Jose, California, and New Delhi, India, the company's focus is commercial and utility solar PV applications where it has a combined experience in hundreds of megawatts (MW) of projects from small residential owners to billion-dollar corporations. Customers know that they can trust and count on Staten Solar's innovative design methodologies, electrical know-how, and system expertise, and construction skills to deliver solar PV systems with the highest quality, most reliability, and best long-term value.

Areas of Expertise:

- **Target Markets:** Agriculture, commercial, non-Profit, RV parks, public sector (schools, government, etc.).
- **Project Expertise in the US:** 100 kW to 30MW, commercial rooftop, canopy & carport structures, levee mount, and ground mount arrays.
- **Project Expertise internationally:** 1MW-40MW, commercial rooftop, canal-top, canopy & carport structures, and ground mount arrays.
- **Multi-vendor Offerings:** We work with all key solar modules, inverter, and racking vendors so that we can tailor a solution that best meets your specific budget, site, and business requirements.
- **Key Company Strengths:**
 - Proactive and Innovative: We create long-term customer value by using innovative and cost-effective solutions in project design and construction, financing, and operations and maintenance.
 - Dedicated and Team Oriented: Our employees are driven by their commitment to service and our culture is defined by management's dedication to growth, innovation, responsibility, and integrity.
 - Extensive Technical Expertise & Experience: We have a thorough understanding of the underlying physics of solar and broad experience in all kinds of solar technologies.
 - Focused on Quality and Reliability: We use state-of-the-art design, logistics, construction techniques, global supply chain optimization, and system monitoring to deliver best in class yet cost-effective value.

Product & Solution Innovation: Solar pioneers. Constructed the **World's First Levee Mount Solar Energy system**. Winner of the '[Solar Project of the Year](#)' award and featured in press releases from [Solar Frontier](#) and [Canadian Solar](#).

Organization & Resources:

Staten Solar operates as a California Corporation. Our organization was founded in 2008 under the laws of the state of California. Our organization was formed with a commitment to excellence, integrity, and adherence to all legal and regulatory obligations. Staten Solar is fully committed to complying with all statutory requirements outlined in the RfP document.

Particulars	Information
Legal Name of Proposer	Staten Solar Corporation
Year founded	2008
Federal ID Number	26-2551126
Date of Incorporation/ State	May 02, 2008 / California
State License (CLSB) Number	984910
License Classification (s)	C10, C46 & B
DIR Registration Number	1000046459
Number of Years in Business	16 years
Status (private or publicly held)	Private
Number of Employees	34
Number of Employees in California	25
Authorized Person (s)	Name: Sam Bhanot Title: President & CEO Phone: (408) 480-3137 (mobile) Email: sb@statensolar.com
Corporate Office	175, Nortech Pkwy, Suite 100, San Jose, CA 95134
Local Office	21037, Dumetz Road, Woodland Hills, CA 91364
Contact Details:	Website: www.statensolar.com Office Phone: (408) 780-2889

2.2 Financial Strengths

Staten Solar operates as a privately held corporation and possesses the financial resources necessary to successfully complete this solar project.

Staten Solar collaborates with a large national REIT for providing PPAs and other financing structures to clients (up to \$300M year). We also have construction lines of credit and tax credit offloading mechanisms with a local community bank.

Staten Solar also possesses the necessary Insurance and bonding capacity to obtain all required payment and performance bonds. We hold \$35 million in bonding capacity, further demonstrating our financial commitment to fulfilling contractual obligations. We maintain strong relationships with reputable bonding companies and are confident in securing the necessary bonds within the specified timeframe.

Financial Partner – Bridge Investment Group Holding LLC: [Supporting Financial Statement](#)

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June 17, 2024

Mission Springs Water District,
66575 Second Street,
Desert Hot Springs, CA 92240.

Dear Board of Directors of MSWD,


Bridge Investment Group Holdings LLC ("Bridge", NYSE: BRDG) engages in the real estate investment management business in the United States. We have assets over \$47B under management. As a publicly held company, our financials are publicly available from various sources including our website (<https://www.bridgeig.com/>). Bridge is also actively investing in Renewable Energy projects across the nation through its Renewable Energy Fund.

The Bridge Renewable Energy Fund has been backing Solar projects developed by Staten Solar Corporation in California; and will be happy to support the current MSWD's Solar PV projects should we be given the opportunity. In our engagement model, we provide 100% financing for the project including milestone-based construction financing which adequately supports the project cash needs.

The Bridge Renewable Energy Fund currently has over 20 projects either live or under construction in the C&I solar space, with 13 of those projects sited in California.

We look forward to the conclusion of the RFP process and hope to work with the MSWD on this Project. Should you have any questions, please contact me at adam.haughton@bridgeig.com or (404) 995-8137.

Sincerely,

DocuSigned by:

4072BB7031DE485...

Adam Haughton
CIO
Bridge Renewable Energy

Audited Financial:

Our fiscal year ends on April 30th and this year (2024) we are back to rapid growth - having shaken off the Covid-19 malaise which lasted through FY 2023. These audited financials will be available around June/July and will be the most relevant set of financials MSWD would want to evaluate. We do have complied financials available for FY 2023 (included) and we are happy to get these audited within two weeks if the MSWD prefers.

The **confidential** complied financial is attached at the given link - [Click to get the Financials statement](#)

https://drive.google.com/drive/folders/11JRCmhhLAD18-XcU3zWQWNflpqj2-gkH?usp=drive_link

Bonding & Insurance Capacity:

During a public works project, as a general contractor, Staten requires Performance & Payment bonds from our subcontractors too – whether they be major material suppliers or labor suppliers or both. Our Surety company takes the sum total of these subcontractor supplied Bonds and adds them to our bonding capacity. On a solar and storage project, we have at least 60% of our total bid amount bonded by other subcontractors/suppliers. Given this backdrop, we are confident and comfortable to be able to bond projects that are up to 2.5 times our individual bonding capacity. Based on our pricing of this project, we can easily be bonding the project.

Sr. No.	Particulars	Information
1	Bonding Capacity (aggregate)	\$35M
2	Experience Modification Rate (EMR) (California workers' compensation insurance)	0.79
3	Commercial General Liability Limits	Aggregate – \$ 6,000,000
4	Commercial Automobile Liability Limits	Combined – \$ 1,000,000
5	Professional Liability Limits	Aggregate – \$ 2,000,000
6	Employers' Liability	Aggregate – \$ 3,000,000
7	Excess Liability Insurance	Aggregate – \$ 4,000,000 Each Occurrence – \$ 4,000,000
8	Number or Percentage of employees covered by Workers' Compensation Insurance	Everyone

Note: Staten Solar shall provide and maintain the required commercial general liability and automobile liability insurance as defined in Exhibit D of RFP documents before beginning any work.

2.3 CSLB License, DIR Registration and Insurance Certificate

Contractors State License Board – B (General), C-46 (Solar) & C-10 (Electrical):

Staten holds Class-B, C-10, and C-46 California licenses, demonstrating our commitment to excellence in electrical and solar construction. The copies of certificate of our Contractors State license, DIR registration and Certificate of Insurance are provided below:



DIR Registration:

Contractor Information

Legal Entity Name

STATEN SOLAR

Legal Entity Type

Corporation

Status

Active

Registration Number

1000046459

Registration effective date

7/1/2023

Registration expiration date

6/30/2026

Mailing Address

175 Nortech Pkwy, Suite 100 San Jose 95134 CA United States of...

Physical Address

175 Nortech Pkwy, Suite 100 San Jose 95134 CA United States of...

Email Address

Trade Name/DBA

STATEN SOLAR CORPORATION

License Number(s)

CSLB:984910

CSLB:984910

Registration History

Effective Date

Expiration Date

7/10/2018

6/30/2019

9/22/2017

6/30/2018

2/3/2017

6/30/2017

7/1/2019

6/30/2021

7/1/2021

6/30/2022

7/1/2022

6/30/2023

7/1/2023

6/30/2026

Legal Entity Information

Corporation Number:

Federal Employment Identification

Number:

President Name:

Sandipan Bhanot

Vice President Name:

Treasurer Name:

Secretary Name:

CEO Name:

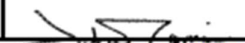
Agent of Service Name:

Staten Solar

Agent of Service Mailing Address:

175 Nortech Pkwy San Jose 95134 CA United States of America

Certificate of Insurance:

Client#: 1811666		STATESOL3		DATE (MM/DD/YYYY) 9/12/2023			
ACORD™ CERTIFICATE OF LIABILITY INSURANCE							
<p>THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.</p> <p>IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer any rights to the certificate holder in lieu of such endorsement(s).</p>							
PRODUCER USI Insurance Services, LLC Lic # 0G11911 333 South Grand Avenue, Suite 1450 Los Angeles, CA 90071			CONTACT NAME: Kelly Lagomarsino PHONE (A/C, No, Ext): 213 337-6400 FAX (A/C, No): E-MAIL ADDRESS: kelly.lagomarsino@usi.com				
INSURED Staten Solar Corporation 175 Nortech Pkwy Suite 100 San Jose, CA 95134			INSURER(S) AFFORDING COVERAGE		NAIC #		
			INSURER A: Colony Insurance Company		39993		
			INSURER B: State Compensation Insurance Fund of CA		35076		
			INSURER C: United Financial Casualty Company		11770		
			INSURER D:				
			INSURER E:				
COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:							
<p>THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.</p>							
INSR LYR	TYPE OF INSURANCE	ADDL INSR	SUBR AVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> BI/PPD Ded: 5,000 GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	X	X	PACES4266580	09/13/2023	09/13/2024	EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$100,000 MED EXP (Any one person) \$5,000 PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$2,000,000 PRODUCTS - COMP/OP AGG \$2,000,000 \$
C	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY			00916102	09/13/2023	03/13/2024	COMBINED SINGLE LIMIT (Ea accident) \$1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$	X	X	EXC4266581	09/13/2023	09/13/2024	EACH OCCURRENCE \$4,000,000 AGGREGATE \$4,000,000 \$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N Y	N/A	92380982023	09/13/2023	09/13/2024	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$1,000,000 E.L. DISEASE - EA EMPLOYEE \$1,000,000 E.L. DISEASE - POLICY LIMIT \$1,000,000
DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)							
Evidence of insurance only.							
CERTIFICATE HOLDER Staten Solar Corporation 175 Nortech Pkwy, Ste., 100 San Jose, CA 95134				CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE 			

2.4 Exhibit C - Public Works Contractor Registration Certification

Public Works Contractor Registration Certification

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or entered into a contract to perform public work must be registered with the Department of Industrial Relations (DIR). See <http://www.dir.ca.gov/Public-Works/PublicWorks.html> for additional information.

No bid will be accepted, nor any contract entered into, without proof of the contractor's and subcontractors' current registration with the DIR to perform public work.

Contractor hereby certifies that it is aware of the registration requirements set forth in Labor Code sections 1725.5 and 1771.1 and is currently registered as a contractor with the DIR.

Name of Contractor: Staten Solar Corporation

DIR Registration Number: 1000046459

Contractor further acknowledges:

1. Contractor shall maintain a current DIR registration for the duration of the project.
2. Contractor shall include the requirements of Labor Code sections 1725.5 and 1771.1 in its contract with subcontractors and ensure that all subcontractors are registered at the time of bid opening and maintain registration status for the duration of the project.
3. Failure to submit this form or comply with any of the above requirements may result in a finding that the bid is non-responsive.

Name of Contractor: Staten Solar Corporation

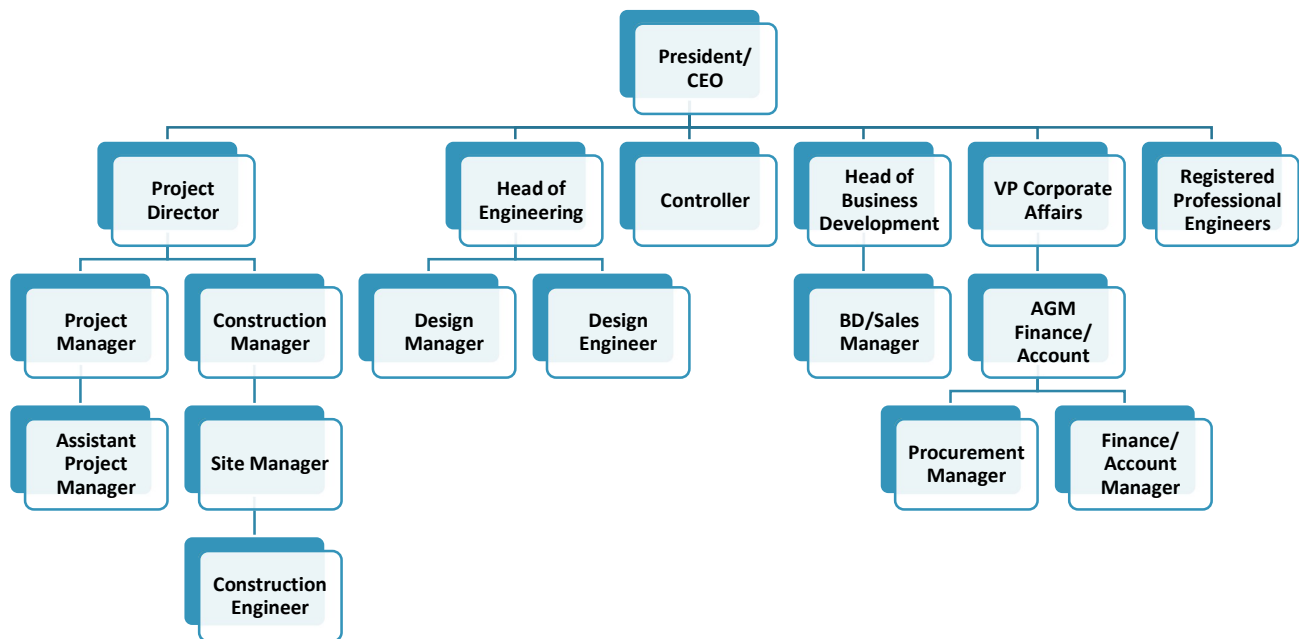
Signature: 

Name and Title: Sandipan Bhanot / President & CEO

Date: June 17, 2024

3. Personnel

3.1 Organization Structure



3.2 Project Management Team

Name	Role	Experience
Sam Bhanot	President	35 years
Mehrdad Jafari	Director of Projects	33 years
Napoleon Leoni	California Professional Engineer (Electrical)	45 years
Gang Xuan	California Professional Engineer (Structural)	18 Years
Raj Kumar	Controller	25 years
Puneet Mathur	Head of Engineering	15 years
Julio Beristain	Construction/Project Manager	20 years

Sam Bhanot, Founder, President

Sam is a licensed CA contractor and has been active in the industry for over 35 years. Under his leadership, Staten has delivered over 200 MWs of complex projects with unique technical challenges and opportunities. Prior to founding Staten in 2008, Sam was the CEO of Knowlent, a semiconductor software company with silicon-valley VC funding and footprint in over a dozen countries. Sam holds an MBA from UC Berkeley and BS in Computer Science from the Indian Institute of Technology.

Mehrdad Jafari, Director of Projects, Registered Professional Engineer in CA

Experienced Civil Engineer with 33 years of demonstrated expertise in commercial and residential development, construction, and real estate. Proven track record of delivering high-profile projects through exceptional project management skills. Proficient in steel structural and reinforced concrete designs using advanced engineering software, with strong capabilities in detailing and CAD-supported drawing.

Napoleon Leoni – Registered Professional Engineer, ELECTRICAL, California

License (PE) Number 24930

As a registered Electrical Professional Engineer of California, Napoleon comes with over 45+ years of combined EPC (Engineering, Procurement and Construction) experience that spans three continents in the world. His profound expertise and industry acumen bring exceptional leadership qualities to the board. Napoleon has extensive experience as a project manager and supervisor in electrical distribution of aerial and control systems. He has led the entire process of revision, budgeting, contracting and administration for about 135 environmental projects in Venezuela. Napoleon has always had a passion for nature and the environment, and from 2017 he has been able to take his diverse skillset and focus them on the solar industry. As the Director of Construction at Staten, Napoleon is responsible for overseeing all aspects of planning, procurement, construction, project management and commissioning of small & large-scale solar projects in California. He leads a project execution team of well-educated professionals to fulfill all the construction commitments. Napoleon has a Bachelors in Electrical Engineering from Universidad Central de Venezuela and a Masters in Control Systems from the Imperial College, London. Napoleon will review and stamp all plan sets for the Project and witness any specialty electrical work that requires an expert witness.

Gang Xuan, Registered Professional Engineer, STRUCTURAL, California

License (PE) Number 6504

As a registered Structural Professional Engineer of California, Gang Xuan, based in the San Francisco Bay Area and registered his civil engineer license (C-80829) to the State of California and subsequently registered his structural engineer license (S-6504) in 2016 to the State. He has been Staten's Structural engineer of record since 2016. Over his 18 years' professional work, the first 6 years (2006-2012) are focused on high-rise buildings, residential

structures, and municipality projects development, and the last 12 years (2012-2024) are quite concentrated in the photovoltaic project structural design development ranging from small residential work (a few KW) to large utility solar farms (at MW level). His expertise includes the solar racking structures including residential use rooftop racking, ground mounted residential solar steel structures, and commercial use steel frame-based carports. Prepare and sign off project design drawings and calculation packages for jurisdiction project permit approval. He focuses includes to a variety of infrastructure facilities with the emphasis on foundation design, pile design, and soil engineering. Structural design includes waterfront piers, ferry terminal, city power plant facility, transmission tower renovation, and residential/commercial office building design. Specific work focuses on deep steel foundation design and inspection for 300 deep piles installation, soil retaining wall and sheet pile installation, concrete/steel/wood structure designs. With a collaborative approach, he bridges technical intricacies with project goals. A proven track record in diverse projects reflects his passion for pushing the boundaries of structural engineering.

Puneet Mathur, Head of Engineering

Seasoned Solar Engineering professional having 15 years of expertise in the areas of solar design. Successfully managed teams of up to 15 engineers to engineer more than 1 Gigawatt of solar energy projects on commercial, industrial, and utility scale. Designed solar power projects for the USA, India, Philippines, and African markets. Puneet holds a BS in Mechanical Engineering from Dronacharya College of Engineering.

Julio Beristain, Construction/Project Manager

Julio has 20+ years' experience in the California construction industry and has delivered numerous solar projects ranging from 100KW up to 1 MW over the last seven years at Staten. Julio will be the designated CM for this project. He consistently demonstrates the time-honored construction code of safety, quality, budget and leads his crews by teaching them. Julio is licensed with OSHA, LG certified, and underwent Electrical Training at Escuela Technica 46-Puebla, México. Julio will be leading the crew onsite.

3.3 Sub-contractor Selection Process

Staten Solar requires all major subcontractors to pass a comprehensive pre-qualification process prior to engagement in services. The pre-qualification process evaluates the subcontractor's statement of qualifications, financial stability, experience, insurance/bonding capabilities, quality and safety standings and procedures, and management background.

The pre-qualification process requires the following:

- Current license in good standing with State License Board.

- Financial stability over the past 3 years
- Have an Experience Modification Rate of 1% or less.
- Experience in solar, electrical, mechanical, or similar trade.
- Signed Non-Disclosure Agreement
- Positive reference check with customers and vendors
- Insurance and Bonding requirements equivalent contact amount.
- Evaluation of safety culture and safety requirements in accordance with ISO standards
- Evaluation of quality processes in accordance with ISO standards

4. Solar PV Project Design and Implementation

4.1 Project Implementation Strategy

4.1.1 Project Implementation Approach

Staten Solar prioritizes a meticulous project management and coordination approach to ensure solar PV system is delivered efficiently on time, and within budget.

Our strategy for managing the construction of the solar projects involves forming a specialized team with expertise in construction, solar energy, and project management. This team consists of experienced Project Manager, Construction Manager, Site Engineers, and Health, Safety, and Environment (HSE) personnel, ensuring comprehensive oversight. The project team of experienced engineers and designers to develop a project plan that optimizes solar energy capture, integrates seamlessly with the existing parking structure.

The Project Manager, with a proven track record in solar projects, will lead the team and be the main client contact while they will focus on technical aspects and quality control. The project team will manage the permitting process, securing all necessary approvals from relevant authorities before construction commences.

The Construction Manager will handle jobsite scheduling and subcontractor management. Our emphasis is on clear communication, regular progress meetings, and the use of project management tools for real-time tracking. We will employ a rigorous safety program to ensure worker and public safety and quality assurance program throughout the construction phase. The construction team will aim to deliver the solar projects efficiently, meeting quality standards and ensuring client satisfaction.

Project Phase	Key Personnel	Responsibilities
Pre-Construction	Project Manager (PM), Engineer, Permitting Specialist	Project planning, securing permits, finalizing design.
Procurement	Procurement Manager	Sourcing materials and equipment, managing vendor contracts.
Construction	Construction Manager, Site Supervisor, Construction Crew (Electricians, Roofers, Laborers), Safety Officer	On-site construction activities, ensuring safety protocols and quality standards.
Commissioning & Testing	Project/Construction Manager, Engineer	System testing, commissioning, and handover to client.

Designing Solar PV Systems Approach

Staten Solar possesses extensive experience designing and implementing solar PV systems for facilities in various stages of development, including those not yet constructed or operational.

We leverage our experience to anticipate potential challenges and provide realistic performance and financial projections for unbuilt facilities. We can adapt our approach based on the availability of data and continuously refine our modeling techniques to ensure accuracy.

- **Facility Plans and Specifications:** Access to architectural drawings, blueprints, or planned square footage is essential. This allows us to estimate roof/parking area suitability and potential solar panel layout.
- **Energy Consumption Goals:** Understanding desired energy usage reduction or self-consumption targets helps us optimize system design.
- **Location-Specific Solar Irradiation:** We factor in historical and projected solar radiation data for specific location to estimate potential energy generation.
- **Preliminary System Design:** Based on initial facility plans, we can model a preliminary solar system design to estimate potential energy generation and optimize panel layout.
- **Shading Analysis:** We consider potential shading from surrounding structures or trees to ensure accurate production estimates.
- **Weather Patterns:** Local weather patterns are factored into account for potential variations in production throughout the year.
- **Projected Solar Energy Production:** Based on PVSyst modeling, we estimate how much solar energy system can generate annually.
- **Financing Options:** We explore various financing options to find the most suitable solution for the project.
- **Payback Period Analysis:** We analyze the timeframe for initial investment to be recovered through electricity cost savings.

Permitting Cost Approach:

Staten Solar acknowledges the inherent challenges in predicting permit costs and timelines. To address this, we leverage our extensive experience and positive relationships with local authorities (AHJs). This allows us to factor in typical building and electrical permit costs within our initial project proposal, providing you with an approximate total price.

To ensure a smooth experience, we dedicate a Project Management and Operations (PMO) team to oversee the entire process, supported by our legal team. Our team boasts decades of experience securing all necessary permits, state, and federal environmental permits, and even glare study approvals. Furthermore, we collaborate with a



network of national, regional, and local consultants specializing in planning, engineering, environment, and urban planning. These experts ensure all required documentation is prepared efficiently. Their services encompass the entire project lifecycle, from initial feasibility studies to ongoing maintenance. By partnering with Staten Solar, you can be confident that your project will receive the necessary permits efficiently and avoid delays.

However, there is a possibility that final permit costs might exceed our initial estimates after submitting the complete permit application package. In such a scenario, we will transparently communicate any additional permitting fees or required upgrades before proceeding.

By incorporating this approach, we aim to provide an upfront and transparent cost estimate while safeguarding against unforeseen permitting contingencies.

Project Management and Coordination for Solar PV Projects:

Staten Solar prioritizes a meticulous project management and coordination approach to ensure solar PV system is delivered efficiently on time, and within budget.

Pre-Construction Phase: The Project Manager, with a proven track record in solar projects, will lead the team and be the main client contact while they will focus on technical aspects and quality control.

- **Project Kick-off Meeting:** We initiate the project with a collaborative meeting to discuss the goals, expectations, and timeline. We will establish clear communication channels and assign dedicated points of contact for the project.
- **Detailed System Design and Engineering:** Our engineering team will develop a comprehensive system design using industry-standard software and considering factors like roof suitability, shading analysis, and local building codes.
- **Permitting and Approvals:** We handle all necessary permitting applications and coordination with local authorities to ensure smooth project approval.
- **Procurement:** Our experienced procurement team secures high-quality material and equipment and manages the entire supply chain to avoid delays.
- **Fund Sourcing:** We maintain a transparent budget from our financial partners and provide regular cost updates throughout the project.

Construction Phase: The Construction Manager will handle jobsite scheduling and subcontractor management. Our emphasis is on clear communication, regular progress meetings, and the use of project management tools for real-time tracking. Our Subcontractor shall also hold a valid California Contractors State License and register with California workers' compensation insurance and maintain an Experience Modification Rate (EMR) less than or equal to 1.

- **Experienced Installation Crew:** Staten Solar employs a team of highly skilled and certified installers who prioritize safety and quality workmanship. The proposed team should include the following members: Experienced Supervisor, OSHA certified electrician to lead the DC team, electricians as helpers of the DC & AC, apprentice/helper to electrician for AC & DC each.
- **Project Management:** We utilize project management software to track progress, manage tasks, and facilitate seamless communication. Regular site meetings ensure everyone is on the same page.
- **Quality Control and Inspections:** We conduct rigorous inspections at every stage to ensure the system meets all engineering specifications and safety standards. We comply with the Federal Occupational Safety and Health Administration (OSHA) and applicable state OSHA Requirements.

Post-Construction Phase:

- **System Commissioning and Performance Testing:** Upon completion, our team tests the system to verify optimal performance. We provide detailed operational and maintenance instructions.
- **Grid Interconnection and Net Metering Setup:** We facilitate the interconnection process with utility company and ensure net metering is set up correctly for maximum financial benefit.
- **Monitoring and Performance Reporting:** We provide ongoing system monitoring and generate regular performance reports to track energy production and identify any potential issues.
- **Warranty Support and Long-Term Service:** Staten Solar offers comprehensive warranty support and remains your trusted partner for long-term maintenance and service needs.

Interconnection Cost approach:

Interconnection costs can be a significant variable in solar PV project budgets. However, it can be forecasted based on proper planning, better design, detailed engineering analysis, utility requirements and correct application submission process. During the pre-project evaluation, we will conduct a preliminary assessment of potential interconnection costs.

Most solar and storage systems connect to the local utility grid. This requires a study by the utility to ensure their grid can handle the additional power from the system. Since most systems rely on the grid, the utility needs to assess their network's capacity to handle the additional power the project generates. It takes, typically takes 4-6 months, and is usually managed by Staten Solar. The utility will then determine if the project can proceed as planned, requires upgrades to their grid, or might necessitate adjustments to the system design before granting approval.

Any associated upgrade costs will be provided by the utility at this stage. While we cannot guarantee upfront that there would not be interconnection upgrade costs, we often factor in allowances for such possibilities within our



contracts to minimize surprises. Our team of experienced, licensed engineers and interconnection specialists will work diligently to navigate any utility-related hurdles and achieve the best outcome for the project.

By partnering with Staten Solar, you can ensure a smooth interconnection process with your utility, avoiding delays and keeping you informed throughout the journey.

The following approach will help to simplify this process.

- **Utility Coordination:** We initiate early communication with local utility to gather information on their interconnection procedures and cost estimation methodologies.
- **System Size and Complexity:** We consider the size and complexity of the proposed solar PV system, as these factors can influence interconnection requirements and costs.
- **Historical Data Analysis:** We try to gather historical data on interconnection costs for similar projects in similar utility areas. We will factor that into our estimates.
- **Interconnection Feasibility Study:** Working with utility, we may commission a feasibility study to assess potential interconnection points, grid upgrades required, and associated costs.
- **Open Communication:** We maintain open communication throughout the interconnection process. We will keep informed of any updates from the utility to ensure transparency.

4.2.2 Testing and Commissioning Procedure & Sample Formats

Staten Solar will ensure a thorough and efficient testing and commissioning process for the Solar PV System, adhering to the requirements of industry best practices. We will develop a comprehensive test plan for successfully commissioning of the project requirements. This plan will detail the specific tests to be conducted, the equipment used, the personnel involved, and the acceptance criteria for each test.

Test Procedures: The following procedures outline the systems and steps needed to meet the requirements required when commissioning the PV system.

General

- Record name of commissioning agent
- Record time and date of commissioning.
- Record weather at time of commissioning.
 - Irradiance
 - Cloud Cover
 - Ambient Temp

➤ Cell Temp

- Take digital photos of all installed equipment.
- Verify that all debris has been removed from area around array.

Array

- Check and record the electrical connection between the ground and the conductive surface of the PV modules. If less than 1 ohm, connection is good.
- Check that noncurrent carrying metal parts are grounded properly (array frames, metal boxes, etc.)
- Check and confirm as built array layouts.
- Check conduit connections.
- Check mounting hardware conditions.
- Check for corrosion.
- Check all wire management is neat and well supported.
- Check for cracked modules or hotspots.
- Check that the solar modules are properly secured to the mounting system.

Combiner Boxes

- Check and verify both the positive and negative string connectors are identified properly with permanent wire marking.
- Check and record Voc of each source circuit string.
- Check and record Imp of each source circuit string.
- Check for water intrusion.
- Check fuse continuity.
- Check strings are torqued correctly.
- Check combiner box is correctly labeled and identified per NEC and local AHJ.
- Record combiner box serial numbers, manufacturer, model number and NEMA rating.
- Record combiner box source circuit conductor size and type.
- Record combiner box output circuit conductor size and type.
- Record what combiner box poles are in use in each combiner box.
- Check combiner box and other enclosures for scratches to paint.
- Check combiner box and other enclosures to ensure incoming conduits are sealed.

AC/DC Disconnect Switches

- Record disconnects switch manufacturer, model number, and NEMA rating.

- Check and record the AC voltages at the AC utility disconnect.
- Check and record the DC voltages at the DC disconnect.
- Check for water intrusion.
- Check and record fuse size and fuse rating.
- Check fuse continuity.
- Check disconnect is correctly labeled per NEC and local AHJ.

AC Switchboard

- Record switchboard manufacturer, model number, and NEMA rating.
- Check and record the AC Voltage and Current Ratings
- Check the record the AC Voltage and Current Ratings of any branch breakers.
- Check for water intrusion.
- Check for any visible damage or corrosion.
- Check that switchboard is correctly labeled per NEC and local AHJ.

Inverter

- Follow manufacturers start up protocol.
- Check and record fuse size and fuse rating.
- Check fuse continuity.
- Record and document inverter serial number.
- Record DC operating voltage.
- Record AC operating voltage.
- Check conductor termination torque values.

Inverter Operation

- Startup inverter per manufacturers protocol
- Verify fan operation.
- Verify that inverter counts down and connects to grid.
- Open ungrounded AC conductors feeding inverter at a remote disconnect or breaker.
- Verify that inverter ceases to operate and stops exporting power at output terminals.
- Close ungrounded AC conductors feeding inverter from remote disconnect or breaker.
- Verify that inverter counts down and reconnects with the grid.

Sample Commissioning Checklist Format:

Commissioning Checklist		Date of Service:						Notes
		Name of Inspector:						
#	Description	Status			Picture Information			
		Completed & Accepted	Completed & NOT Accepted	Not Completed	N/A	Picture Taken	Picture ID	
Racking and Components								
1	Visual inspection of array and racking components							
2	Visual inspection of ALL modules							
3	Visual inspection of roof penetrations							
4	Continuity test of racking components to ground							
5	Random torque test of racking hardware							
6	Check for any abnormal movement of racking system							
AC Load Center								
7	Combiner box inspection (water, debris, connections, etc.)							
8	Combiner box torque							
9	Source circuit VOC							
10	Source circuit Imp							
11	Complete combiner box data sheets							
12	IR image of all combiner boxes							
13	Total number of combiner boxes (list in notes)							
AC Disconnect								
14	Disconnect inspection (water, debris, connections, etc.)							
15	Disconnect torque							
16	Confirm proper operation of disconnect							
17	Complete disconnect data sheets							
18	IR image of all disconnects							
19	Total number of disconnects (list in notes)							
Sub-Combiner								
20	Sub-combiner box inspection (water, debris, connections, etc.)	n/a				n/a		n/a
21	Sub-combiner torque	n/a				n/a		n/a
22	Complete sub-combiner data sheets	n/a				n/a		n/a
23	IR image of all sub-combiners	n/a				n/a		n/a
24	Total number of sub-combiners (list in notes)	n/a				n/a		n/a
Pull-Box Inspection								
25	Inspection of all major pull boxes (water, debris, connections, etc.)							
26	Verify any splices made inside box are in good condition (visual only)							
27	Verify the lids of all boxes are secure after inspection							
Source Circuit Inspection								
28	Random visual inspection of source circuit wiring							
29	Random visual inspection of field made MC connections							
30	Random visual inspection of source circuit strapping							
Rooftop Conduits								
31	Random inspection of rooftop conduit connections for tightness (2%)							
32	Visual inspection of rooftop conduits and supports							
Inverter								
33	Visual inspection of all inverter components							
34	Completion of all manufacturers required commissioning tasks							
35	Complete inverter data sheets							
36	Torque of all components							
AC Switchboard (only perform if power is completely down inside cabinet)								
37	Inspect cabinet for wiring conditions							
38	Torque terminations on breakers							
Utility Disconnect								
39	Utility disconnect inspection (water, debris, connections, etc.)							
40	Disconnect torque							
41	Confirm proper operation of disconnect							
42	Complete disconnect data sheets							
43	IR Image of all disconnects							
44	Total number of disconnects (list in notes)							
DAS (Monitoring system)								
45	Visual inspection of DAS box							
46	Visual inspection of meteorological stations							
47	Complete DAS data sheet							
Final Checks								
48	All customer required paperwork is completed							
49	All data sheets completed							
50	Complete picture list							
51	Complete equipment checklist (all fuse holders and boxes are closed)							
52	List all downed circuits found (list in notes)							
General Notes								
Array is very dirty from construction debris and dirt.								

Inverter Commissioning Checklist:

Inverter Commissioning Datasheet										Technician:		Date:								
General Information	Site:				Box Condition		Corrosion present:													
	Manufacturer:						Protective finish condition:													
	Model #:						Debris inside box:													
	Serial #:						Water Intrusion:													
	Field #:						Mounting hardware condition:													
				Polarity: +		Conduit connection condition:														
DC Side	Voc:		Circuit #		Size		Type		Material		Voc		Imp		Polarity		Fuse Vdc		Trq. Chk	
	Vmp:		Input 1																	
	Imp:		Input 2																	
AC Side	Voltage:		Input 3																	
	Current:		Input 4																	
	Power (W):		Input 5																	
IR #		Input 6																		
Notes			Input 7																	
			Input 8																	
			GND																	
			Output																	
			GND																	
Inspection																			Initials	
Torque and inspect all wiring terminations.																				
Clean inverter enclosure and heat sinks.																				
Requirements																			Initials	
The circuit breaker must be correctly rated																				
A means of disconnecting the inverter from the PV array must be present																				
The inverter must be correctly mounted and closed																				
All cables must be correctly connected to the terminals																				
Unused openings for the DC connection in the inverter enclosure must be closed with UL-Listed type 3R filler																				
Unused opening for the Ethernet connection or the communication connection in the inverter enclosure must be sealed tightly																				
MECHANICAL CHECKS																			Initials	
Make sure cable glands are mounted properly and solidly fixed to the inverter's chassis.																				
Fasten the inverter's front panel.																				
NOTES:																				

AC Load Center Checklist:

AC Load Center										Technician:		Date:	
General Information	Site:				Box Condition		Corrosion Present:						
	Manufacturer:						Protective Finish Condition:						
	Model #:						Debris Inside Box:						
	Field #:		NEMA Rating: 3R				Water Intrusion:						
	On-Site Location:						Mounting Hardware Condition:						
IR Image#:				Conduit Connection Condition:									
Circuit #	Conductor Size	Conductor Type	Conductor	EG Conductor Size	EG Conductor Type	EG Conductor Material	Breaker Size	Breaker AIC	Trq. Chk.				
LOAD													
INV #1													
INV #2													
INV #3													
INV #4													
INV #5													
INV #6													
Torque Values		Ratings				Conduit							
Line Side:	lbs./in.	Fuse Rating:		A	V	Size	Type	# of Conductors	Conductor Size	Qty.			
Load Side:	lbs./in.	Disconnect Rating:		A	V								
NOTES						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							

4.1.3 Operation and Maintenance Approach

Staten Solar aims to ensure the optimal performance and longevity of the PV system(s) through regular and meticulous maintenance. We emphasized and ensured the solar system operates efficiently and delivers clean energy for years to come. We deploy our in-house dedicated O&M team (or subcontractor if required) consisting of qualified technicians with experience in solar system maintenance.

O&M Service Personnel:

We will assign a dedicated O&M team (if Sub-contractor required for this activity, we will intimate before the start of O&M period) comprised of qualified technicians with experience in solar system maintenance. The team will include:

- **O&M Manager:** Oversees the overall O&M program and ensures compliance with industry standards.
- **Field Technicians:** Perform on-site inspections, maintenance tasks, and troubleshooting.
- **Electrical Engineers:** Provide technical expertise for diagnosing and resolving complex electrical issues.

Our operation and maintenance program encompassing the following:

a) PV Module & Inverter Cleaning:

- Staten Solar will conduct Annually (1 time in a year) cleaning of all PV modules to remove dust, dirt, and debris, ensuring maximum energy production.
- Staten Solar will use compressed air to clean inverter fans, preventing overheating and ensuring optimal performance.
- Visual inspections will be performed to identify any visible damage, and findings will be documented for your review.
- **Frequency of Service – Annually (1 Time in a year)**

b) Inspection of Connections and Terminals:

- Our team will perform a detailed inspection of electrical connections and terminals on Annual basis (1 time in a year).
- Any loose or damaged connections will be addressed promptly, and a comprehensive report, including recommendations, will be provided.
- **Frequency of Service – Annual (1 Time in a year)**

c) Corrective Maintenance:

- Prompt diagnosis and repair of any system malfunctions to minimize downtime and ensure efficient operation.

- Continuous monitoring of system performance through a monitoring system to identify any performance issues and optimize energy production. This data will include:
 - Daily, weekly, monthly, and annual energy production (kWh)
 - System efficiency metrics
 - Performance ratio (PR)

d) Work Report Status:

- After each maintenance visit, Staten Solar will provide a detailed work status report.
- Reports will include a summary of maintenance activities, any identified issues, corrective actions taken, and overall system health.
- Annual report of system performance and all maintenance performed on the system (Preventative, Corrective and Reactive, Warranty-related, or otherwise).
- **Frequency of Service – After each maintenance visit and as needed for significant findings.**

Services	Frequency
Module Washing	Annually
Vegetation Management	Annually (if required)
Pest Control	Annually
Required manufacturers inspections, testing and routine service	As per requirement
Corrective and Reactive Maintenance	As per requirement
Warranty Administration	As per requirement
Visual Inspections <ul style="list-style-type: none"> ➤ Identify any new shading concerns. ➤ Ensure penetrations are watertight where applicable. ➤ Confirm electrical enclosures are secured with locks and have restricted access. ➤ Check and document any corrosion issues. ➤ Check for loose hanging wires. ➤ Inspect equipment pads for cracking and wear. ➤ Inspect PV modules for defects (burn marks, discoloration, delamination, or cracked glass) ➤ Inspect racking system for rust, corrosion, sagging, missing or broken clips or bolts. ➤ Inspect conduits for proper support and expansion joints where necessary. ➤ Open combiner boxes and check torque marks on lugs. ➤ Open disconnects and inspect for corrosion or damage. ➤ Inspect all combiner boxes and disconnects for water ingress and debris, seal and clean where necessary. 	Annually

<ul style="list-style-type: none"> ➤ Inspect inverter interior and exterior for water ingress rodent, pests, dust intrusion, and torque settings. ➤ Verify weather sensor placements and cleanliness. 	
Testing <ul style="list-style-type: none"> ➤ Verify torque settings for major equipment (structures, inverters, modules, BOS) ➤ Voltage and current testing at inverters and string level. ➤ Sensor calibration 	Annually

Solar String Inverter Replacement Plan:

- The warranty on the proposed inverter is 10 Years and can be extended up to 20 Years.
- We evaluate the current inverter performance, age, and warranty status. Identify any warning signs or performance decline.
- After research compatible replacement inverters considering factors like power output, efficiency, warranty, and future needs.
- Analyze and estimate replacement cost (inverter, labor, permits) and schedule installation during optimal weather conditions to minimize production loss.
- Consider upgrading to a monitoring system for proactive maintenance and potential future system expansion.

Extended Maintenance Plans:

We also offer optional extended maintenance plans that provide comprehensive coverage beyond the manufacturer's warranty. It includes:

- More frequent preventative maintenance inspections.
- Priority service response times.
- Discounted rates on repairs and replacements.

4.1.4 Preliminary Project Schedule

The table below shows our High-Level critical path schedule. Many details have been omitted for ease of use and appropriate abstraction. We may address them during the interview or after signing the Contract – for example the details of construction steps or permitting steps, Geotech studies and so on. But please rest assured that this schedule is based on our years of experience and is the one we will commit to.

Preliminary Project Schedule			
Task ID	Task Name	Duration	Finish
1	Notice to Proceed (NTP)	0 Weeks	31-Jul-24
2	30% Design	2 Weeks	14-Aug-24
3	100% Design/ Submit for Permit	10 Weeks	23-Oct-24
4	Permit Received	16 Weeks	12-Feb-25
5	Material on Site	8 Weeks	9-Apr-25
6	Installation Start	2 Weeks	23-Apr-25
7	Mechanical Installation Complete	16 Weeks	13-Aug-25
8	Substantial Completion	5 Weeks	17-Sep-25
9	PTO	4 Weeks	15-Oct-25
10	Final Completion	4 Weeks	12-Nov-25

4.1.5 Safety Plan

Staten Solar is committed to providing safe and healthy work environments for all personnel involved in the solar PV system project. Staten Solar has their own policy to monitor and manage the safety at the project site during construction and maintenance phase. The policy promotes a safe workplace, free from hazards for all employees, contractors/subcontractors, and the public. This program shall provide directions to implement safety requirements and achieve compliance with the Federal Occupational Safety and Health Administration (OSHA) and applicable state OSHA Requirements.

Please refer the link to access the policy – [Click to get the Safety at Staten Solar Policy.](#)

https://drive.google.com/file/d/1CPxUNCuz2QxZ1RDU2ZnYViM8Mesr2EFI/view?usp=drive_link

Staten Solar's EHS policy emphasizes the following principles:

- **Safety First:** We believe that all incidents are preventable, and we are committed to continuously improving our safety performance.
- **Compliance:** We comply with all applicable local, state, and federal EHS laws, regulations, and standards.
- **Risk Management:** We identify and assess potential hazards and implement effective controls to mitigate them.
- **Continuous Improvement:** We strive to continually improve our EHS programs and procedures through regular reviews and inspections.
- **Communication and Training:** We effectively communicate EHS expectations and provide comprehensive training to all personnel.

Experience Modification Rate (EMR) (California workers' compensation insurance)	0.79
Any OSHA (Occupational Health and Safety Administration) Violation or Fine	No

Signage and Fencing Examples:



4.2 System Design

4.2.1 System Layouts and Design Parameters

Design Concept and Layout: Staten Solar possesses extensive experience designing and implementing solar PV systems for facilities in various stages of development. We are confident in our ability to contribute positively to the project's success and our capabilities align seamlessly with your requirements and make it a strong partner for the District. Staten Solar has been installing projects for the C&I and government sector for 15 years. We have successfully deployed solar PV systems, BESS & Microgrid constructed from the highest quality system components with best-in-class performance, reliability, and warranties in United State. Our proven experience guarantees high-quality, customer-oriented service from project inception through construction and operation. Staten Solar prioritizes approach to ensure solar PV system is delivered efficiently on time, and within budget.

Building upon the District's initial concept and leveraging our expertise, we have developed a refined design concept and layout that optimizes energy production, minimizes land use, orientation of the panels to maximize sunlight capture throughout the year and aligns with the district's technical requirements. We optimized the layout and orientation of the panels to maximize sunlight capture throughout the year. The summary of the proposed system is described below. The System layout for the project can be seen in [Appendix A](#).

Solar PV System Design - Parameters:

Sr. No.	Site Name	Proposed System	Proposed System Size	Proposed System Size	Estimated Annual Energy Production	Footprint of Proposed Module System	Specific Production
		Type	(kW-DC)	(kW-AC)	(in kWh)	(Sq-feet)	(kWh/kWp/Year)
1	Horton WWTP	GM - Fixed	388.30	350.00	783,879	19,634	2,019
2	Well 24	GM - Fixed	183.70	160.00	371,147	9,289	2,020
3	Well 27	GM - Fixed	334.40	300.00	676,618	16,910	2,023
4	Well 29	GM - Fixed	203.50	170.00	408,647	10,290	2,008
5	Well 32 and Booster Station	GM - Fixed	426.80	400.00	864,449	21,582	2,025
6	Nancy Wright Regional Water Reclamation	GM - Fixed	388.30	360.00	783,447	19,634	2,018
7	Little Morongo RES-BCT	GM – 1P Tracker	2,159.30	2,000.00	5,261,364	109,168	2,437
	Total		4,084.30	3,740.00	9,149,551	206,507	2,240

Solar PV System Design Parameters:

Sr. No.	Site Name	Estimated Capacity Factor	PR (%)	Tilt Angle	Azimuth Angle	DC/AC Ratio
		(%)	(%)	Degree	Degree	
1	Horton WWTP	23.05%	82.09%	20 °	180 °	1.11
2	Well 24	23.06%	82.18%	20 °	174 °	1.15
3	Well 27	23.10%	82.28%	20 °	180 °	1.11
4	Well 29	22.92%	81.65%	20 °	180 °	1.20
5	Well 32 and Booster Station	23.12%	82.36%	20 °	180 °	1.07
6	Nancy Wright Regional Water Reclamation	23.03%	82.04%	20 °	180 °	1.08
7	Little Morongo RES-BCT	27.82%	78.13%	+60°/ -60°	180 °	1.08
	Total	25.57%	81.53%			1.09

Site/System Layout & Energy Simulation (PVSyst Reports) Details:

Sr. No.	Site Name	System Layout (Click on the below Link for quick reference)	PVSyst Simulation Report (Click on the below Link for quick reference)
1	Horton WWTP	Click to get System Layout	Click to get PVSyst Report
2	Well 24	Click to get System Layout	Click to get PVSyst Report
3	Well 27	Click to get System Layout	Click to get PVSyst Report
4	Well 29	Click to get System Layout	Click to get PVSyst Report
5	Well 32 and Booster Station	Click to get System Layout	Click to get PVSyst Report
6	Nancy Wright Regional Water Reclamation	Click to get System Layout	Click to get PVSyst Report
7	Little Morongo RES-BCT	Click to get System Layout	Click to get PVSyst Report

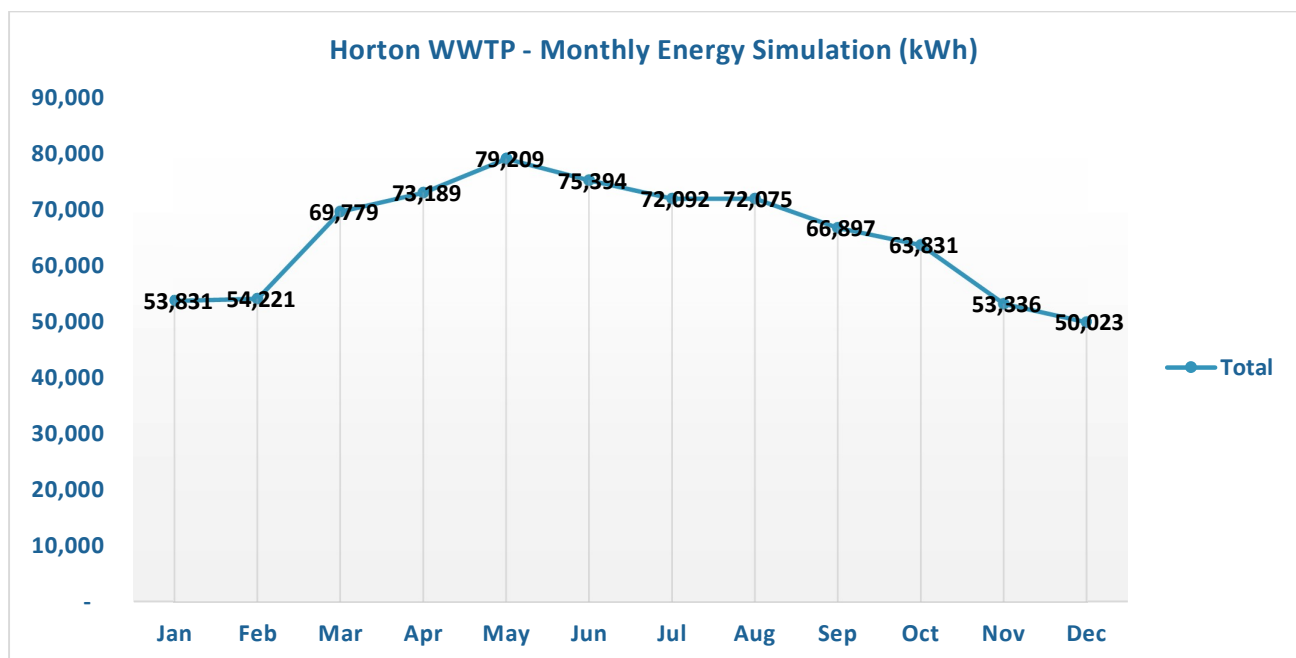
Solar Production Modelling:

Staten Solar provides highly accurate PV performance modelling simulations using PVSyst, an industry-standard tool known for its user-friendly interface and regular updates.

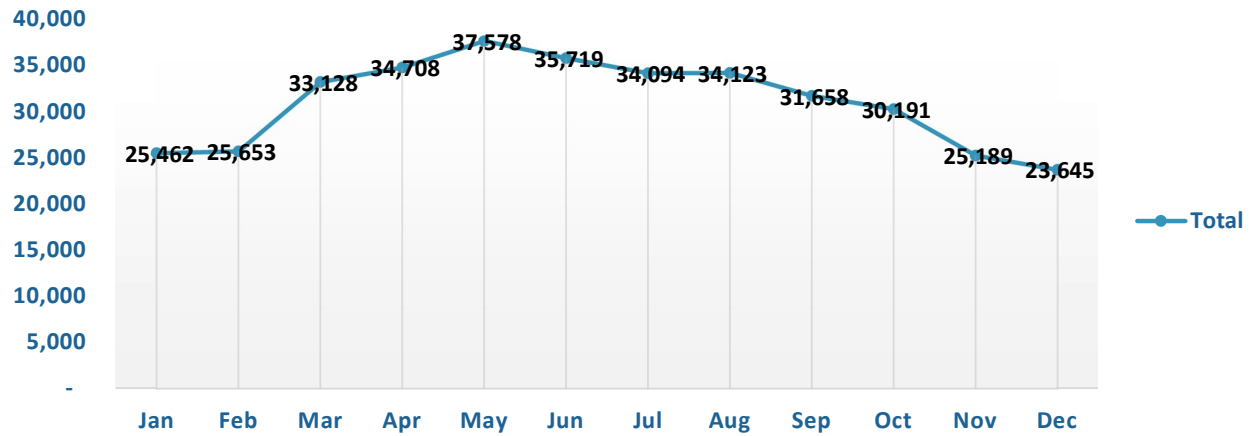
PVSyst helps design engineers produce reliable production reports. Our Engineering team is available to discuss findings at any time upon request. Solar power simulations are critical for determining the total value of a solar technology, which is why accurate data inputs are essential.

Our models consider various loss factors like soiling, IAM, temperature effects, low light conditions, wiring losses, degradation, and mismatch losses. These factors are based on historical production data relevant to your project.

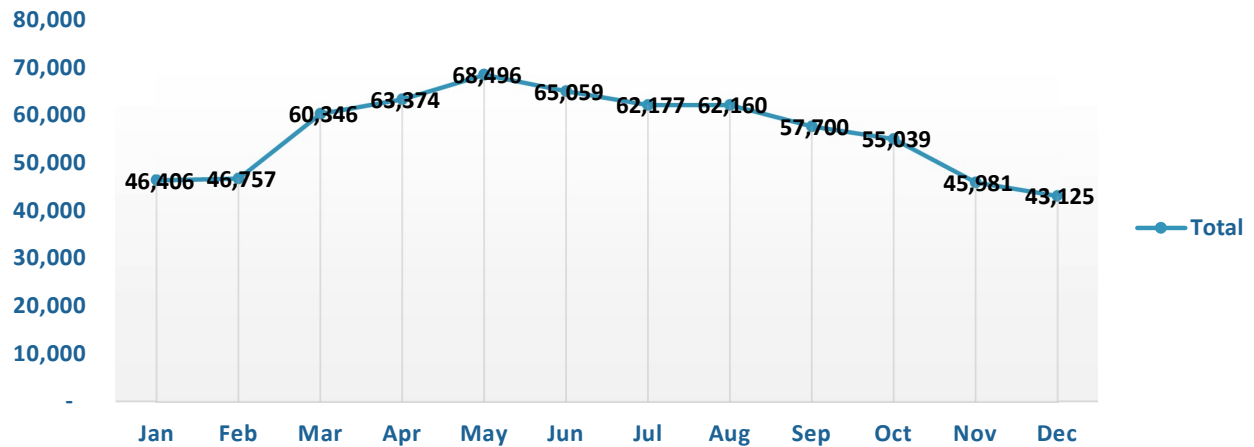
The complete PVSyst report is available in [Appendix B](#). This section presents a graphical representation of the monthly energy simulations, derived from the detailed 8760-hour data analysis within the report.



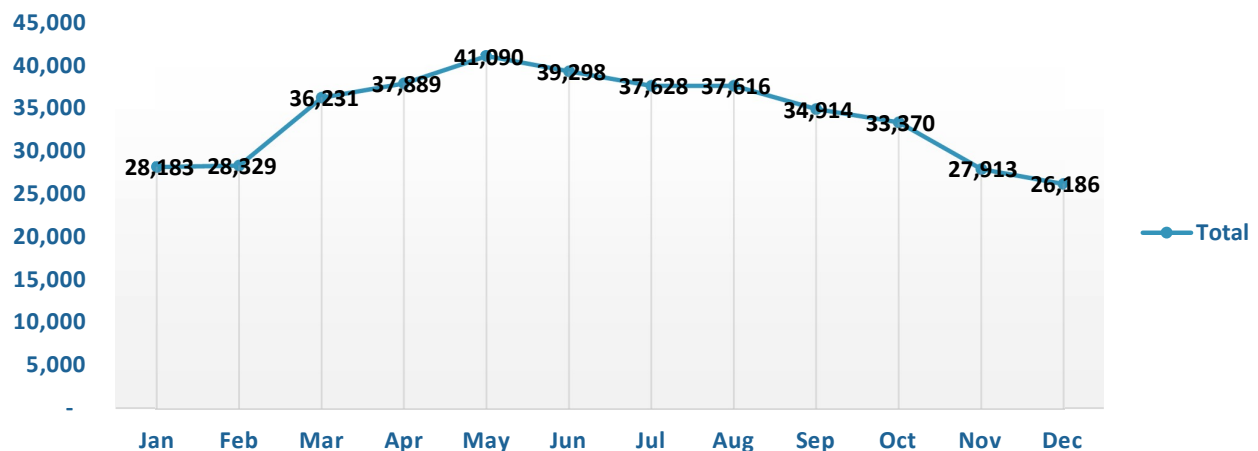
Well 24 - Monthly Energy Simulation (kWh)



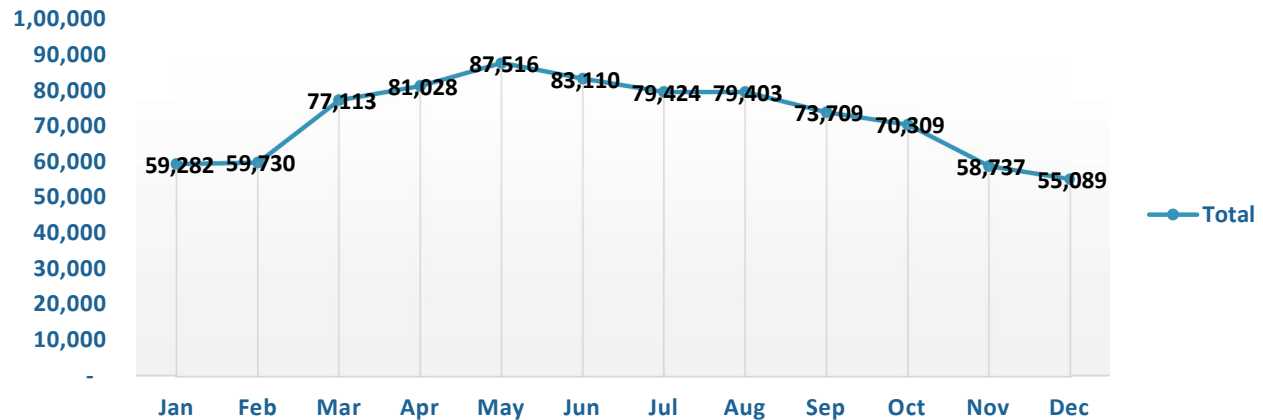
Well 27 - Monthly Energy Simulation (kWh)



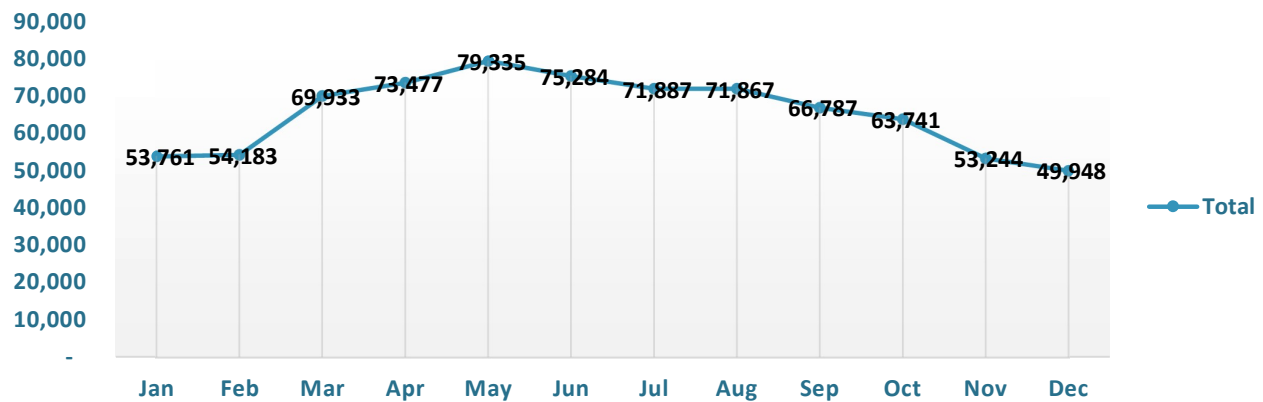
Well 29 - Monthly Energy Simulation (kWh)



Well 32 - Monthly Energy Simulation (kWh)



NWRWR - Monthly Energy Simulation (kWh)



Little Morongo RES-BCT - Monthly Energy Simulation



4.2.2 Single Line Diagram

The Single Line Diagram (SLDs) having DC & AC side components for all the project sites (Solar project) can be seen in [Appendix C](#) and available at link given below: [SLDs – Solar System](#).

Sr. No.	Site Name	Solar System - SLDs (Click on the below Link)
1	Horton WWTP	Click to get system SLD
2	Well 24	Click to get system SLD
3	Well 27	Click to get system SLD
4	Well 29	Click to get system SLD
5	Well 32 and Booster Station	Click to get system SLD
6	Nancy Wright Regional Water Reclamation	Click to get system SLD
7	Little Morongo RES-BCT	Click to get system SLD

4.2.3 BOS & Transformer – Solar System

This is the typical high-level BOS (Balance of system) details provided for all project sites. The specification for the transformer (if required at any site) is also provided.

Sr. No	Product	Specification	UOM	Horton WWTP	Well 24	Well 27	Well 29	Well 32 and Booster Station	Nancy Wright Regional Water Reclamation	Little Morongo RES-BCT
Plant Capacity (kW)				388.30	183.70	334.40	203.50	426.80	388.30	2,159.30
1	Solar Module	ZNShine-550W	Nos	706	334	608	370	776	706	3,926
2	Inverter	CPS-50KW	Nos	1	0	0	1	0	0	0
		CPS-60KW	Nos	0	1	0	2	0	6	0
		CPS-100KW	Nos	3	1	3	0	4	0	20
3	AC Combiner Panel	Reputed	Type	480V 600A	480V 400A	480V 600A	480V 400A	480V 600A	480V 600A	480V 3000A
4	AC Disconnect	Reputed	Type	480V 600A	480V 400A	480V 600A	480V 400A	480V 600A	480V 600A	480V 3000A
5	AC Cable	Reputed	Lot	1	1	1	1	1	1	1
6	DC Cable	Reputed	Lot	1	1	1	1	1	1	1
7	Transformer	Reputed	Type	0	0	0	0	0	(2) 480V/ 4.16kV - Due to long Cable run	(1) 480V/ 12.47kV 2MVA
8	Communication Cable	Reputed	Lot	1	1	1	1	1	1	1

4.2.4 Racking/Structure Design

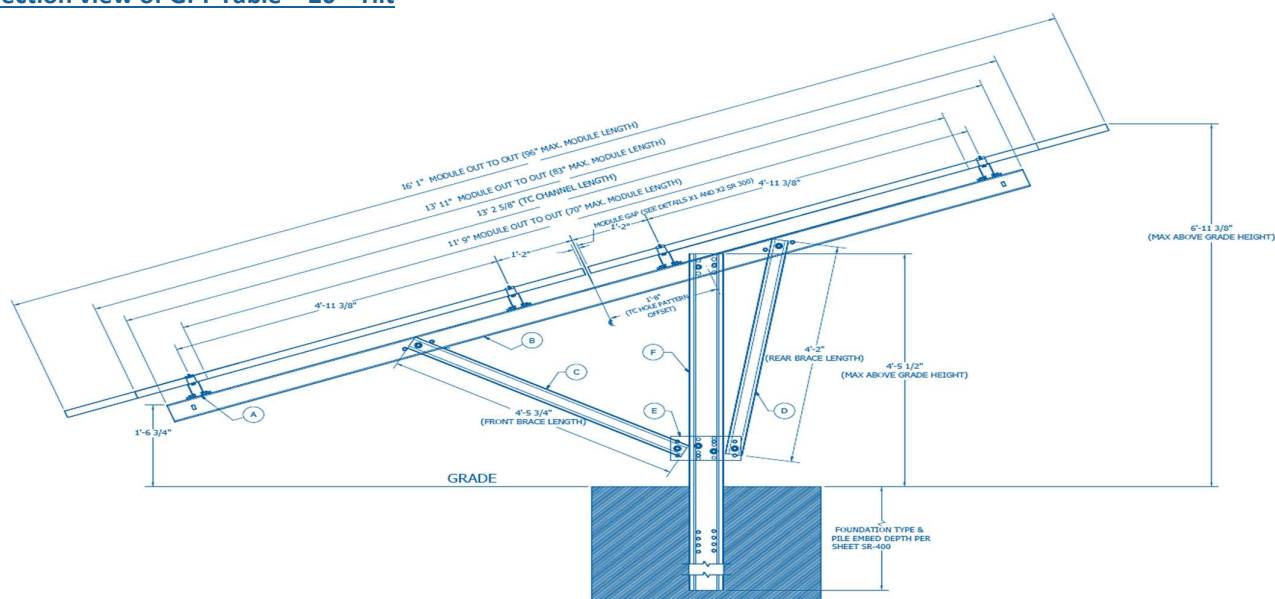
The ground mount project sites design using Unirac structure is available at the link given below – [Structure Design](#).

https://drive.google.com/drive/folders/13ZlqQNaWlb7Flfy5G4sygV2mwyrbiahR?usp=drive_link

Site Name	Proposed System	Proposed System Size	Design Document
	Type	(kW-DC)	
Horton WWTP	GM - Fixed	388.30	Click to get Structure Design
Well 24	GM - Fixed	183.70	Click to get Structure Design
Well 27	GM - Fixed	334.40	Click to get Structure Design
Well 29	GM - Fixed	203.50	Click to get Structure Design
Well 32 and Booster Station	GM - Fixed	426.80	Click to get Structure Design
Nancy Wright Regional Water Reclamation	GM - Fixed	388.30	Click to get Structure Design
Little Morongo RES-BCT	GM - Tracker	2,159.30	Refer the Datasheet for Tracking

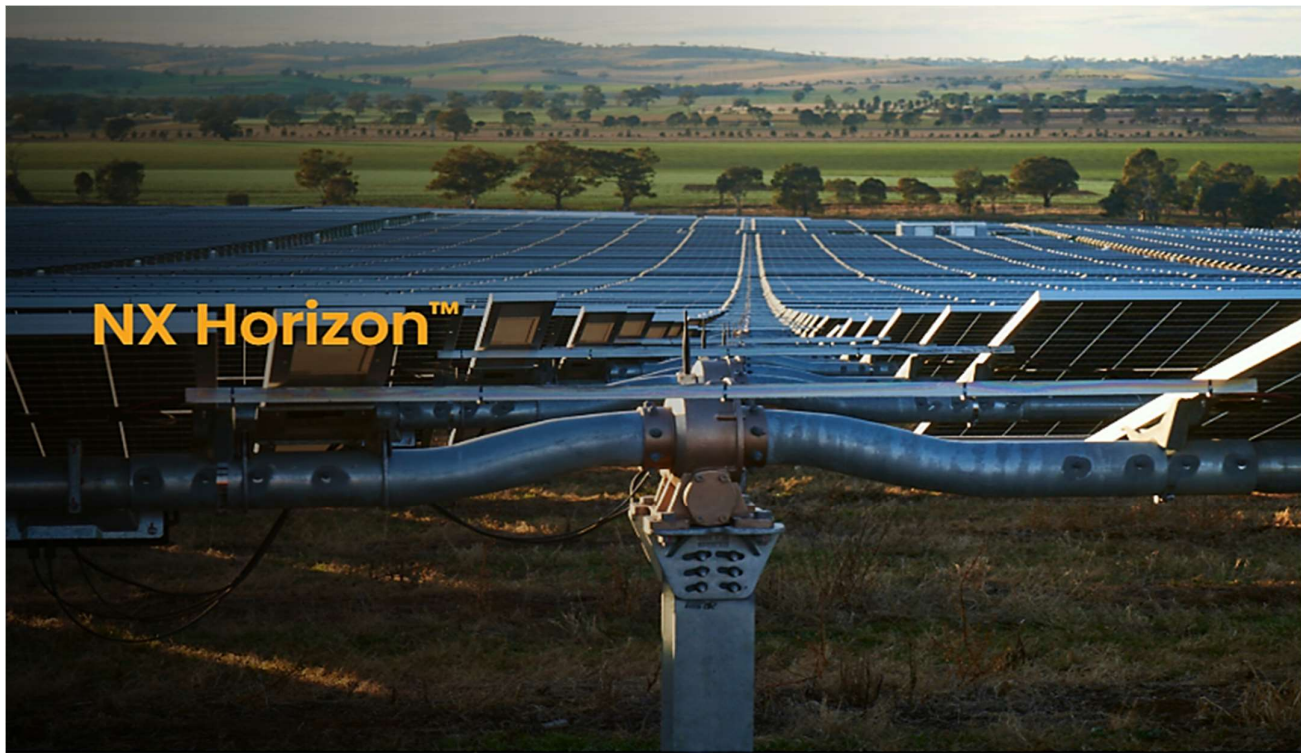
Descriptions	Values
Type of Structure	Ground Mount Structure (Permit Ready)
Manufacturer	Unirac – For Ground Fixed Tilt Next Tracker – For 1P Tracker
Type of Structure	GFT (Ground Fixed Tilt) Tracker System – NX Horizon (Next Tracker)
Datasheet	Refer Appendix E – GM Fixed Structure Refer Appendix E – GM Tracker Structure
Warranty	25 years for Fixed 10 Years for Tracker

Section view of GFT Table – 20 ° Tilt



Next Tracker Architecture –

- NX Horizon – Horizontal Single-Axis, Independent Row, independently balanced



Design Criteria / Assumptions / Notes for Ground Mount Projects:
Project Site: Horton WWTP – GFT

Parameters Used for Design

Building Code	ASCE 7-16
Basic Wind Speed	91.00 mph
Ground Snow Load	0.00 psf
Risk Category	I
Seismic Factor, S _s	2.315
Seismic Factor, S ₁	0.868
Elevation	924.00 ft
Wind Exposure	C
Wind On Ice	30.00 mph
Ice Thickness	0.00"
Frost Depth	0.00 ft

Inspection

Product	GFT
Module Manufacturer	Znshinesolar
Model	706 - ZXM7-SHLDD144 550 V5
Module Watts	550 watts
Module Length	89.68"
Module Width	44.64"
Module Thickness	1.18"
Module Weight	69.44 lbs
Rails Direction	EW
Rails Arrangement Type	Four Rail
Tilt	20 degrees
Clamp Selection	Universal AF Clamps
Foundation Type	Driven
Front Edge Height	2.00 ft
Foundation Length	12.50 ft

Project Site: Well 24 – GFT

Parameters Used for Design

Building Code	ASCE 7-16
Basic Wind Speed	91.00 mph
Ground Snow Load	0.00 psf
Risk Category	I
Seismic Factor, S _s	2.265
Seismic Factor, S ₁	0.854
Elevation	1062.00 ft
Wind Exposure	C
Wind On Ice	30.00 mph
Ice Thickness	0.00"
Frost Depth	0.00 ft

Inspection

Product	GFT
Module Manufacturer	Znshinesolar
Model	334 - ZXM7-SHLDD144 550 V5
Module Watts	550 watts
Module Length	89.68"
Module Width	44.64"
Module Thickness	1.18"
Module Weight	69.44 lbs
Rails Direction	EW
Rails Arrangement Type	Four Rail
Tilt	20 degrees
Clamp Selection	Universal AF Clamps
Foundation Type	Driven
Front Edge Height	2.00 ft
Foundation Length	12.50 ft

Project Site: Well 27 – GFT

Parameters Used for Design

Building Code	ASCE 7-16
Basic Wind Speed	91.00 mph
Ground Snow Load	0.00 psf
Risk Category	I
Seismic Factor, S _s	2.487
Seismic Factor, S ₁	0.967
Elevation	854.00 ft
Wind Exposure	C
Wind On Ice	30.00 mph
Ice Thickness	0.00"
Frost Depth	0.00 ft

Inspection

Product	GFT
Module Manufacturer	Znshinesolar
Model	428 - ZXM7-SHLDD144 550 V5
Module Watts	550 watts
Module Length	89.68"
Module Width	44.64"
Module Thickness	1.18"
Module Weight	69.44 lbs
Rails Direction	EW
Rails Arrangement Type	Four Rail
Tilt	20 degrees
Clamp Selection	Universal AF Clamps
Foundation Type	Driven
Front Edge Height	2.00 ft
Foundation Length	12.50 ft

Project Site: Well 29 – GFT

Parameters Used for Design

Building Code	ASCE 7-16
Basic Wind Speed	91.00 mph
Ground Snow Load	0.00 psf
Risk Category	I
Seismic Factor, Ss	2.389
Seismic Factor, S1	0.894
Elevation	1011.00 ft
Wind Exposure	C
Wind On Ice	30.00 mph
Ice Thickness	0.00"
Frost Depth	0.00 ft

Inspection

Product	GFT
Module Manufacturer	Znshinesolar
Model	350 - ZXM7-SHLDD144 550 V5
Module Watts	550 watts
Module Length	89.68"
Module Width	44.64"
Module Thickness	1.18"
Module Weight	69.44 lbs
Rails Direction	EW
Rails Arrangement Type	Four Rail
Tilt	20 degrees
Clamp Selection	Universal AF Clamps
Foundation Type	Driven
Front Edge Height	2.00 ft
Foundation Length	12.50 ft

Project Site: 32 and Booster Station – GFT

Parameters Used for Design

Building Code	ASCE 7-16
Basic Wind Speed	91.00 mph
Ground Snow Load	0.00 psf
Risk Category	I
Seismic Factor, Ss	2.459
Seismic Factor, S1	0.938
Elevation	908.00 ft
Wind Exposure	C
Wind On Ice	30.00 mph
Ice Thickness	0.00"
Frost Depth	0.00 ft

Inspection

Product	GFT
Module Manufacturer	Znshinesolar
Model	776 - ZXM7-SHLDD144 550 V5
Module Watts	550 watts
Module Length	89.68"
Module Width	44.64"
Module Thickness	1.18"
Module Weight	69.44 lbs
Rails Direction	EW
Rails Arrangement Type	Four Rail
Tilt	20 degrees
Clamp Selection	Universal AF Clamps
Foundation Type	Driven
Front Edge Height	2.00 ft
Foundation Length	12.50 ft

Project Site: NWRWR – GFT (Nancy Wright Regional Water Reclamation)

Parameters Used for Design		Inspection	
Building Code	ASCE 7-16	Product	GFT
Basic Wind Speed	91.00 mph	Module Manufacturer	Znshinesolar
Ground Snow Load	0.00 psf	Model	706 - ZXM7-SHLDD144 550 V5
Risk Category	I	Module Watts	550 watts
Seismic Factor, Ss	2.419	Module Length	89.68"
Seismic Factor, S1	0.907	Module Width	44.64"
Elevation	976.00 ft	Module Thickness	1.18"
Wind Exposure	C	Module Weight	69.44 lbs
Wind On Ice	30.00 mph	Rails Direction	EW
Ice Thickness	0.00"	Rails Arrangement Type	Four Rail
Frost Depth	0.00 ft	Tilt	20 degrees
		Clamp Selection	Universal AF Clamps
		Foundation Type	Driven
		Front Edge Height	2.00 ft
		Foundation Length	12.50 ft

Project Site: Little Morongo RES-BCT – GFT

Parameters Used for Design	
Building Code	ASCE 7-16
Basic Wind Speed	91.00 mph
Ground Snow Load	0.00 psf
Risk Category	I
Seismic Factor, Ss	2.419
Seismic Factor, S1	0.907
Elevation	976.00 ft
Wind Exposure	C
Wind On Ice	30.00 mph
Ice Thickness	0.00"
Frost Depth	0.00 ft

4.3 Equipment Specification and Data Sheets

4.3.1 Solar Modules Specification

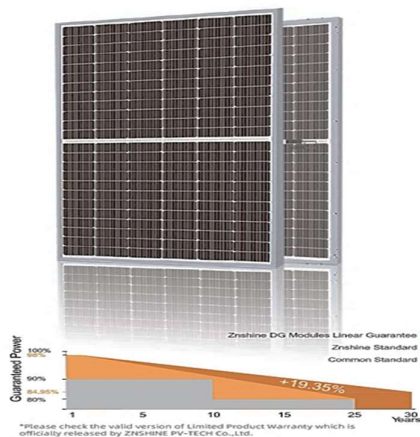
We propose utilizing high-efficiency solar panels with a proven record of accomplishment of performance and reliability. Our recommended photovoltaic (PV) modules are **Tier 1 approved by CEC (California Energy Commission) offered by ZnShine Solar 550W model**, identified by the model number "ZXM7-SHLDD-144-550". These modules feature **mono-crystalline bifacial solar cells**, renowned for their exceptional efficiency and reliability even under low irradiance conditions. The N-type cells utilized in this design exhibit high resistance to Light Induced Degradation, contributing to prolonged performance.

ZnShine modules are designed to adapt to harsh outdoor environment conditions such as salt, ammonia, sand, high temperature and high humidity environment. It has more power output in weak light conditions, such as haze, cloudy, and early morning. It utilized MBB cell technology which has an excellent anti-microcracking performance and reduces distance between busbars that balanced interior stress.

ZnShine Solar stands behind its product with an industry leading Twelve (12) years product and thirty (30) years power output warranty, ensuring an output not less than 84% of the nameplate capacity.

A copy of ZnShine Solar Module datasheet is available in [Appendix E](#).

Solar PV Module Specifications	
Solar Module Manufacturer	ZnShine Solar (Tier 1 classified)
Module Type	10BB Half Cell Bifacial Double Glass Monocrystalline PERC PV Module
Module Number	ZXM7-SHLDD144-550
Module Maximum Efficiency	21.23 %
Module Peak Power	550 W
Year 1 Production Degradation Rate	1.00 %
Year 2 – 25 Production Degradation Rate	0.45 %
Module Warranty	12 Years Product & 30 Years Power Warranty



ZXM7-SHLDD144 Series

10BB HALF-CELL Bifacial Double Glass Monocrystalline PERC PV Module

525-550W
POWER RANGE

21.23%
MAXIMUM EFFICIENCY

0.45%
YEARLY DEGRADATION

12 12 YEARS PRODUCT WARRANTY

30 30 YEARS OUTPUT GUARANTEE



IEC 61215/IEC 61730/IEC 61701/IEC 62716/UL6 1730

ISO 14001: Environmental Management System

ISO 9001: Quality Management System

ISO45001: Occupational Health and Safety Management System

*As there are different certification requirements in different markets, please contact your local zshinex sales representative for the specific certificates applicable to the products in the region in which the products are to be used.

4.3.2 Inverter Specification

We will utilize high-efficiency inverters that convert DC power from the panels to AC power for utilization. We will also consider incorporating advanced inverter features like power quality improvement and reactive power control, if applicable. To convert DC power to AC power, Chint Power (CPS) String inverters are employed.

The 50 & 60kW (55 & 66kVA) medium power CPS three phase string inverters are designed for ground mount, rooftop, and carport applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 98.8% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications.

The 100kW high power CPS three-phase string inverters are designed for ground-mount applications with 480Vac service voltage. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiencies, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 100kW products ship with the Standard or Centralized Wire-box, each fully integrated and separable with AC and DC disconnect switches. The Standard Wire-box includes touch-safe fusing for up to 20 strings.

A copy of the CPS Inverter datasheet is available in [Appendix E](#).

Inverter Specifications	
Inverter Manufacturer	CPS – Chint Power (CEC Listed)
Inverter Type	String

Inverter Number	CPS SCA60KTL-DO/US-480 CPS SCA50KTL-DO/US-480 CPS SCH100KTL-DO/US-480
Inverter Peak Power	60 kWac 50 kWac 100 kWac
Maximum Efficiency	98.80%
CEC Efficiency	98.00%
Inverter Warranty	10 Years



Data

50/60 kW, 1000 Vdc String Inverters for North America

The 50 & 60 kW (55 & 66 kVA) medium-power CPS three-phase string inverters are designed for ground mount, large rooftop and carport applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 98.8% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications.

The CPS 50/60KTL products ship with either the Standard Wire-box or the Rapid Shutdown Wire-box, each fully integrated and separable with touch-safe fusing, monitoring, and AC and DC disconnect switches. The integrated PLC transmitter in the Rapid Shutdown Wire-box enables PVRSS certified module-level rapid shutdown when used with the Tigo TS4-F/TS4-A-F/TS4-A-2F products, APS RSD-S-PLC/RSD-D products, and NEP PVG-2 products. The CPS FlexOM Gateway enables monitoring, controls and remote product upgrades.

Key Features

- NEC 2017/2020 PVRSS certified for rapid shutdown
- 55 & 66 kVA rating allows max rated active power @ ± 0.91 PF
- Selectable max AC apparent power of 50/55 kVA and 60/66 kVA
- NEC compliant and UL listed arc-fault circuit protection
- 15-90° mounting orientation for low profile roof installs
- Optional FlexOM Gateway enables remote firmware upgrades
- Integrated AC and DC disconnect switches
- 3 MPPTs with 5 inputs each for maximum flexibility
- NEMA Type 4X outdoor rated enclosure
- UL 1741-SA certified to CA Rule 21, including SA8 - SA18
- UL 1741-SB and IEEE 1547-2018 certified



CPS SCA50KTL-DO/US-480
CPS SCA60KTL-DO/US-480



Data

100kW, 1500Vdc/480Vac String Inverters for North America



CPS SCH100KTL-DO/US-480

4.3.3 Racking Structure Specification – Ground Mount

Ground Mount – Fixed Structure:

The ground mount fixed structure is sourced from **UNIRAC**, a North America's leading manufacturer of solar PV mounting systems. With more than 25 years of customer service, UNIRAC has over 12.5GW of experience and more than 2,500,000 installations worth of knowledge; partnering with UNIRAC leverages experience that makes a difference.

Sr. No.	Descriptions	Values
1	Type of Structure	Ground Mount – Fixed Structure (Permit Ready)
2	Manufacturer	Unirac
3	Type of Structure	GFT (Ground Fixed Tilt)
4	Datasheet	Refer Appendix E – GM – Fixed Structure
5	Warranty	25 years



DETAILED PARTS DESCRIPTION

	<p>Rail 411168M GFT RAIL 168" MILL</p> <p>168" long mill finish aluminum east-west rail for module mounting. Interfaces with top mounting Solarmount Pro Series or Standard module clamps. Works with both 4 rail or shared rail configurations.</p>
	<p>Rail 411246M GFT RAIL 246" MILL</p> <p>246" long mill finish aluminum east-west rail for module mounting. Interfaces with top mounting Solarmount Pro Series or Standard module clamps. Works with both 4 rail or shared rail configurations.</p>
	<p>Splice 404014 GFT RAIL SPLICE KIT</p> <p>Internal splice for aluminum GFT east-west rails. Splice is fully structural and includes self-drilling fasteners.</p>
	<p>Mid Clamp 302045M UNIVERSAL AF SERIES MID CLAMP MILL</p> <p>Universal Aesthetic Fastener (Mid), Universal for modules between 30-46mm and features twist and lock installation, 1 tool install, UL2703 integrated bonding, and low profile hardware and 1/2" module gap for optimal aesthetics. Made from Aluminum and Stainless Steel hardware.</p>
	<p>End Clamp 302050M UNIVERSAL AF SERIES END CLAMP MILL</p> <p>Universal Aesthetic Fastener (End), Universal for modules between 30-46mm without the use of spacers or extra parts, Features twist and lock installation, 1 tool install, UL2703 integrated bonding, and low profile hardware for optimal aesthetics. Clamps can be placed anywhere on the rail and rail can be cut flush with the clamp for optimal aesthetics. Made from Aluminum and Stainless Steel hardware, Caps are PC/ASA.</p>
	<p>Foundation 404001 GFT C-PILE, 12.5'</p> <p>12.5' galvanized cold rolled C-profile foundation for GFT ground mount, with encircling concrete pile diameter.</p>
	<p>Structure 404037 GFT Top Chord Channel 20/30, LgFmt</p> <p>Galvanized cold rolled C-profile top-chord. Supports east-west beams at both 20 degree and 30 degree tilt options.</p>
	<p>Structure 404031 GFT DIAGONAL BRACE ASSEMBLY 20D SR</p> <p>Pre-assembled diagonal brace set for 20 degree tilt option. Includes lower brace plate, front diagonal, and rear diagonal brace.</p>
	<p>Hardware 404013 KIT, GFT ASSEMBLY HARDWARE 4-RAIL</p> <p>Complete hardware kit for for all structural connections at one foundation. Use this kit for 4 rail configuration (2 rails behind each row of modules). Does not include module clamps.</p>
	<p>Wire Management 404015 GFT WIRE MANAGEMENT CLIP</p> <p>Stainless steel spring clip supports wire bundles along GFT east-west rails.</p>
	<p>Grounding Lug 008009P ILSCO LAY IN LUG (GBL4DBT)</p> <p>For electrical bonding of PV modules and rails. Accepts 4-14 AWG copper wires. Tin plated copper body, 1/4" stainless steel fasteners.</p>
	<p>Wire Mgmt 008017S HEYCO SUNRUNNER 2-S CLIP</p> <p>HEYCO SUNRUNNER 2-S CLIP</p>
	<p>Microinverter Mounting To The Rail 008013S</p> <p>MICRO MNT BND T-BOLT 1/4in x 3/4in SS</p> <p>Attaches micro-inverter rolled flange to beam using 3/4" x 1/4" bonding T-Bolt.</p>
8" of embedment needs to be verified by pile testing or by an engineered pile design	

Ground Mount – Tracking Structure:

The ground mount tracking structure (NX Horizon) is sourced from **Nextracker**, a leading provider of intelligent, integrated solar tracker and software solutions used in utility-scale and ground-mounted distributed generation solar projects around the world. NX Horizon tracker is powered by world-class engineering, technology innovation, and comprehensive global support services. It is known for its robust design, ease of installation, field-proven weather durability, and LCOE-optimized performance.

NX Horizon's patented independent row, self-powered tracking system provides reliable performance across the widest range of site conditions. Simple, robust hardware, including self-aligning module rails and vibration-proof fasteners, enables rapid installation and long life without maintenance. Mechanically balanced rows minimize tracking power requirements and pair with a time-proven drive & control system for maximum durability and uptime. NX Horizon's decentralized architecture with intelligent communications supports layout adaptability, flexible construction and commissioning sequencing, and advanced tracker functionality with over-the-air updates.

NX Horizon Decentralized Architecture:

- Pioneer of the independent-row single-axis tracker system.
- Able to commission each row in advance of site power.
- Highly engineered mass-balance rotation instead of reliance on rotational torque energy.
- Rugged slew-drive motor with proven reliability across many industries
- Maximum solar energy capture with up to 120° tracker range of motion.
- Eliminates the need for a power cable run
- Unlinked tracker rows allow for east-west terrain-following flexibility.
- North-south maximum slope: 15%.

Sr. No.	Descriptions	Values
1	Type of Structure	Ground Mount – Tracker Structure
2	Manufacturer	Nextracker
3	Type of Structure	NX Horizon – (Horizontal single-axis, independent row, independently balanced)
4	Datasheet	Refer Appendix E – GM – Tracker Structure
5	Solar Tracking method	Astronomical algorithm with backtracking standard
6	Tracker Controller	Self-Powered Controller (SPC) with integrated inclinometer and UPS
7	Motor	Brushless DC
8	Warranty	10 years

Proven resilience

NX Horizon is designed to withstand extreme weather, proven season after season, with hundreds of systems around the world. Nexttracker's in-house project-engineering services configure and optimize NX Horizon to suit the unique combination of weather and climate for each project site. Based on the industry's most comprehensive wind analysis and field testing, NX Horizon is hardened against failures by robust structural design, the industry's best damping system, and advanced stowing functionality. In the event of hail, NX Horizon offers a 60° stow position, rapid rotation and UPS backup to maximize module survivability, even in the event of a grid outage. Additional software, hardware and support is available with NX Horizon Hail Pro™, for maximum capability and readiness in severe hail regions. NX Horizon is inherently tolerant of flooding with drive and control components 4-5' above grade. Flood-stowing functions to protect panels are available.

Highlights

8 years in a row

Global Market Share Leader

90 GW

Delivered on 6 Continents

Best-in Class

Software Ecosystem and
Global Services

Up to 4% more energy

Using TrueCapture yield
optimization software



4.3.4 Monitoring Equipment/System Specification

The system will be monitored using the Wattch monitoring portal throughout the project period. The system layout shows the status of all equipment. Primarily data is captured via on-site hardware (full turnkey, UL-listed assembly that can be mounted and wired for ease of installation).

Wattch default data interval- 10 second resolution, uploaded frequency every minute. Configurable down to 1 second resolution (additional scope required). It can provide a range of traditional metrics like Performance vs. Predicted (Helioscope or other design tool), availability, etc. But most of the value for clients come from the Wattch Ideal Energy models, driven by the Wattch Digital Twin. This gives much higher precision with a bottom-up, physics simulation of every component on the site. Gives clients a much more accurate view of site health, where performance issues may occur, and whether those are worth corrective action or not.

It has Full alert capabilities for a range of conditions, including device faults, device underperformance, site underperformance, device communications lost, modem offline, and other issues. Also includes additional intelligence and thresholds to reduce false alarm “noise.”

It has Cloud-based monitoring platform that brings together highly precise energy modeling powered by the Wattch Digital Twin, remote diagnostics, and control functionality via an always-on, bi-directional connection to the site, and easy to set up and commission hardware that enables faster installation and data capture.

Wattch monitoring system can collect basically any data point captured that a device could surface via Modbus. It has a library of drivers Wattch maintains that span over 200 hardware brands and is growing by the day. Everything from production data, fault codes, and additional technical data.

Wattch monitoring system can support most telemetry needs based on the utility and grid requirements.

Additionally, it includes a snapshot of key information, while the utility's portal displays the system's consumption data.

It allows users to do the following:

- A secure, bidirectional, always on communications link between a site and the cloud provides an unprecedented level of observability and control.
- Remotely reset inverters, clear faults, and capture IV curves.
- Eliminate guesswork and instantly localize performance issues.
- Stay informed and prioritize maintenance work with real-time alerts.
- Asset Management - View equipment history and manage replacements.
- Allows exporting any dataset to Excel for further analysis, report generation, or sharing with colleagues

Below is a snip of some of the monitoring information available for your system.

Sr. No.	Descriptions	Values
1	Metering & Monitoring System	Wattch – Standard or Lite System (As per System Size)
2	Screenshot of user interface	Attached below this table.
3	Data Logger/Controller	Wattch Edge Controller
4	Production Meter	AccuEnergy AcuVim IIR
5	LTE Modem for Communication	Digi International IX30-00G4
6	Manufacturer's data sheets for the system	Refer monitoring system datasheet at Appendix E .



SPECIFICATIONS

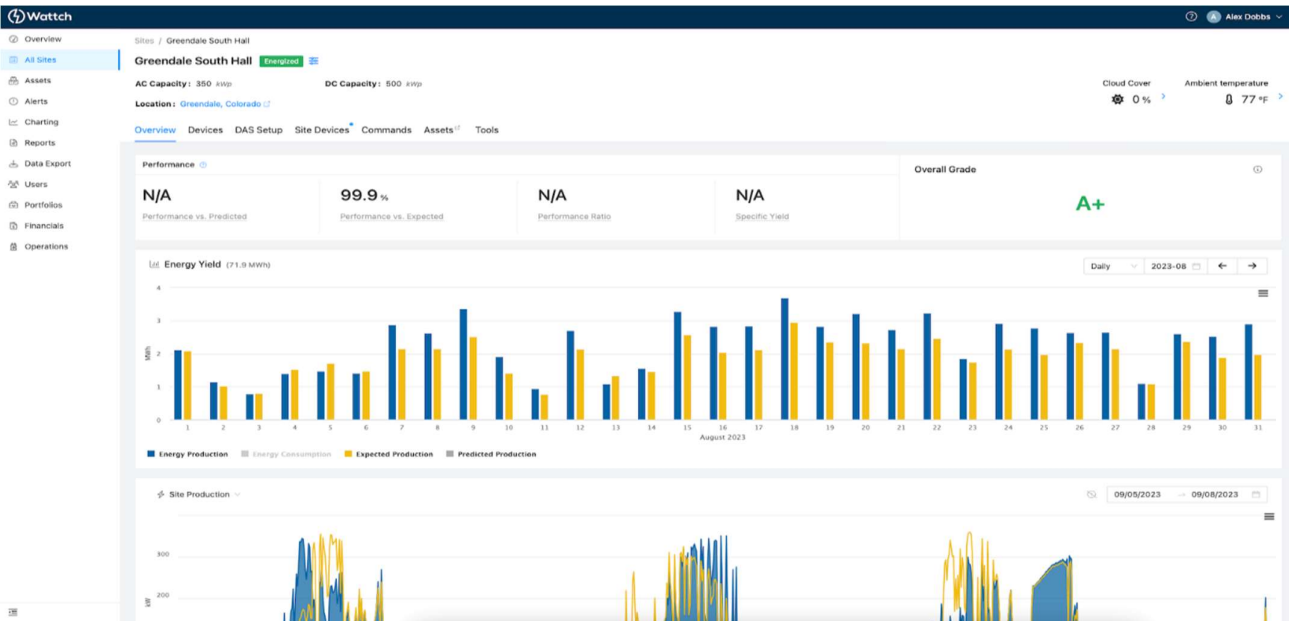
GENERAL		DATA ACQUISITION	
Dimensions	19.69 x 15.75 x 7.87 in (500.13 x 400.05 x 199.90 mm)	Resolution	10 second nominal Configurable down to 1 second
Weight	16 lb (7.26 kg) 32 lb with batteries (14.2 kg)	Device Limit	250 devices over ethernet 32 devices over RS-485 <i>Contact sales@wattch.io for options to increase device count</i>
Ratings	UL 508A	Compatibility	Modbus/RTU or Modbus/TCP devices <i>Contact sales@wattch.io for an up-to-date hardware compatibility list</i>
Mounting	Non-penetrating surface-mount installation with included flange kit	Interfaces	(1) RS-485 (1) Available 10/100 Ethernet port
Warranty ¹	5 years against defects in materials and workmanship	Storage Capacity ⁴	Up to 3 months of offline data storage capacity
ENVIRONMENTAL		Connectivity	LTE Cat 4 Modem with multi-carrier compatibility (requires Wattch data plan)
Operating Temperature	-20 to 70°C, 20-90% relative humidity non-condensing	METERING	
Protection Ratings	NEMA 4X / IP67, outdoor-rated	CT Inputs	Compatible with any 333 mV CT
POWER SUPPLY		Accuracy ⁵	Typical 0.1% (ANSI C12.20 Class C0.1)
Input Voltage	311-690Vac L-L		
Input Protection	2A Class CC time-delay fuse per input		

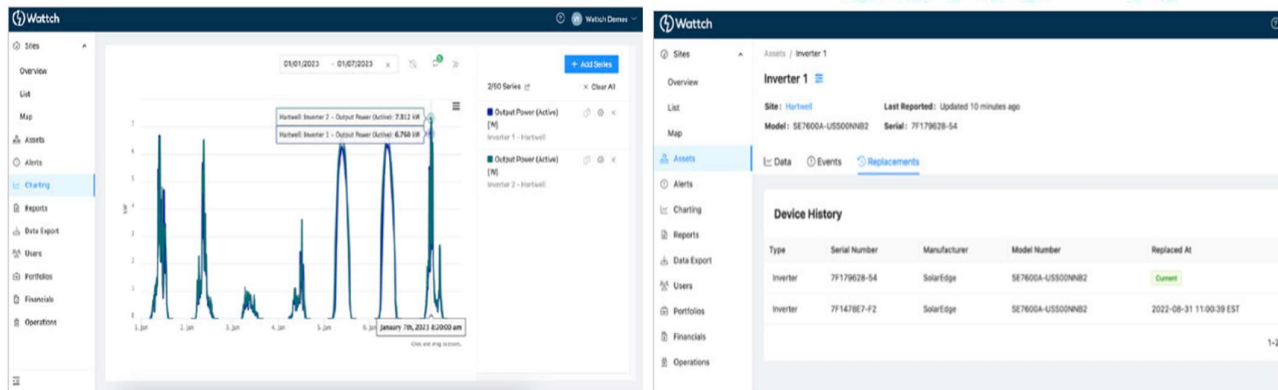
BILL OF MATERIALS

GENERAL	
Enclosure	Polycase WQ-76
POWER SUPPLY	
Power Supply	Mean Well WDR-120-24
Uninterruptible Power Supply	Mean Well DUPS40
AC Protection	Holly HC10SR Fuse
I/O Supplementary Protector	Eaton FAZ-B1-1-SP
UPS Supplementary Protector	Eaton FAZ-B3-1-SP

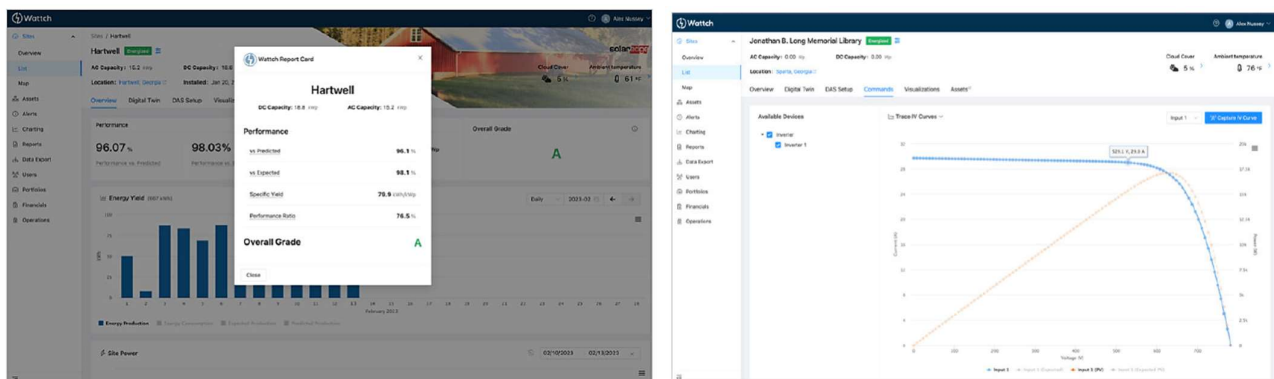
DATA ACQUISITION	
Production Meter	AccuEnergy AcuVim IIR
Data Logger/Controller	Wattch Edge Controller
COMMUNICATIONS	
LTE Modem	Digi International IX30-00G4

Monitoring System Interface Screenshot:



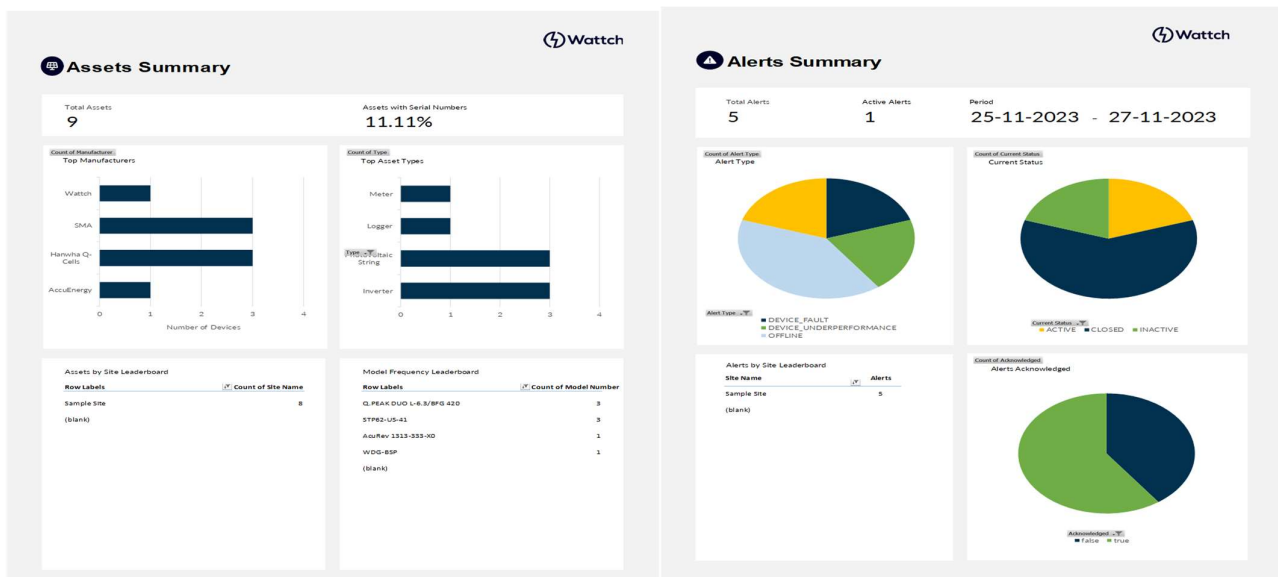


It has Full alert capabilities for a range of conditions, including device faults, device underperformance, site underperformance, device communications lost, modem offline, and other issues. Also includes additional intelligence and thresholds to reduce false alarm “noise”.



Site Report Card

Remote IV Curve Trace



4.3.5 Solar PV System - Standard Warranty

Descriptions	Values
Solar PV Module Warranty	Product Warranty – 10 Years Power Warranty – 30 Years
Inverter Warranty	10 years
Racking system Warranty	25 Years
Transformers	Standard Manufacturing Warranty
Balance of System (BOS)	Standard Manufacturing Warranty
Overall Workmanship Warranty	10 Years
Monitoring System	5 Years

5. Project Reference

Staten Solar – Project Reference -1:

Sr. No.	Descriptions	Values
1	Name of Entity/Firm	Brar Farms
2	Contact Person Name	Major B. S. Brar
3	Phone Number	(661) 721 1802
4	Email	majorbsbrar@gmail.com
5	Project Size	4MWp
6	Project location	Delano, CA
7	Scope of Work	EPC Contractor, Turn-Key Solution
8	Installation Period	2021
9	Type of system	Ground Mount (Levee Mount)



Staten Solar – Project Reference -2:

Sr. No.	Descriptions	Values
1	Name of Entity/Firm	South Lake Tahoe Airport
2	Contact Person Name	Mark Gibbs
3	Phone Number	(530) 208 8074
4	Email	mgibbs@cityofslt.us
5	Project Size	301 kWp
6	Project location	South Lake Tahoe, CA
7	Scope of Work	EPC Contractor, Turn-Key Solution
8	Installation Period	2019
9	Type of system	Airport Hangars Rooftop



Staten Solar – Project Reference -3:

Sr. No.	Descriptions	Values
1	Name of Entity/Firm	Happy Days
2	Contact Person Name	Ravi Grewal
3	Phone Number	(310) 748 1348
4	Email	ravigrewal192@gmail.com
5	Project Size	300 kWp
6	Project location	Baker, CA
7	Scope of Work	EPC Contractor, Turn-Key Solution
8	Installation Period	2023
9	Type of system	Solar Carport



Staten Solar – Project Reference -4:

Sr. No.	Descriptions	Values
1	Name of Entity/Firm	Goldberry Distributors
2	Contact Person Name	Javier Palma, Project Manager
3	Phone Number	(408) 685 9209
4	Email	Palma.javier@gmail.com
5	Project Size	Solar – 300kW BESS – 150kW/300kWh
6	Project location	Hayward, CA
7	Scope of Work	EPC Contractor, Turn-Key Solution
8	Installation Period	2022
9	Type of system	Solar (Rooftop) + BESS



Staten Solar – Project Reference -5:

Sr. No.	Descriptions	Values
1	Name of Entity/Firm	RNDS Properties LLC
2	Contact Person Name	Sachin Malik
3	Phone Number	(559) 903 4627
4	Email	sachinmalik1978@gmail.com
5	Project Size	498.52 kW
6	Project location	32603 Avenue 7, Madera, CA 93637
7	Scope of Work	EPC Contractor, Turn-Key Solution
8	Installation Period	2024
9	Type of system	Ground Mount and Carport System

6. List of Representative Projects

Staten Solar – US Commercial Project Experience:

S.No.	Id	Jurisdiction	Size (KW)	Installation	Status
1	AHN	San Bernardino	1,231	Ground Mount	Commissioned
2	B21	Kern	522	Ground Mount	Commissioned
3	B51	Ducor	522	Ground Mount	Commissioned
4	AMG	Big Water	500	Ground Mount	Commissioned
5	B41	Kern	456	Ground Mount	Commissioned
6	B24	Tulare	399	Ground Mount	Commissioned
7	B32	Tulare	391	Ground Mount	Commissioned
8	B27	Delano city	359	Ground Mount	Commissioned
9	B33	Visalia	359	Levee Mount	Commissioned
10	SLT	Lake Tahoe	301	Rooftop	Commissioned
11	FCC	San Jose	286	Rooftop	Commissioned
12	VTA	Milpitas	286	Carport	Commissioned
13	CLYD	Mountain View	200	Rooftop	Commissioned
14	STS	Sacramento	180	Carport	Commissioned
15	SNGHA	Delano	140	Ground Mount	Commissioned
16	B22	Delano	131	Levee Mount	Commissioned
17	B71	Delano	131	Ground Mount	Commissioned
18	B13	Visalia	130	Levee Mount	Commissioned
19	B34	Kern	130	Ground Mount	Commissioned
20	B81	Kern	130	Ground Mount	Commissioned
21	B11	Tulare	122	Ground Mount	Commissioned
22	RINN	San Jose	100	Rooftop	Commissioned
23	BBG	Ducor	97	Ground Mount	Commissioned
24	B42	Dinuba	88	Levee Mount	Commissioned
25	SEYM	Castroville	86	Carport	Commissioned
26	FMG	Fremont	82	Rooftop	Commissioned
27	HMT	Fremont	71	Ground Mount	Commissioned
28	COHR	San Leandro	68	Canopy	Commissioned
29	SPGL	Castroville	60	Carport	Commissioned
30	BUB	Hayward	56	Carport	Commissioned

S.No.	Id	Jurisdiction	Size (KW)	Installation	Status
31	JCNC	Milpitas	54	Carport	Commissioned
32	CABA	Walnut Creek	54	Rooftop	Commissioned
33	LUTZ	Scotts Valley	48	Rooftop	Commissioned
34	FBT	Bakersfield	40	Rooftop	Commissioned
35	TIME	Milbrae	38	Rooftop	Commissioned
36	RDH	Delano city	30	Canopy	Commissioned
37	AAT	Kern	24	Carport	Commissioned
38	B12	Tulare	20	Ground Mount	Commissioned
39	B23	Tulare	20	Ground Mount	Commissioned
40	STSS	Sacramento	20	Carport	Commissioned
41	OLR	Castroville	19	Carport	Commissioned
42	SPAT 2	Oakland	10	Rooftop	Commissioned
43	PAY	San Jose	1,132	Rooftop	Commissioned
44	RAVI	Baker	316	Carport	Commissioned
45	LSWI	San Jose	276	Rooftop	Commissioned
46	GBRY	Hayward	256	Rooftop	Commissioned
47	GHOS	Yermo	250	Ground Mount	Commissioned
48	HACI	Newberry	250	Ground Mount	In Progress
49	MEMO	Newberry	201	Ground Mount	In Progress
50	MUSH	City of Commerce	201	Carport, Roof	Commissioned
51	NATI	Newberry Springs	186	Ground Mount	Commissioned
52	GRID	Compton	120	Rooftop	Commissioned
53	KGH	San Jose	100	Rooftop	In Progress
54	LAKV	Newberry Springs	20	Ground Mount	Commissioned
55	SWAN	Delano	500	Ground Mount	Commissioned
56	LEEF	Delano	225	Ground Mount	Commissioned
57	SCLI	Santa Clara	40	Rooftop	Commissioned
58	MCFA	McFarland	125	Ground Mount	Commissioned
59	STJO	Sacramento	167	Rooftop	In Progress
60	NSTR	Truckee, CA	83	Rooftop	Commissioned
61	RAFT	San Jose, CA	115	Rooftop	Commissioned
62	NMAN	Ojai, CA	52	Ground Mount	Commissioned
63	SGCC	Stockton, CA	369	Carport	In Progress
64	WELT	Vernalis, CA	431	Ground Mount	In Progress
65	CCYN	San Ramon, CA	143	Raised Rooftop	Commissioned
66	TOAKS	City of Thousand Oaks	1,461	Carport and RT	In Progress
67	RCLNC	Bakersfield, CA	110	Raised Rooftop	In Progress
68	DIVAG	Divine Company Ag	350	Ground Mount	In Progress
69	WUSD	Washington USD	61	Carport	In Progress
70	MADR	Madera, CA	501	Carport and GM	In Progress
71	MONTE	Santa Clara	249	Rooftop	Commissioned
72	ACAMP	Acampo	110	Ground Mount	In Progress
73	PPLC	Bakersfield	25	Rooftop	Commissioned
74	RHOME	Bakersfield	37	Rooftop	Commissioned

7. Cost Proposal - Pricing and Terms

7.1 Solar Project Pricing

We would be happy to be partnered with MSWD for implementation of Solar PV projects for the proposed project at seven (7) locations. We have developed a refined design concept and layout that optimizes energy production, minimizes land use, orientation of the panels to maximize sunlight capture throughout the year and aligns with the client's technical requirements.

The proposed pricing for Solar PV Projects pricing for all seven project sites is provided in the table below. The excel file of [Exhibit-E](#) can be access through this link: -

7.1.1 Pricing Details

Sr. No.	Site Name	Proposed System	Proposed System Size	PPA Rate	PPA Annual Escalation	PPA Terms	End of Term Buyout Payment
		Type	(kW-DC)	(\$/kWh)	(%)	(Years)	(\$)
1	Horton WWTP	Ground Mount	388.30	\$ 0.1150	1.5%	25	FMV
2	Well 24	Ground Mount	183.70	\$ 0.1150	1.5%	25	FMV
3	Well 27	Ground Mount	334.40	\$ 0.1150	1.5%	25	FMV
4	Well 29	Ground Mount	203.50	\$ 0.1150	1.5%	25	FMV
5	Well 32 and Booster Station	Ground Mount	426.80	\$ 0.1150	1.5%	25	FMV
6	Nancy Wright Regional Water Reclamation	Ground Mount	388.30	\$ 0.1150	1.5%	25	FMV
7	Little Morongo RES-BCT	Ground Mount	2,159.30	\$ 0.0968	1.5%	25	FMV

Notes for PPA: -

- The initial PPA term is 25 Years for all sites
- Annual escalation in PPA rate is 1.5% for all sites.
- Staten Solar will provide 90% Performance Guarantee for all sites.
- For Little Morongo RES-BCT, \$250K is included for Interconnection. Anything beyond that will be extra.

7.1.2 Exhibit-E: Price Proposal Sheet

The proposal sheet for all seven (07) project sites Horton WWTP, Well 24, Well 27, Well 29, Well 32, NWRWR (Nancy Wright Regional Water Reclamation) and Little Morongo RES-BCT. The PPA rate for six (06) project sites is the same and applicable to all. The PPA rate for Little Morongo RES-BCT is mentioned separately in the below Exhibit-E proposal sheet.

Exhibit - E: Proposal Sheet								Exhibit - E: Proposal Sheet	
Year	Annual PPA Rate	Horton WWTP	Well 24	Well 27	Well 29	Well 32	NWRWR	Annual PPA Rate*	Little Morongo RES-BCT
	\$/kWh	Estimated kWh Output	Estimated kWh Output	Estimated kWh Output	Estimated kWh Output	Estimated kWh Output	Estimated kWh Output	\$/kWh	Estimated kWh Output
1	\$0.1150	783,879	371,147	676,618	408,647	864,449	783,447	\$0.0968	5,261,364
2	\$0.1167	764,282	361,868	659,703	398,431	842,838	763,861	\$0.0983	5,129,830
3	\$0.1185	758,932	359,335	655,085	395,642	836,938	758,514	\$0.0997	5,093,921
4	\$0.1203	753,620	356,820	650,499	392,872	831,079	753,204	\$0.1012	5,058,264
5	\$0.1221	748,344	354,322	645,946	390,122	825,262	747,932	\$0.1027	5,022,856
6	\$0.1239	743,106	351,842	641,424	387,391	819,485	742,696	\$0.1043	4,987,696
7	\$0.1257	737,904	349,379	636,934	384,680	813,749	737,497	\$0.1058	4,952,782
8	\$0.1276	732,739	346,933	632,475	381,987	808,052	732,335	\$0.1074	4,918,112
9	\$0.1295	727,610	344,505	628,048	379,313	802,396	727,209	\$0.1090	4,883,686
10	\$0.1315	722,516	342,093	623,652	376,658	796,779	722,118	\$0.1107	4,849,500
11	\$0.1335	717,459	339,699	619,286	374,021	791,202	717,063	\$0.1123	4,815,553
12	\$0.1355	712,436	337,321	614,951	371,403	785,663	712,044	\$0.1140	4,781,845
13	\$0.1375	707,449	334,960	610,647	368,803	780,164	707,060	\$0.1157	4,748,372
14	\$0.1396	702,497	332,615	606,372	366,222	774,703	702,110	\$0.1175	4,715,133
15	\$0.1417	697,580	330,286	602,127	363,658	769,280	697,195	\$0.1192	4,682,127
16	\$0.1438	692,697	327,974	597,913	361,112	763,895	692,315	\$0.1210	4,649,352
17	\$0.1459	687,848	325,679	593,727	358,585	758,547	687,469	\$0.1228	4,616,807
18	\$0.1481	683,033	323,399	589,571	356,075	753,238	682,656	\$0.1247	4,584,489
19	\$0.1503	678,252	321,135	585,444	353,582	747,965	677,878	\$0.1266	4,552,398
20	\$0.1526	673,504	318,887	581,346	351,107	742,729	673,133	\$0.1284	4,520,531
21	\$0.1549	668,789	316,655	577,277	348,649	737,530	668,421	\$0.1304	4,488,887
22	\$0.1572	664,108	314,438	573,236	346,209	732,367	663,742	\$0.1323	4,457,465
23	\$0.1596	659,459	312,237	569,223	343,785	727,241	659,096	\$0.1343	4,426,263
24	\$0.1620	654,843	310,052	565,238	341,379	722,150	654,482	\$0.1363	4,395,279
25	\$0.1644	650,259	307,881	561,282	338,989	717,095	649,901	\$0.1384	4,364,512

Note: * For Little Morongo RES-BCT, \$250K is included for Interconnection. Anything beyond that will be extra.

7.1.3 Solar PV Project Includes

Staten Solar proposed the solar PV Project pricing for the project sites items/components mentioned in the RFP documents. The project Price is including the following items/components:

a) Project Engineering

- (i) Civil/structural engineering
- (ii) Electrical engineering
- (iii) Mechanical engineering
- (iv) Geotechnical studies and engineering

b) Project Permitting

- (i) Applicable AHJ permitting fees
- (ii) Utility interconnection study process

c) Safety Plan

d) Materials

- (i) Modules
- (ii) Inverters
- (iii) Racking/structures
- (iv) Balance of System (BOS)
- (v) All other materials for constructing the system as per industry standards.

e) Equipment/Material Procurement

- (i) Mobilization
- (ii) Delivery, storage, and staging logistics
- (iii) Delivery and handling costs
- (iv) De-mobilization

f) Facility Construction

- (i) Civil (trenching and backfill, directional boring, equipment pad preparation, etc.)
- (ii) Structural/mechanical
- (iii) Electrical

g) Interconnection Process

- (i) Interconnection Application
- (ii) Initial and supplemental review process management
- (iii) System coordination studies (if deemed necessary)
- (iv) System protection engineering (Rule 21, UL 1741, etc.)
- (v) Pre-parallel inspection

- (vi) Permission to operate (PTO)
- h) Facility Testing**
- i) Facility Commissioning**
 - (i) String voltage check
 - (ii) Inverters – (System check ramp rate, power factor, protection, etc.)
 - (iii) Racking visual inspection and torque check
 - (iv) Monitoring, configuration, startup, and training of Participant's personnel
 - (v) Switchgear (if required)
- j) Monitoring Equipment/System** - Inverter level performance/production monitoring
- k) Operations and Maintenance**
 - (i) Inverter maintenance
 - (ii) Module cleaning/testing
 - (iii) Checking of electrical connections/torque
 - (iv) Racking/structure torque check
 - (v) Inverter extended warranty or replacement plan
 - (vi) Remote monitoring
- l) Production Guarantee** - 90% system production guarantee or better.

7.1.4 Solar PV Project Assumptions

Staten Solar proposed the solar PV Project pricing for the project sites items/components with the following assumptions:

- a)** Each site will follow the payments milestone separately based only on its status.
- b)** Pricing includes sales tax, and permit fees.
- c)** Payment and performance Bond and Insurance
- d)** The District will retain ownership of all environmental attributes of the energy systems (Renewable Energy Credits (RECs), Carbon Credits, etc.)
- e)** Underground conditions allow for standard foundation sizing and installation, boring for electrical conduit lines, and trenching or digging required for the scope of work.
- f)** Project pricing Project pricing includes compliance with prevailing wages where required by law; but assumes that the project is not bound to Union Labor.
- g)** Solar modules are Tier 1 and All inverters are UL 1741-SA certified or listed in the CEC compliant database.
- h)** Project pricing is based on designs for the PV Systems and location provided in RfP documents. Any changes to the location may be adjusted via a change order.

- i) No electrical panel upgrades included. Main meters are adequately sized and have available space for connection of PV generation.
- j) Unless otherwise stated, all systems will interconnect into a 480V AC 3-Phase service.
- k) Array areas shown on project site maps are representative and not exact layouts.
- l) All pricing should be based on standard work hours of Monday – Friday 8:00 AM to 5:00 PM.
- m) Assumed that all equipment will be delivered to site, if equipment must be delivered to a storage facility, then the cost of storage and redelivery to site will be the responsibility of Owner.
- n) If crossing an existing easement is required, then any additional cost to perform work will result in a change order to Owner.
- o) **For Little Morongo RES-BCT, \$250K is included for Interconnection. Anything beyond that will be extra.**
- p) **Notes for Equipment make:** It is important to note that equipment makes and models are subject to change based on market availability. In such cases, any replacements will be chosen to be at least similar or superior in technical specifications and warranty terms.

7.1.5 Solar PV Project Excludes

The following products and services are expressly excluded from the work and base pricing offered by Staten Solar.

- a) Utility costs for new services, distribution/substation upgrade fees, or any utility study fees beyond the initial application fee.
- b) Any upgrades to existing site services.
- c) Buy American, American Made, or American Recovery and Reinvestment Act certified components unless the Domestic Content option is ordered.
- d) Overtime work – if required by the Owner - outside of Contractors standard working hours of 8 AM – 5 PM Monday through Friday.
- e) Groundwater abatement.
- f) Removal/disposal/Remediation of existing hazardous materials including asbestos.
- g) Habitat mitigation.
- h) Backup, or temporary power for existing electrical system.
- i) SWPPP, grading plans/permit, tree removal permits, or any other permits required other than standard building, electrical and fire permits.
- j) Backup generator power for use during interconnection shutdown.
- k) All conductors, transformers, and pole work, as required by the utility and not the contractor.
- l) Any fees or preparation and recording of documents required to cross existing easements.
- m) Removal of any existing abandoned structures, conduits, pads etc.
- n) Off-site Storage fees.
- o) Environmental studies.

7.2 Value Engineering/ Saving Analysis

Economics Benefits: Key Economic Benefits with PPA option

Sr. No.	Site Name	Proposed System	Proposed System Size	PPA Terms	Starting PPA Rate	PPA Escalation Annual	Lifetime Savings
		Type	(kW-DC)	(Years)	(\$/kWh)	(%)	(\$)
1	Horton WWTP	Ground Mount	388.30	25	\$0.1150	1.5%	\$560,548
2	Well 24	Ground Mount	183.70	25	\$0.1150	1.5%	\$(133,028)
3	Well 27	Ground Mount	334.40	25	\$0.1150	1.5%	\$988,270
4	Well 29	Ground Mount	203.50	25	\$0.1150	1.5%	\$(112,689)
5	Well 32 and Booster Station	Ground Mount	426.80	25	\$0.1150	1.5%	\$1,231,308
6	Nancy Wright Regional Water Reclamation	Ground Mount	388.30	25	\$0.1150	1.5%	\$87,696
7	Little Morongo RES-BCT	Ground Mount	2,159.30	25	\$0.0968	1.5%	\$6,168,485
Total			4,084.30	25			\$8,790,590

Environmental Benefits Equivalent:

- Yearly Production of kWh : 9,149,551 kWh Annual
- CO₂ Emission Reduction : 3,814,482 Kg of Carbon Dioxide (CO₂) equivalent
- Tree Seedling Grown : 63,073 (For 10 Years)
- Waste Recycled : 1,324 tons (instead of landfilled)
- Homes Energy use for : 497 (For 1 Year)

Additional Benefits:

- 30 Years Solar output Guarantee
- 25 Years Performance Guarantee
- Full system maintenance and monitoring
- Greatest Net Savings
- Better utilization of parking space
- Minimal site operation disruption
- Long term partnership

Saving Analysis:

Based on details in the RFP and utility data, Staten Solar analyzed the savings for all proposed solar projects using the ETB platform. We analyzed both PPA options, considering assumptions and details provided in the RFP documents.

ETBs co-optimization of grid services and utility bill savings. This enhancement allows solar and storage projects to capitalize on diverse value streams, not only improving overall project economics but also rendering these estimates more reliable and robust. The addition of grid service optimization builds on ETB's sophisticated modeling technology, which includes:

- Optimization across multiple behind-the-meter value streams
- Rapid creation and application of forecasts during simulation
- Access to our unparalleled utility rates database

ETBs Report – Solar only System:

ETB reports for each project site (Solar Only) can be accessed through this link: [ETBs Report](#)

https://drive.google.com/drive/folders/1p_iyIlhuE_y3w2k3KSSDnc4HLaFBd8-s?usp=drive_link

Sr. No.	Site Name	Solar System - ETBs (Click on the below Link)
1	Horton WWTP	Click to get the ETB Report
2	Well 24	Click to get the ETB Report
3	Well 27	Click to get the ETB Report
4	Well 29	Click to get the ETB Report
5	Well 32 and Booster Station	Click to get the ETB Report
6	Nancy Wright Regional Water Reclamation	Click to get the ETB Report
7	Little Morongo RES-BCT	Click to get the Cash Flow Analysis

8. Sample Draft Contract Agreements

Staten Solar has prepared this proposal in accordance with the Request for Proposal (RFP) requirements and includes all design documents for the solar project. All draft PPA, SLA, Performance Guarantee and Payment and Performance bond agreements are available at the below given link for the Solar projects.

For ease of access and readability, all documents are linked through a Google Drive shared folder in respective section wherever required. If MSWD encounters any difficulty accessing the documents or requires additional information, please contact us using the details provided in our cover letter.

The following contract documents are submitting as a part of our Proposal: [Draft Contract Documents](#)

https://drive.google.com/drive/folders/1mPfXrHb_PVsH5LOagBUW4lBrcbKe_2kr?usp=drive_link

Sr. No.	Document Type	Link for Accessing Documents
1.	Draft PPA Template	Click to get PPA Template
2.	Draft SLA (Site Lease Agreement) Template	Click to get SLA Template

Performance Guarantee Template:

We are committed to maintaining the performance of the solar photovoltaic systems at levels equal to the predicted annual kWh output levels listed within the proposal. The performance guarantees shall continue till the system is maintained by us. The proposer anticipates that the System will produce the Expected Energy set forth below and guarantees that Actual Generation will not be less than the Guaranteed Electricity Production, 90% of the expected Energy. To obtain the true average, a three-year generation period will be considered to calculate the performance guarantee.

To calculate the 90% threshold, the system's actual generation will be compared to the Expected Energy output after adjustment for measured metrological conditions per the Weather Adjustment/variance in a true-up period of Thirty (36) months basis. Any excess energy produced in each true-up period can be applied towards covering shortfalls in kWh production in subsequent periods.

Guaranteed Output Calculations:

- Provider shall calculate the Annual Deficit for each Guarantee Period during the Term:

$$\text{Annual Deficit} = ((\text{Expected Energy} \times \text{Guarantee Level}) \times \text{Weather Adjustment}) - \text{Actual Generation}$$

- Where “Weather Adjustment” means the following ratio:

$$\frac{\text{Simulated energy in a Measured Metrological Year}}{\text{Simulated energy for a Metrological Year}}$$

- For each Guarantee Period, the Provider shall calculate the Annual Deficit.

Guarantee Payment:

- At the end of each True-up Period of Five Years:
 - (i) if the \sum Annual Deficits > 0 , then Provider shall pay to Customer an amount equal to the product of (i) the Annual Deficit and (ii) the blended Energy Price per kWh for each Guarantee Period, with each product then aggregated for the Guarantee Periods comprising such True-Up Period.
 - (ii) Provider shall, by invoice, promptly notify Customer of any Guarantee Payment due. A Guarantee Payment shall be payable within thirty (30) days of the date of such invoice.
 - (iii) Provider shall provide Customer with a report detailing the calculations set forth in the “Guaranteed Output Calculations” and the “Guarantee Payment” Sections. This report shall contain sufficient information for the Customer to be able to determine the accuracy of the Provider’s conclusion as the amount, if any, of Guarantee Payment.

Blended Energy Price: Blended rate shall be calculated during “True-up” period of previous 36 months at the time of performance guarantee calculation. The Blended Rate is based on the previous 36-months of total energy cost divided by the total kWh.

Actual Generation Measurement:

The process for measuring Actual Generation for each Guarantee Period shall be:

- **Initial Output Data Collection.** During the Term, the Provider will collect energy output data using its Data Acquisition System. For each Guarantee Period, the Provider will sum the daily kWh output provided by the DAS to calculate the Actual Generation for such Guarantee Period.
- **Equipment Calibration and Replacement:** Provider may request to have the meteorological equipment independently calibrated or replaced at its own expense every eighteen to thirty months. The provider shall notify the other party of the scheduled calibration date and time no less than 30 days prior and shall provide the Customer with written proof of calibration or replacement.
- **Contingency for Equipment Failure:** In the event of hardware, communication, or other failure affecting the DAS, Provider will make commercially reasonable efforts to resolve the failure in a timely manner. If data is lost, Actual Generation shall be adjusted to compensate for such lost data, which shall be Provider’s sole liability, and Customer’s exclusive remedy, for any Guaranteed Output arising from any equipment failure or lost data relating to the DAS:

- In lieu of lost meteorological data, Provider will utilize such data obtained from a nearby meteorological station that Provider monitors and selects for such purpose.
- In lieu of lost electricity data, Provider will utilize the cumulative data from System meter readings to calculate the electricity generated during the missing interval. If data from the System meter is inaccurate or missing, the Provider will simulate electricity production during the missing interval utilizing measured meteorological data and PVsyst. The simulated electricity production during the missing interval will be added to the Actual Generation for the subject Guarantee Period.

Adjustment of Expected Energy:

Guaranteed output levels shall be adjusted as part of the Construction Document Phase of design. This revised number will be developed based on the final system design agreed on by both the Provider and customer. Annual guaranteed output levels shall be normalized to account for variance between actual weather conditions and those assumed in the output modeling (PVsyst) used as the basis for the Production Guarantee.

If, and to the extent, any of the following events results in a change in the production of electricity by the System, Expected Energy shall be adjusted correlatively for the period of such change:

- There is structural failure in a building supporting the System.
- There is not a material change in solar access or irradiance causing shading such as added trees or structures.
- The equipment, including any modules, inverters, racking or structure, transformers, switchgear, panelboards combiner boxes or monitoring equipment suffers a manufacturers serial defect to the extent more than 5% of the equipment at a singular site is out of service for a period greater than thirty (30) days and requires replacement, provided that Contractor used its best efforts to assist the Owner in its attempts to remedy the equipment with respective manufacturer;
- The manufacturer of the equipment including any modules, inverters, racking or structure, transformers, switchgear, panelboards combiner boxes or monitoring equipment is not able or willing to honor its product warranty to Provider or the warranty has expired, and Owner does not remedy by replacement at its own expense, provided that Provider used its best efforts to assist the Owner in its attempts to oblige the manufacturer to comply with its warranty obligations;
- There is any curtailment, reduction, or adjustment to the System, or failure of the System to perform, whether foreseen or unforeseen, as a result of any legislation, regulation, administrative or executive order, requisition or any other action by any (i) federal, state or local government or agency, (ii) local utility or public utilities commission; or (iii) independent system operator or regional transmission organization.
- There is an event of Force Majeure; or

- There is any change in usage of our structures on any of the Sites, or buildings at or near any of the Sites, which causes additional shading, soiling, or otherwise reduced performance of the System.

Guarantee Period	Expected Solar Energy Production (kWh)	Guaranteed Solar Energy Production (kWh)	Blended Energy Price (Total energy cost divided by the total kWh for True-up period) (\$/kWh)
1			
2			
3			
4			
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19			
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22			
23			
24			
25			

All Relevant Documents: All documents that are part of proposal can also be accessed on below links:

Sr. No.	Document Type	Link for Accessing Documents
1.	Exhibit E – Pricing Sheet	Click to get the Exhibit E
2.	Layout Plans	Click to get System Layouts
3.	PVSyst – Simulation Reports	Click to get PVSyst Reports
4.	Single Line Diagrams	Click to get SLDs
5.	Structure Designs	Click to get structure Design
6.	ETB Reports	Click to get ETB Reports
7.	Draft Contract Documents (PPA, SLA)	Click to get the Documents

Note: All documents can also be access on this master link for ease: [Master Documents Folder](#)

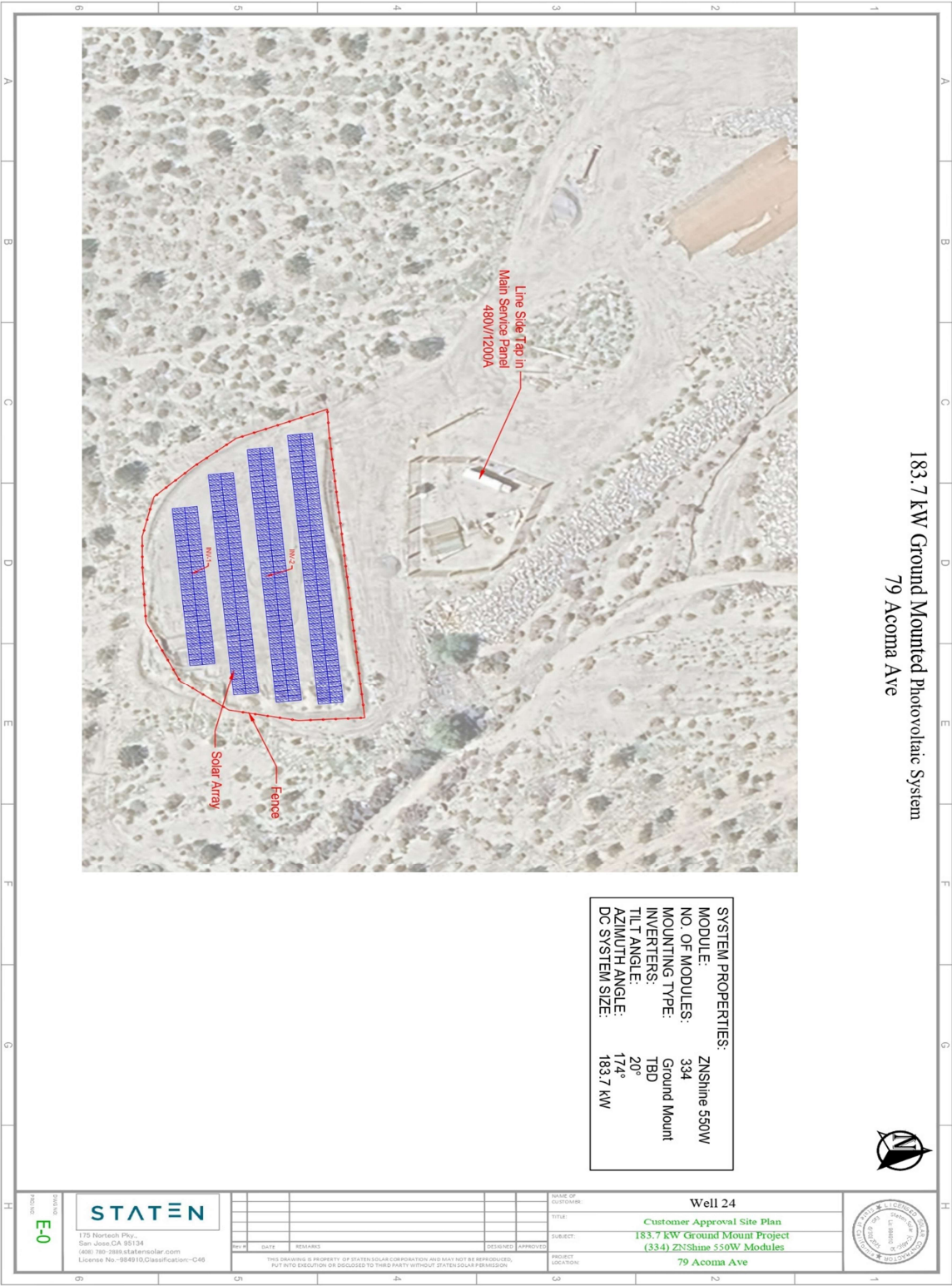
https://drive.google.com/drive/folders/1YIkSC88mtHPA2yYgJGOLayDdLWSvsMhP?usp=drive_link

Appendices

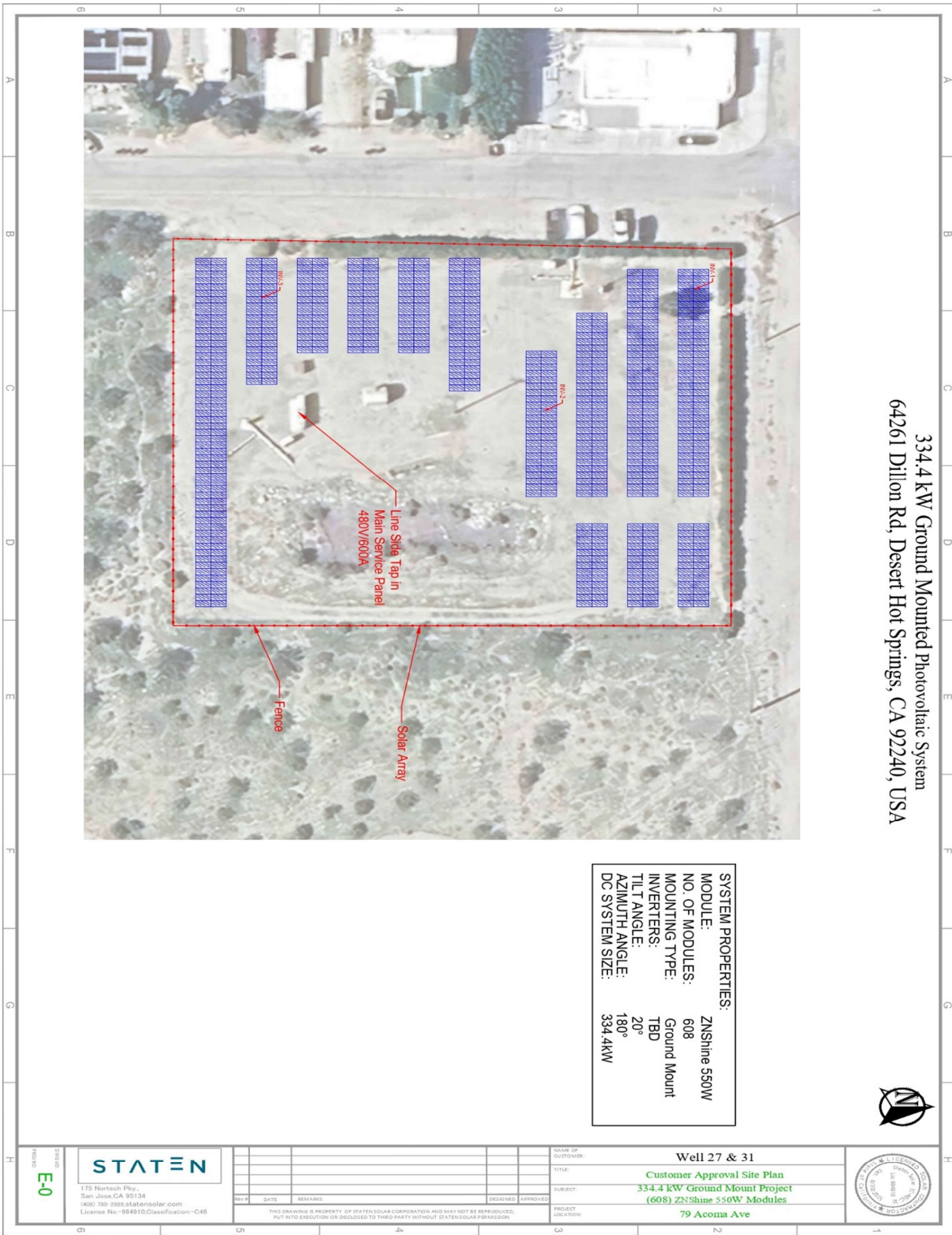
System Layout – Horton WWTP



System Layout – Well 24



System Layout – Well 27

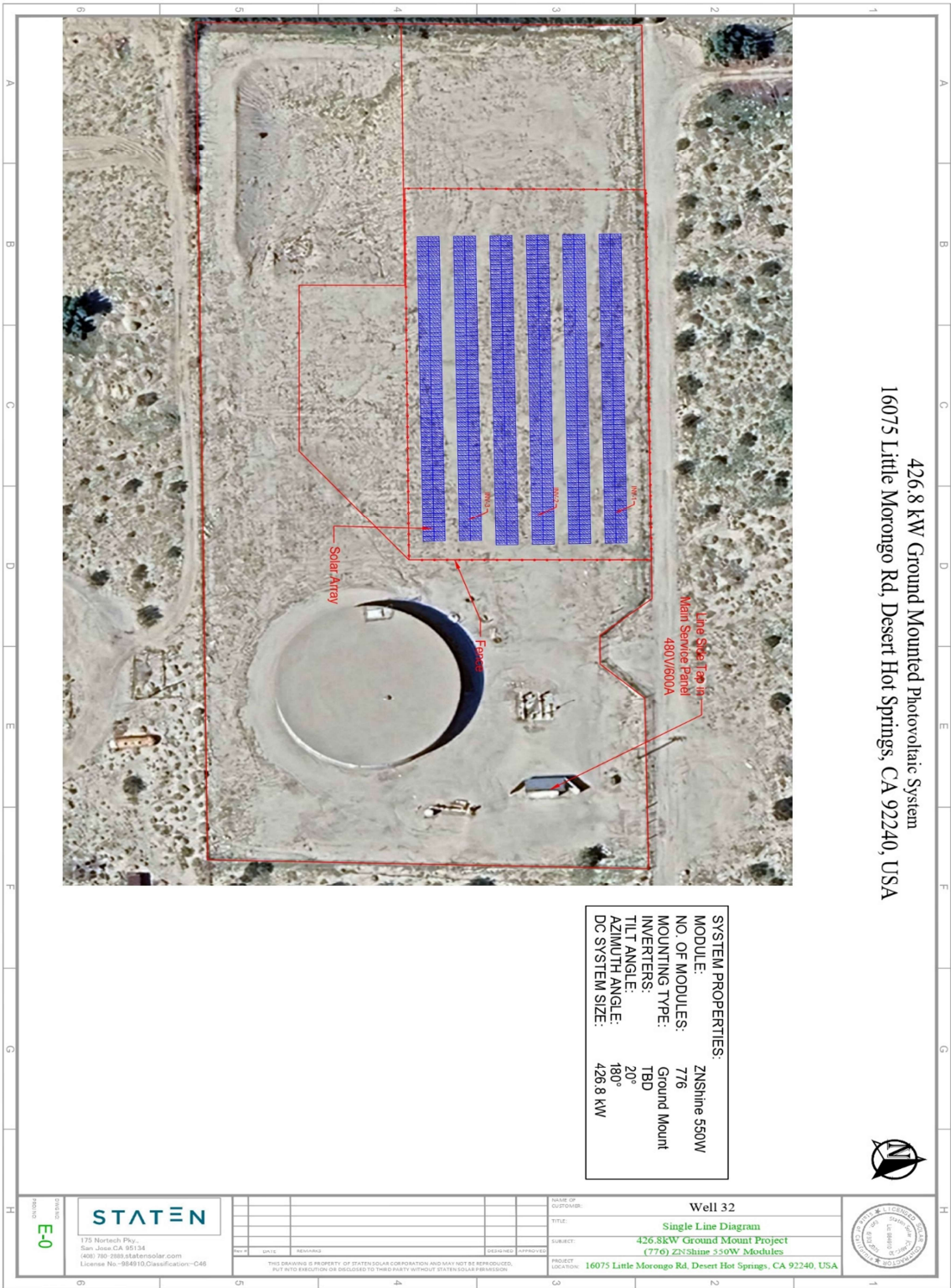


203.5 kW Ground Mounted Photovoltaic System
65700 Ironwood Dr, Desert Hot Springs, CA 92240, USA

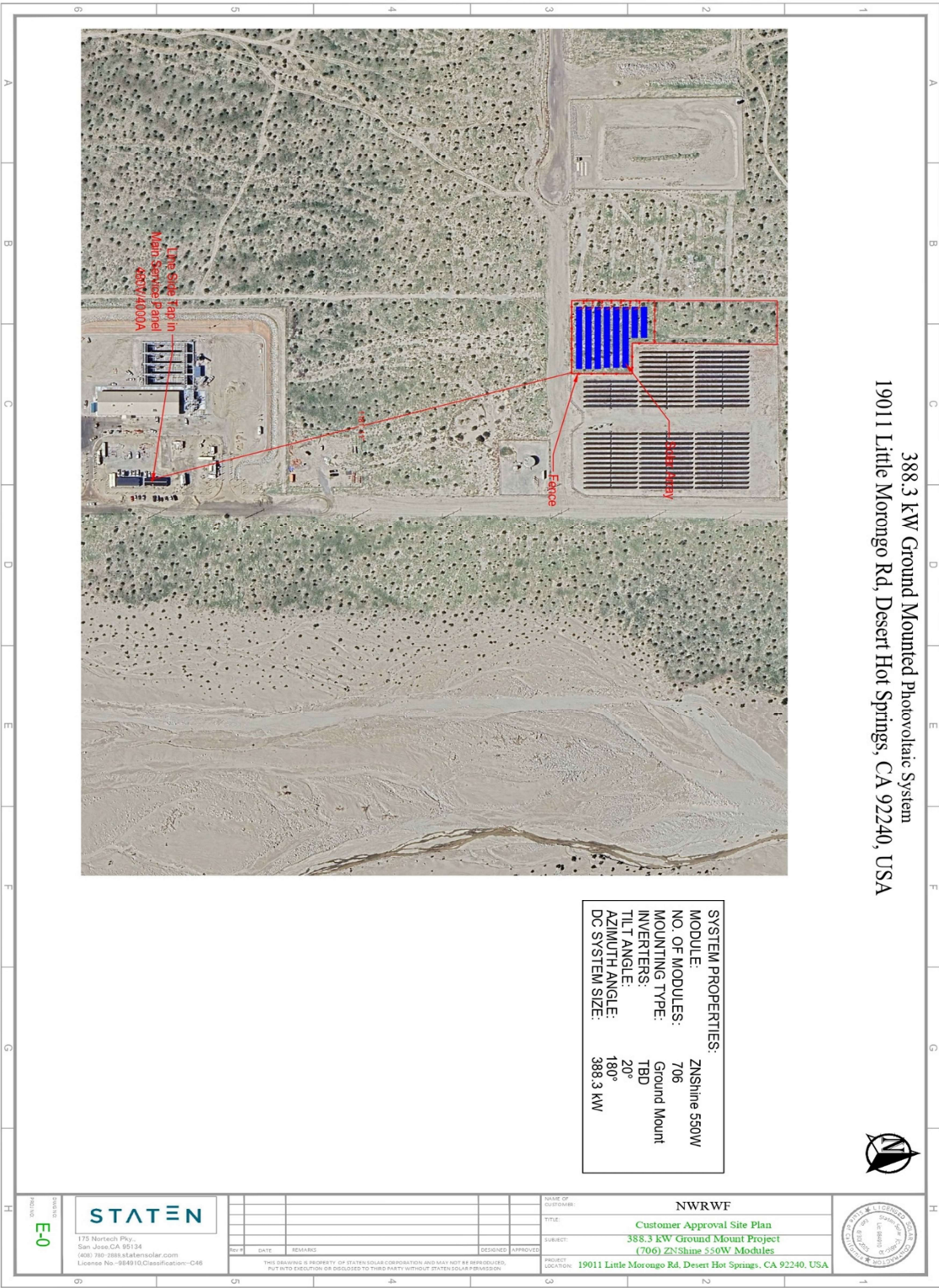




System Layout – Well 32 and Booster Station

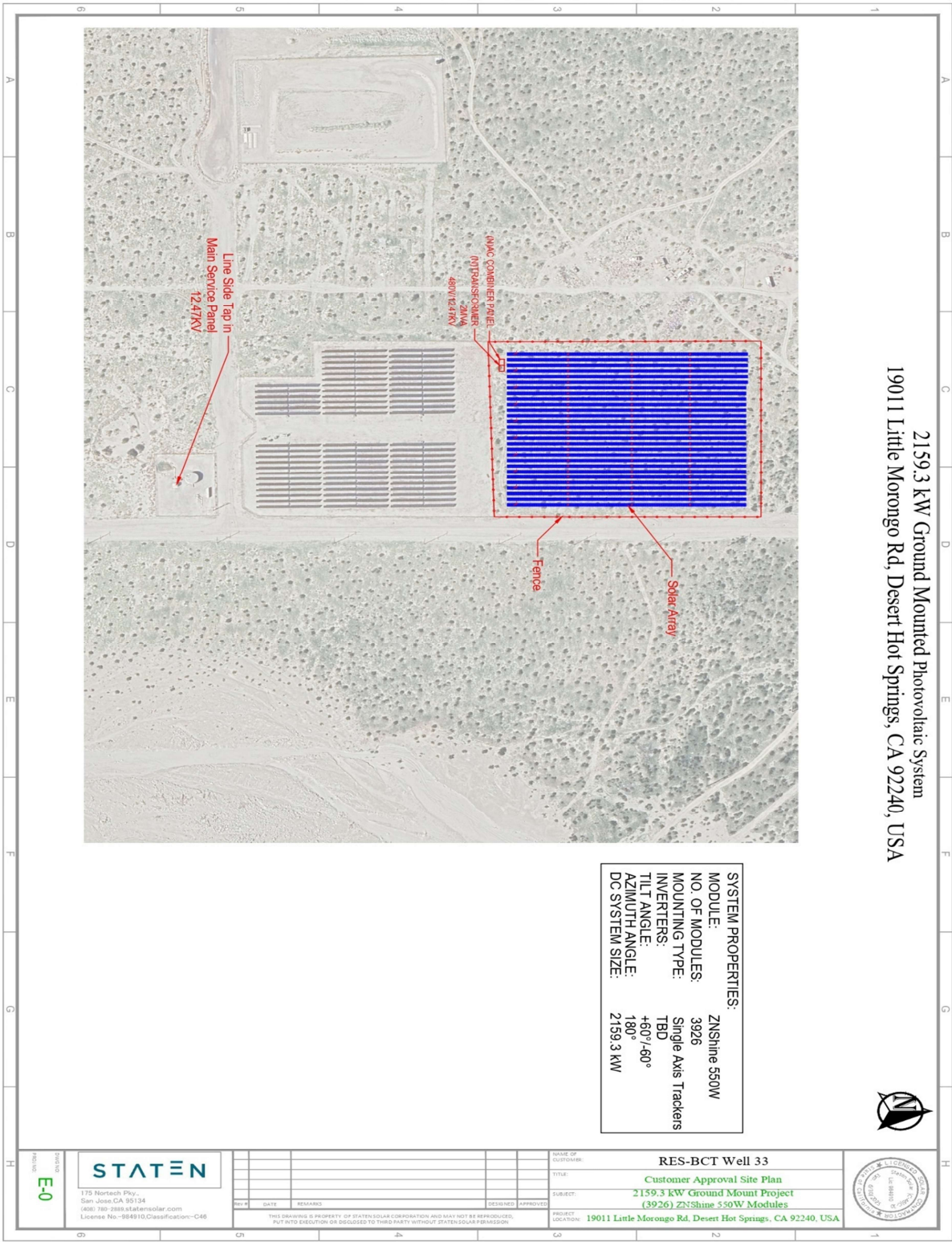


System Layout – Nancy Wright Regional Water Reclamation





System Layout – Little Morongo RES - BCT



Appendix – B (PVSyst Simulation)

PVSyst Simulation

Note: PVSyst report for each project site can be accessed through this link – [PVSyst Report](#)

[https://drive.google.com/drive/folders/1FHJS6FPurWUWMBvUbqs_sTCsyA6ddwIU?usp=drive link](https://drive.google.com/drive/folders/1FHJS6FPurWUWMBvUbqs_sTCsyA6ddwIU?usp=drive_link)

Sr. No.	Site Name	PVSyst Simulation Report (Click on the below Link)
1	Horton WWTP	Click to get PVSyst Report
2	Well 24	Click to get PVSyst Report
3	Well 27	Click to get PVSyst Report
4	Well 29	Click to get PVSyst Report
5	Well 32 and Booster Station	Click to get PVSyst Report
6	Nancy Wright Regional Water Reclamation	Click to get PVSyst Report
7	Little Morongo RES-BCT	Click to get PVSyst Report

Appendix – C (SLDs)

SLD for Solar System

Note: Single Line Diagrams (SLDs) for each project site can be accessed through this link: [SLDs – Solar System](#)

https://drive.google.com/drive/folders/1d3FTcC1oEAZpTqO8YOPdyROjRJb2lw_u?usp=drive_link

Sr. No.	Site Name	Solar System - SLDs (Click on the below Link)
1	Horton WWTP	Click to get system SLD
2	Well 24	Click to get system SLD
3	Well 27	Click to get system SLD
4	Well 29	Click to get system SLD
5	Well 32 and Booster Station	Click to get system SLD
6	Nancy Wright Regional Water Reclamation	Click to get system SLD
7	Little Morongo RES-BCT	Click to get system SLD

Appendix – D (ETBs)

ETBs for Solar System

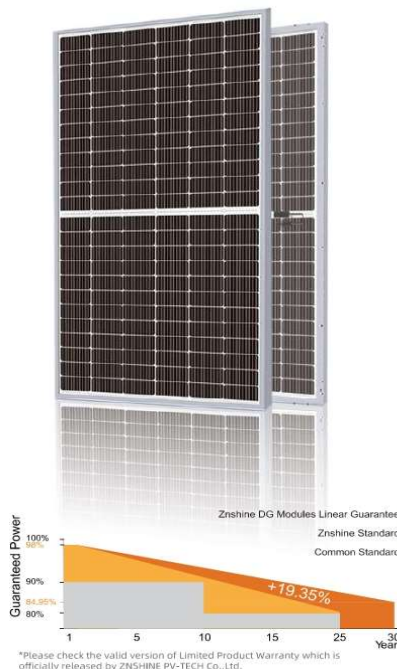
Note: ETB reports for each project site (Solar System) can be accessed through this link: [ETBs Report](#)

https://drive.google.com/drive/folders/1p_iyIluE_y3w2k3KSSDnc4HLaFBd8-s?usp=drive_link

Sr. No.	Site Name	Solar System - ETBs (Click on the below Link)
1	Horton WWTP	Click to get the ETB Report
2	Well 24	Click to get the ETB Report
3	Well 27	Click to get the ETB Report
4	Well 29	Click to get the ETB Report
5	Well 32 and Booster Station	Click to get the ETB Report
6	Nancy Wright Regional Water Reclamation	Click to get the ETB Report
7	Little Morongo RES-BCT	Click to get the Cash Flow Analysis

Appendix – E (Equipment Datasheets)

Datasheet – Solar Module



ZXM7-SHLDD144 Series

10BB HALF-CELL Bifacial Double Glass Monocrystalline PERC PV Module

525-550W
POWER RANGE

21.23%
MAXIMUM EFFICIENCY

0.45%
YEARLY DEGRADATION

12 12 YEARS PRODUCT WARRANTY

30 30 YEARS OUTPUT GUARANTEE



IEC 61215/IEC 61730/IEC 61701/IEC 62716/UL6 1730
ISO 14001: Environmental Management System
ISO 9001: Quality Management System
ISO45001: Occupational Health and Safety Management System

*As there are different certification requirements in different markets, please contact your local znshine sales representative for the specific certificates applicable to the products in the region in which the products are to be used.

Key Features



Excellent Cells Efficiency

MBB technology reduce the distance between busbars and finger grid line which is benefit to power increase.



Better Weak Illumination Response

More power output in weak light condition, such as haze, cloudy, and early morning.



Anti PID

Ensured PID resistance through the quality control of cell manufacturing process and raw materials.



Adapt To Harsh Outdoor Environment

Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity environment.



TIER 1

Global, Tier 1 bankable brand, with independently certified advanced automated manufacturing.



Excellent Quality Management System

Warranted reliability and stringent quality assurances well beyond certified requirements.



Bifacial Technology

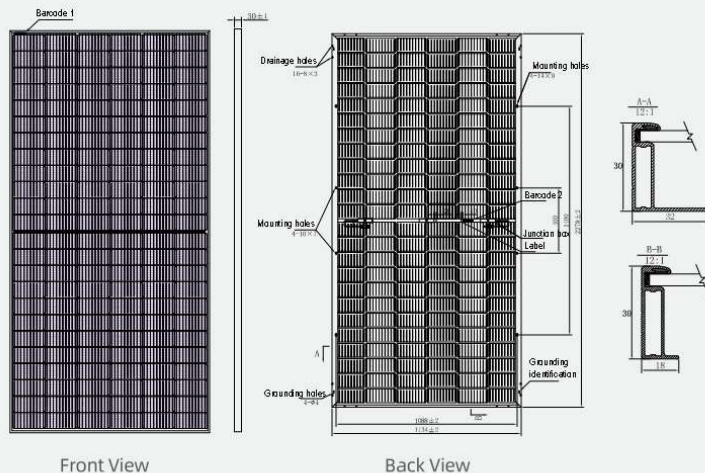
Up to 25% additional power gain from back side depending on albedo.

Founded in 1988, ZnShine solar is a world's leading high-tech PV module manufacturer. With the advanced production lines, the company boasts module capacity of 6GW. Bloomberg has listed ZnShine as a global Tier 1 PV module maker. Today ZnShine has distributed its sales to more than 60 countries around the globe.

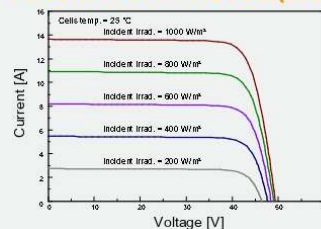
ZXM7-SHLDD144 Series | Znshinesolar 10BB HALF-CELL Bifacial Double Glass Monocrystalline PERC PV Module



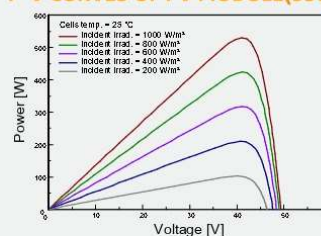
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE(530W)



P-V CURVES OF PV MODULE(530W)



ELECTRICAL CHARACTERISTICS | STC*

Nominal Power Watt Pmax(W)*	525	530	535	540	545	550
Power Output Tolerance Pmax(%)	0~+3	0~+3	0~+3	0~+3	0~+3	0~+3
Maximum Power Voltage Vmp(V)	40.90	41.10	41.30	41.50	41.70	41.90
Maximum Power Current Imp(A)	12.85	12.91	12.96	13.02	13.07	13.13
Open Circuit Voltage Voc(V)	49.20	49.40	49.60	49.80	50.00	50.20
Short Circuit Current Isc(A)	13.59	13.65	13.71	13.77	13.83	13.89
Module Efficiency (%)	20.32	20.52	20.71	20.90	21.10	21.29

*The data above is for reference only and the actual data is in accordance with the practical testing

*STC (Standard Test Condition): Irradiance 1000W/m², Module Temperature 25°C, AM 1.5

*Measuring tolerance: ±3%

MECHANICAL DATA

Solar cells	Mono PERC
Cells orientation	144 (6×24)
Module dimension	2278×1134×30 mm (With Frame)
Weight	31.5±1 kg
Glass	2.0 mm±2.0mm, High Transmission, AR Coated Heat Strengthened Glass
Junction box	IP 68, 3 diodes
Cables	4 mm², 350 mm (With Connectors)
Connectors	MC4-compatible

*Please refer to regional datasheet for specified connector

ELECTRICAL CHARACTERISTICS | NMOT*

Maximum Power Pmax(Wp)	392.70	396.40	399.90	403.60	406.80	410.80
Maximum Power Voltage Vmpp(V)	38.00	38.20	38.40	38.50	38.80	38.90
Maximum Power Current Imp(A)	10.33	10.38	10.42	10.47	10.49	10.56
Open Circuit Voltage Voc(V)	46.00	46.20	46.30	46.50	46.70	46.90
Short Circuit Current Isc(A)	10.98	11.02	11.07	11.12	11.17	11.22

*NMOT: Irradiance 800W/m², Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s

ELECTRICAL CHARACTERISTICS WITH 25% REAR SIDE POWER GAIN*

Front power Pmax/W	525	530	535	540	545	550
Total power Pmax/W	656	663	669	675	681	688
Vmp/V(Total)	41.00	41.20	41.40	41.60	41.80	42.00
Imp/A(Total)	16.01	16.08	16.15	16.23	16.30	16.37
Voc/V(Total)	49.30	49.50	49.70	49.90	50.10	50.30
Isc/A(Total)	16.95	17.02	17.10	17.17	17.25	17.32

*Bifacial Gain: The additional gain from the back side compared to the power of the front side at the standard test condition.
It depends on mounting structure, height, tilt angle etc.) and albedo of the ground.

TEMPERATURE RATINGS

NMOT	44°C ±2°C	Maximum system voltage	1500 V DC
Temperature coefficient of Pmax	-0.35%/°C	Operating temperature	-40°C~+85°C
Temperature coefficient of Voc	-0.29%/°C	Maximum series fuse	30 A
Temperature coefficient of Isc	0.05%/°C	Front Side Maximum Static Loading	Up to 5400Pa
Refer. Bifacial Factor	70±10%	Rear Side Maximum Static Loading	Up to 2400Pa

*Do not connect Fuse in Combiner Box with two or more strings in parallel connection

PACKAGING CONFIGURATION**

Piece/Box	36
Piece/Container(40'HQ)	720

*Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer.
They only serve for comparison among different module types.

**Customized packaging is available upon request.

Caution: Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

Address: 1#, Zhixi Industrial Zone, Jintan Jiangsu 213251, P.R. China | Tel: +86 519 6822 0233

Note: Specifications included in this datasheet are subject to change without notice. ZNSHINE reserves the right of final interpretation © ZNSHINE SOLAR 2022 | Version: ZXM7-SHLDD144 2201.E
No special undertaking or warranty for the suitability of special purpose or being installed in extraordinary surroundings is granted unless as otherwise specifically committed by manufacturer in contract document



50/60 kW, 1000 Vdc String Inverters for North America

The 50 & 60 kW (55 & 66 kVA) medium-power CPS three-phase string inverters are designed for ground mount, large rooftop and carport applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 98.8% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications.

The CPS 50/60KTL products ship with either the Standard Wire-box or the Rapid Shutdown Wire-box, each fully integrated and separable with touch-safe fusing, monitoring, and AC and DC disconnect switches. The integrated PLC transmitter in the Rapid Shutdown Wire-box enables PVRSS certified module-level rapid shutdown when used with the Tigo TS4-F/TS4-A-F/TS4-A-2F products, APS RSD-S-PLC/RSD-D products, and NEP PVG-2 products. The CPS FlexOM Gateway enables monitoring, controls and remote product upgrades.

Key Features

- NEC 2017/2020 PVRSS certified for rapid shutdown
- 55 & 66 kVA rating allows max rated active power @ ± 0.91 PF
- Selectable max AC apparent power of 50/55 kVA and 60/66 kVA
- NEC compliant and UL listed arc-fault circuit protection
- 15-90° mounting orientation for low profile roof installs
- Optional FlexOM Gateway enables remote firmware upgrades
- Integrated AC and DC disconnect switches
- 3 MPPTs with 5 inputs each for maximum flexibility
- NEMA Type 4X outdoor rated enclosure
- UL 1741-SA certified to CA Rule 21, including SA8 - SA18
- UL 1741-SB and IEEE 1547-2018 certified
- Separable wire-box design for fast service
- Standard 10-year warranty with extensions up to 20 years



CPS SCA50KTL-DO/US-480
CPS SCA60KTL-DO/US-480



50/60KTL Standard Wire-box



50/60KTL Rapid Shutdown Wire-box



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Chint Power Systems America
1380 Presidential Drive, Suite 100, Richardson, TX 75081
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com



Technical Data

Model Name	CPS SCA50KTL-DO/US-480	CPS SCA60KTL-DO/US-480
DC Input		
Max. PV power	90 kW (33 kW per MPPT)	
Max. DC input voltage	1000 Vdc	
Operating DC input voltage range	200-950 Vdc	
Start-up DC input voltage / power	330 V / 80 W	
Number of MPP trackers	3	
MPPT voltage range @ PF>0.99	480-850 Vdc	540-850 Vdc
Max. PV short-circuit current (Isc x 1.25)	204 A (68 A per MPPT)	
Number of DC inputs	15 inputs, 5 per MPPT	
DC disconnection type	Load-rated DC switch	
DC surge protection	Type II MOV	
AC Output		
Rated AC output power @ PF>0.99 to ±0.91 ¹	50 kW	60 kW
Max. AC apparent power (selectable)	50 / 55 kVA	60 / 66 kVA
Rated output voltage	480 Vac	
Output voltage range ²	422 - 528 Vac	
Grid connection type	3Φ / PE / N (Neutral optional)	
Max. AC output current @ 480 Vac	60.2 / 66.2 A	72.2 / 79.4 A
Rated output frequency	60 Hz	
Output frequency range ²	57 - 63 Hz	
Power factor	>0.99 (±0.8 adjustable)	
Current THD @ rated load	<3%	
Max. fault current contribution (1 cycle RMS)	64.1 A (1.06/0.88 PU)	
Max. OCPD rating	110 A	125 A
AC disconnection type	Load-break rated AC switch	
AC surge protection	Type II MOV	
System and Performance		
Topology	Transformerless	
Max. efficiency	98.8%	
CEC efficiency	98.5%	
Stand-by / night consumption	<1 W	
Environment		
Enclosure protection degree	NEMA Type 4X	
Cooling method	Variable speed cooling fans	
Operating temperature range ³	-22°F to +140°F / -30°C to +60°C	
Non-operating temperature range ⁴	No low temp minimum to +158°F / +70°C maximum	
Operating humidity	0 to 100%	
Operating altitude	13123 ft / 4000 m (derating from 9843 ft / 3000 m)	
Audible noise	<60 dBA @ 1 m and 25°C	
Display and Communication		
User interface and display	LCD+LED	
Inverter monitoring	SunSpec, Modbus RS485	
Site-level monitoring	CPS FlexOM Gateway (1 per 32 inverters)	
Modbus data mapping	CPS	
Remote diagnostics / firmware upgrade functions	Standard / (with FlexOM Gateway)	
Mechanical		
Dimensions (H x W x D)	39.4 x 23.6 x 10.24 in (1000 x 600 x 260 mm)	
Weight	Inverter: 123.5 lbs (56 kg); Wire-box: 33 lbs (15 kg)	
Mounting / installation angle ⁵	15 to 90 degrees from horizontal (vertical or angled)	
AC termination	M8 stud type terminal block (wire range: #6 - 3/0 AWG CU/AL; lugs not supplied)	
DC termination ⁶	Screw clamp, neg. busbar (RSD version ⁸) wire range: #14 - #6 AWG CU	
Fused string inputs (5 per MPPT) ⁷	RSD ⁶ and Standard Wire-box: 20 A fuses provided (fuse values up to 30 A acceptable)	
Safety		
Certifications and standards	UL 1741-SA Ed. 2, UL 1699B, CSA-C22.2 NO.107.1-01, IEEE 1547a-2014, FCC PART15	
Selectable grid standard	IEEE 1547a-2014, CA Rule 21, ISO-NE	
Smart-grid features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAR, Freq-Watt, Volt-Watt	
Warranty		
Standard	10 years	
Extended terms	15 and 20 years	

1) Active power derating begins at PF = ± 0.91 to ± 0.80 when max AC apparent power is set to 55 or 66 kVA.

2) The "output voltage range" and "output frequency range" may differ according to the specific grid standard.

3) Active power derating begins at 40°C when PF = ± 0.9 and MPPT \geq Vmin; at 45°C when PF = 1 and MPPT \geq Vmin; and at 50°C when PF = 1 and MPPT \geq 700 Vdc.

4) See user manual for further requirements regarding non-operating conditions.

5) Shade cover accessory required for installation angles of 75 degrees or less.

6) RSD wire-box only includes fuses and fuse holders on the positive polarity, compliant with NEC 2017/2020.

7) Fuse values above 20 A have additional spacing requirements or require the use of the Y-Comb Terminal Block. See user manual for more details.

8) Firmware version 17.0 or later required.



Datasheet

100kW, 1500Vdc/480Vac String Inverters for North America



CPS SCH100KTL-DO/US-480

The 100kW high power CPS three-phase string inverters are designed for ground-mount applications with 480Vac service voltage. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiencies, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 100kW products ship with the Standard or Centralized Wire-box, each fully integrated and separable with AC and DC disconnect switches. The Standard Wire-box includes touch-safe fusing for up to 20 strings. The CPS FlexOM solution enables communication, controls and remote product upgrades.

Key Features

- NFPA 70 and NEC compliant
- Touch-safe DC fuse holders adds convenience and safety
- CPS FlexOM Gateway enables remote firmware upgrades
- Integrated AC & DC disconnect switches
- 1 MPPT with 20 fused inputs for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- Advanced Smart-Grid features (CA Rule 21 certified)
- kVA headroom yields 100kW @ 0.95PF
- Generous DC/AC inverter load ratios
- Separable wire-box design for fast service
- Standard 5-year warranty with extensions to 20 years



100KTL Standard Wire-box



100KTL Centralized Wire-box



This device complies with part 15 of the FCC Rules

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Chint Power Systems America
1380 Presidential Drive, Suite 100, Richardson, TX 75081
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com



Model Name	CPS SCH100KTL-DO/US-480
DC Input	
Max. DC input voltage	1500Vdc
Operating DC input voltage range	750-1450Vdc
Start-up DC input voltage / power	900Vdc / 200W
Number of MPP trackers	1
MPPT voltage range @ PF>0.99 ¹	760-1300Vdc
Max. PV input current (Isc x1.25)	275A
Number of DC inputs	20 PV source circuits, pos. & neg. fused with Standard Wire-box 1 input circuit, 1-2 terminations per pole, non-fused with Centralized Wire-box
DC disconnection type	Load-rated DC switch
DC surge protection	Type II MOV (with indicator/remote signaling), Up=2.5kV, In=20kA (8/20uS)
AC Output	
Rated AC output power @ PF>0.99	100kW
Max. AC apparent power ²	100kVA (105.3kVA @ PF>0.95)
Rated output voltage	480Vac
Output voltage range ³	423-528Vac
Grid connection type ⁴	3-Phase / PE / N (neutral optional)
Max. AC output current @ 480Vac	120.3A / 126.7A
Rated output frequency	60Hz
Output frequency range ³	57 - 63Hz
Power factor	>0.99 (±0.8 adjustable)
Current THD @ rated load	<3%
Max. fault current contribution (1 cycle RMS)	41.47A
Max. OCPD rating	200A
AC disconnection type	Load-rated AC switch
AC surge protection	Type II MOV (with indicator/remote signaling), Up=2.5kV, In=20kA (8/20uS)
System and Performance	
Topology	Transformerless
Max. efficiency	98.9%
CEC efficiency	98.0%
Stand-by / night consumption	<4W
Environment	
Enclosure protection degree	NEMA Type 4X
Cooling method	Variable speed cooling fans
Operating temperature range	-22°F to +140°F / -30°C to +60°C (derating from +108°F / +42°C)
Non-operating temperature range ⁵	No low temp minimum to +158°F / +70°C maximum
Operating humidity	0-100%
Operating altitude	8202ft / 2500m (no derating)
Audible noise	<65dBA @ 1m and 25°C
Display and Communication	
User interface and display	LED indicators, WiFi + APP
Inverter monitoring	Modbus RS485
Site level monitoring	CPS FlexOM (1 per 32 inverters)
Modbus data mapping	SunSpec / CPS
Remote diagnostics / firmware upgrade functions	Standard / (with FlexOM Gateway)
Mechanical	
Dimensions (W x H x D)	45.28 x 24.25 x 9.84in (1150 x 616 x 250mm) with Standard Wire-box 39.37x24.25x9.84in (1000x616x250mm) with Centralized Wire-box
Weight	Inverter: 121lbs / 55kg; Wire-box: 55lbs / 25kg (Standard Wire-box); 33lbs / 15kg (Centralized Wire-box)
Mounting / installation angle	15 - 90 degrees from horizontal (vertical or angled)
AC termination	M10 stud type terminal [3Ø] (wire range: 1/0AWG - 500kcmil CU/AL, lugs not supplied) Screw clamp terminal block [N] (#12 - 1/0AWG CU/AL)
DC termination	Screw clamp fuse holder (wire range: #12 - #6AWG CU) with Standard Wire-box Busbar, M10 Bolts (wire range: #1AWG - 500kcmil CU/AL [1 termination per pole], #1AWG - 300kcmil CU/AL [2 terminations per pole], lugs not supplied) with Centralized Wire-box
Fused string inputs	20A fuses provided (fuse values up to 30A acceptable)
Safety	
Certifications and standards	UL1741-SA/SB Ed. 3, CSA-22.2 NO.107.1-01, IEEE1547-2018, FCC PART15
Selectable grid standard	IEEE 1547a-2014, IEEE 1547-2018 ⁶ , CA Rule 21, ISO-NE, HECO Rule 14H
Smart-grid features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAR, Freq-Watt, Volt-Watt
Warranty	
Standard	5 years
Extended terms	10, 15, and 20 Years

1) See user manual for information regarding MPPT voltage range when operating at non-unity PF.
2) "Max AC apparent power" rating valid within MPPT voltage range and temperature range of -30°C to +40°C (-22°F to +104°F).
3) The "output voltage range" and "output frequency range" may differ according to the specific grid standard.
4) Wye neutral-grounded; Delta may not be corner-grounded.
5) See user manual for further requirements regarding non-operating conditions.
6) Firmware version 12.0 or later required.

Datasheet – Monitoring (DAS) System

STANDARD DATA
ACQUISITION
SYSTEM

WDAS-S3

FEATURES

- Revenue-grade energy metering with NIST traceable calibration certificates
- Battery backup for increased uptime and outage accounting
- Second-by-second monitoring and control for distributed generation assets
- Universal compatibility with Modbus/RTU and Modbus/TCP devices

SPECIFICATIONS

GENERAL	
Dimensions	19.69 x 15.75 x 7.87 in (500.13 x 400.05 x 199.90 mm)
Weight	16 lb (7.26 kg) 32 lb with batteries (14.2 kg)
Ratings	UL 508A
Mounting	Non-penetrating surface-mount installation with included flange kit
Warranty ¹	5 years against defects in materials and workmanship
ENVIRONMENTAL	
Operating Temperature	-20 to 70°C, 20-90% relative humidity non-condensing
Protection Ratings	NEMA 4X / IP67, outdoor-rated
POWER SUPPLY	
Input Voltage	311-690Vac L-L
Input Protection	2A Class CC time-delay fuse per input
Power Consumption	Average: 11W Peak: 80W
UPS	(2) 9Ah sealed lead acid batteries in series (24V DC) Powers equipment for up to 18 hours after power failure ²
External ³	Up to 1A at 24V DC available for external devices and sensors Switched via UL 1077 supplementary protector
DATA ACQUISITION	
Resolution	10 second nominal Configurable down to 1 second
Device Limit	250 devices over ethernet 32 devices over RS-485 <i>Contact sales@wattch.io for options to increase device count</i>
Compatibility	Modbus/RTU or Modbus/TCP devices <i>Contact sales@wattch.io for an up-to-date hardware compatibility list</i>
Interfaces	(1) RS-485 (1) Available 10/100 Ethernet port
Storage Capacity ⁴	Up to 3 months of offline data storage capacity
Connectivity	LTE Cat 4 Modem with multi-carrier compatibility (requires Wattch data plan)
METERING	
CT Inputs	Compatible with any 333 mV CT
Accuracy ⁵	Typical 0.1% (ANSI C12.20 Class C0.1)

¹Excludes SLA backup batteries and fuses²Actual runtime will vary based on the number of external devices connected³Devices connected must be 21-28VDC tolerant for operation while running on UPS backup⁴Exact value varies with the number of configured devices⁵Applies from 1% to 120% of rated CT current, NIST traceable calibration certificate available upon request for an additional feeDeveloped in partnership with **ACCUEnergy**



BILL OF MATERIALS

GENERAL	
Enclosure	Polycase WQ-76
POWER SUPPLY	
Power Supply	Mean Well WDR-120-24
Uninterruptible Power Supply	Mean Well DUPS40
AC Protection	Holly HC10SR Fuse
I/O Supplementary Protector	Eaton FAZ-B1-1-SP
UPS Supplementary Protector	Eaton FAZ-B3-1-SP

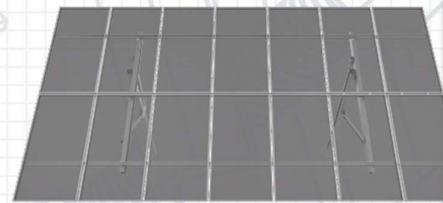
DATA ACQUISITION	
Production Meter	AccuEnergy AcuVim IIR
Data Logger/Controller	Wattch Edge Controller
COMMUNICATIONS	
LTE Modem	Digi International IX30-00G4

GROUND FIXED TILT



IN STOCK AND READY TO SHIP

- Standardized components and kitted hardware bring ease of stocking and repeatability from 2KW to multi-MW.
- North America's largest ground mount distributor network ensures the fastest lead times and empowers you to finish your projects on schedule.

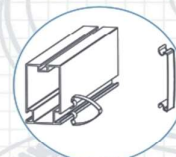
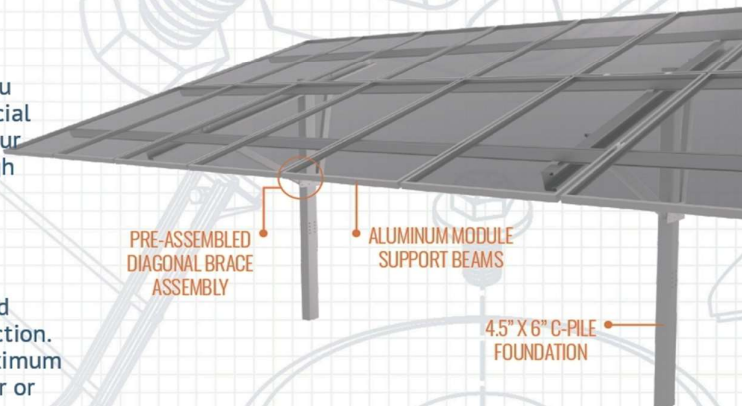


PERMIT - READY

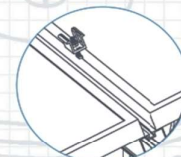
- Pre-engineered regional designs save you valuable time. Industry-leading commercial customer service supports you across your project, from design and logistics through installation.

INSTALLATION EXPERIENCE

- Kitted hardware, integrated bonding, and pre-assembled parts streamline construction. Straightforward connections ensure maximum strength and require no specialized labor or training.
- Lightweight components allow for one or two-person assembly.
- System flexibility enables you to mount all the most common residential and commercial modules on shared rails or at standard module quarter points.
- Choose from multiple foundations and 3, 4, 5, or 6-rail designs to optimize your projects.



SNAP ON WIRE
MANAGEMENT



TOP MOUNTING MODULE CLAMPS
W/ INTEGRATED BONDING

ABOUT PRODUCT

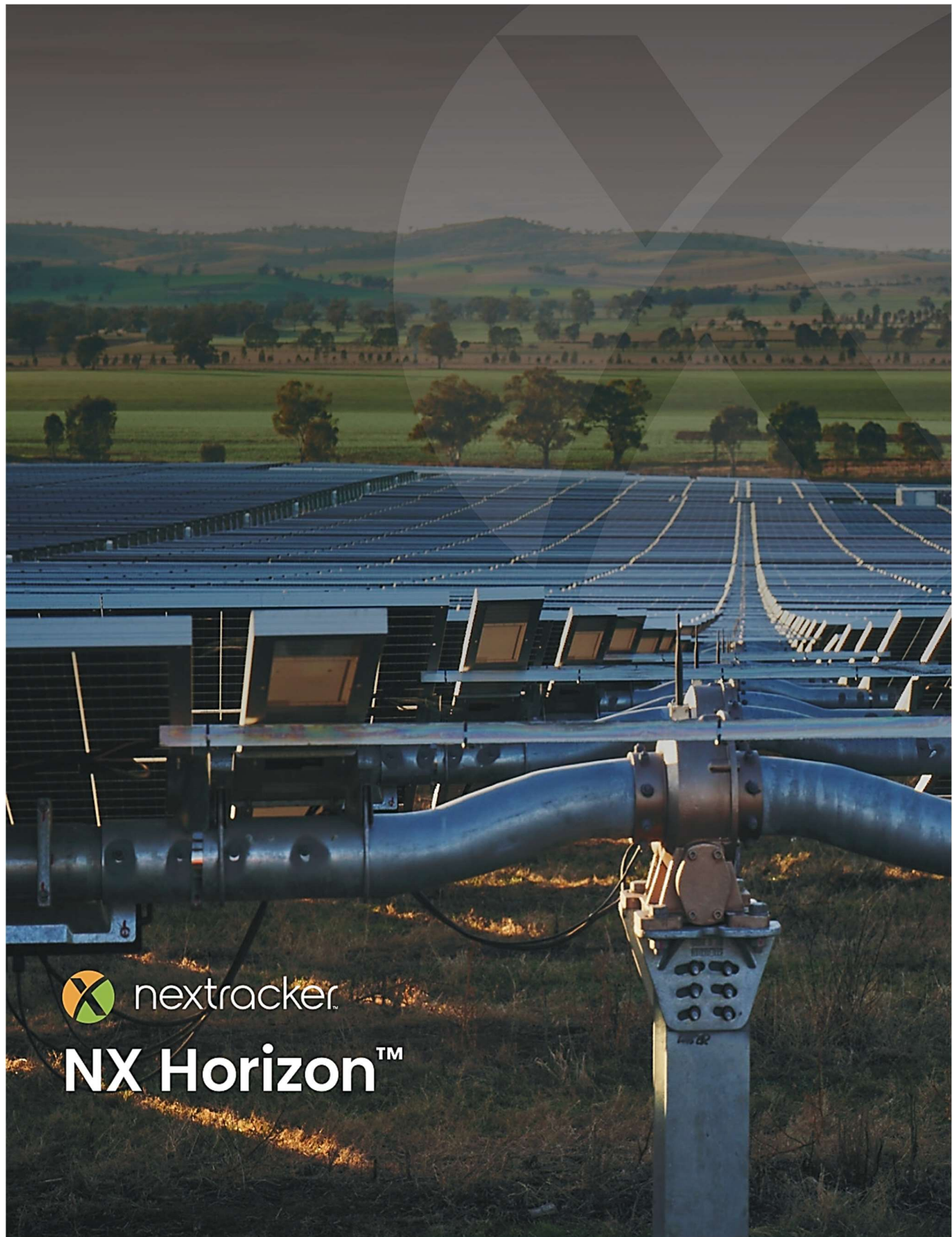
GROUND FIXED TILT (GFT) is a single post geometry system with 20 and 30 tilt options. It's engineered using standard lightweight ground mount components that are in stock and ready to ship from North America's largest ground mount distribution network. UNIRAC's unmatched commercial project support makes construction easy, from permitting through installation, including region specific engineering. GFT's refined solution, including a new shared rail design, delivers enhanced system and labor optimization. Plus, enjoy peace of mind with SOLARMOUNT Mounting Technology and UNIRAC's industry-leading 25-year warranty.

FOR QUESTIONS OR CUSTOMER SERVICE CONTACT:
505-242-6411 | SALES@UNIRAC.COM | WWW.UNIRAC.COM
PUB2024JAN01-V1

CONFORMS TO
UL2703



9001:2015
14001:2015
CERTIFIED





NX Horizon™ is the world's most chosen solar tracking system, deployed and contracted on over 90 gigawatts of solar capacity as of December 2023. NX Horizon's unrivaled combination of integrated hardware and software is the gold standard for the utility-scale solar industry. It is known for its robust design, ease of installation, field-proven weather durability, and LCOE-optimized performance.

Pioneering independent-row technology

NX Horizon's patented independent row, self-powered tracking system provides reliable performance across the widest range of site conditions. Simple, robust hardware, including self-aligning module rails and vibration-proof fasteners, enables rapid installation and long life without maintenance. Mechanically balanced rows minimize tracking power requirements and pair with a time-proven drive & control system for maximum durability and uptime. NX Horizon's decentralized architecture with intelligent communications supports layout adaptability, flexible construction and commissioning sequencing, and advanced tracker functionality with over-the-air updates.

Proven resilience

NX Horizon is designed to withstand extreme weather, proven season after season, with hundreds of systems around the world. Nextracker's in-house project-engineering services configure and optimize NX Horizon to suit the unique combination of weather and climate for each project site. Based on the industry's most comprehensive wind analysis and field testing, NX Horizon is hardened against failures by robust structural design, the industry's best damping system, and advanced stowing functionality. In the event of hail, NX Horizon offers a 60° stow position, rapid rotation and UPS backup to maximize module survivability, even in the event of a grid outage. Additional software, hardware and support is available with NX Horizon Hail Pro™, for maximum capability and readiness in severe hail regions. NX Horizon is inherently tolerant of flooding with drive and control components 4-5' above grade. Flood-stowing functions to protect panels are available.



Highlights

8 years in a row

Global Market Share Leader

90 GW

Delivered on 6 Continents

Best-in Class

Software Ecosystem and
Global Services

Up to 4% more energy

Using TrueCapture yield
optimization software

Optimized for the lowest LCOE

Compared with conventional tracking systems, NX Horizon delivers Levelized Cost of Energy (LCOE) reductions of up to 7% by maximizing energy generation and driving the lowest possible project CAPEX and OPEX.

With pre-assembled components, no drive linkages, no AC wiring, self-aligning rails, and available XTR terrain-following upgrades, NX Horizon is fundamentally faster to install, requiring less construction labor, less grading, and less total project capital cost.

Projects with NX Horizon enjoy open-row access for efficient vegetation management and panel cleaning. Compared with linked row systems, NX Horizon cuts mowing costs by up to 55% and cleaning costs by up to 73%.

To boost energy generation and revenue, NX Horizon comes equipped with a unique design optimized for bifacial modules. In addition, TrueCapture yield optimization software is available, delivering IE-validated annual energy gains using unique algorithms for different module technologies, site terrain and diffuse light conditions.

GENERAL AND MECHANICAL

Architecture	Horizontal single-axis, independent row, independently balanced
Configuration	1x module in portrait
Tracking range of motion	Options for $\pm 60^\circ$ or $\pm 50^\circ$. Steeper stowing angles available with Hail Pro
Row Size	Configurable per module type, string length and site layout
Array Height	Rotation axis elevation, 1.3 to 1.8 m / 4'3" to 5'10"
Drive type	High accuracy slew gear
Modules supported	All utility-scale crystalline and thin-film modules
Bifacial optimization	High-rise mounting rails, bearing & driveline gaps, round torque tube
Structural connections	Engineered fastening system, vibration-proof
Materials	Galvanized steel; other coatings available
Foundations	Complete range of foundation solutions available
Slope	Up to 15% N-S and 15% E-W
Ground coverage ratio (GCR)	No specific limit Typical range 25-45%
Operating temperature range	SELF POWERED: -30°C to 55°C (-22°F to 131°F) AC POWERED: -40°C to 55°C (-40°F to 131°F) Cold Pak upgrades available
Wind speed	Configurable up to 240 kph (150 mph) 10m, 3-second gust
Wind protection	Intelligent wind stowing with symmetric damping system

ELECTRONICS AND CONTROLS

Solar tracking method	Astronomical algorithm with backtracking standard. TrueCapture™ available for enhanced energy yield
Tracker controller	Self-Powered Controller (SPC) with integrated inclinometer and UPS
Motor	Brushless DC
Power supply	SELF POWERED: Standalone smart solar power AC POWERED: Customer-provided 120-277 VAC circuit
Communications	Network control units (NCUs) at inverter pads/skids, self-powered weather stations, centralized data hub, encrypted Zigbee wireless mesh communications
Defensive stowing functions	Wind, hail, hurricane, snow, flood, loss of grid power
Operator interface	NX Navigator advanced HMI available, with SCADA integration

SERVICE, WARRANTY, AND STANDARDS

Tracker engineering & PE stamped design package	Standard
Foundation engineering & PE stamped design package	Available
Onsite construction support & commissioning service	Available
Warranty	10-year structural, 5-year drive and controls standard; extended warranty available
Codes and standards	UL 3703 / UL 2703 / IEC 62817 / CSA

