Emmi Roth- Stoughton Facility
Proposed Solar Project Review
August 30, 2023

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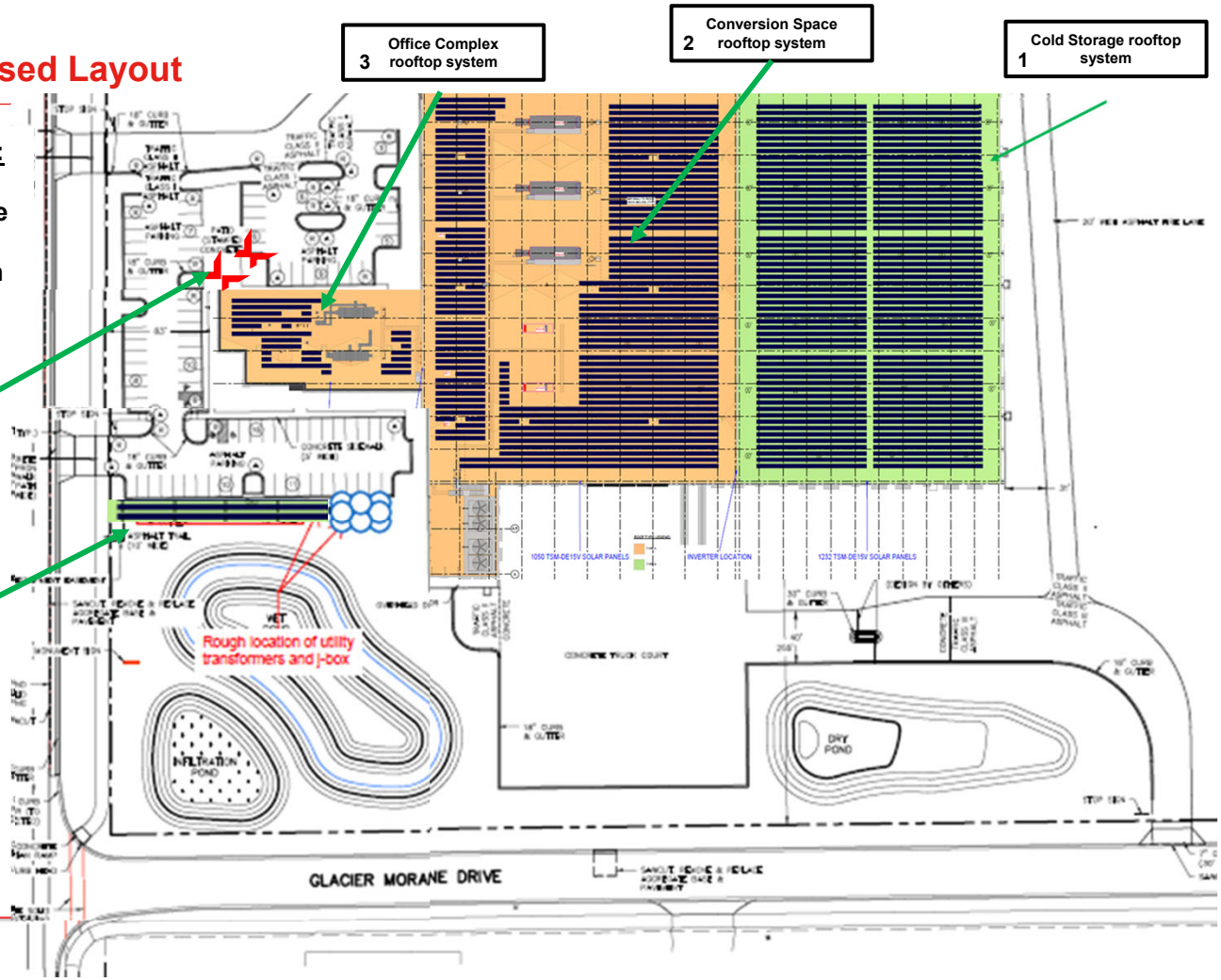
Stoughton Solar Array- Proposed Layout

The Solar arrays would be located in 5 areas:

1) Roof of the Cold Storage warehouse
2) Roof of the Production/Conversion space
3) Roof of the office complex
4) Ground mounted system along the south employee parking lot
5) Small Trestle system on the employee patio



Emmi Roth- Stoughton Solar Project Projected Cost

Project Element	Budgeted Cost ($000s)
1160 kW Solar System	**$2,349**
Design, building structural modifications, electrical, electrical controls, fall protection system, Egauge management system, project management to accommodate solar array	**$1,124**
Total project cost	**$3,474**

1. Complete turnkey design
2. Stamped structural engineering review
3. Zoning, building and electrical permits (City of Stoughton)
4. Utility Interconnection Application and engineering fees
5. Back-feed breakers, disconnects and other required fault protection
6. Labor and balance of system components
7. Fully grounded solar array
8. Fully Engineered and Stamped Electrical Design
9. PV module location as noted on preliminary layout drawing.
10. Full system commissioning
11. Construction facilities and equipment for the duration of the project.
12. Safety plan and safety management throughout construction
13. Design and installation of Fall Protection Safety System for Roof-mounted arrays
14. Fall protection implementation throughout construction
15. Non-permeable, weather resistant ballast block
16. Directional boring for Spotlight Solar Trestle conductors
17. Egauge and inverter integrated monitoring
18. Cantilevered ground mount array
19. Directional boring to building connection point
20. Civil Engineering
21. Owner training

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Stoughton- Proposed Solar Panel Rack Installation

Solar Electrical System Details	
KW Size	1160.43 kW
Solar Modules	(2443) Trina Solar Tier 1 475W
Racking	Ecolibrium Ecofoot & Sky-Rack Fixed-tilt
Inverter	Rapid Shutdown Compliant
Monitoring	Inverter Integrated
Miscellaneous	

ROOFMOUNT | RM10 EVO

UNIRAC
BETTER SOLAR STARTS HERE

LAY IT DOWN AND POWER UP! Unirac has taken the tried-and-true form and functionality of RM10 and evolved it to maximize the potential of flat roof solar projects. We have paired simplicity with power by improving the function, strength and reliability of the module clamps and modified the shape of the north row bay to optimize space and increase module density by up to 20%. The system continues to consist of only three major components, minimizing installation time and reducing soft costs. Quickly design around roof obstacles and bond the system with just the turn of a wrench. As with our legacy systems, optional roof attachments, roof pads, and MLPE mounts provide a complete solution. Unirac's unmatched commercial project support makes construction easy, from permitting through installation, and as always, Unirac is supported by North Americas largest distribution network and industry leading 25-year warranty. AERODYNAMIC DESIGN. SIMPLICITY OF FORM.

SOLID Bifacial

60 cell

Frameless _ Glass/Glass_Transparent

Self-cleaning effect
Extreme load resistance
Fire class A
Salt mist resistance
Ammonia resistance
35% of recycled glass content
98% recyclable
Hail resistance

Positive sorting up to +5W

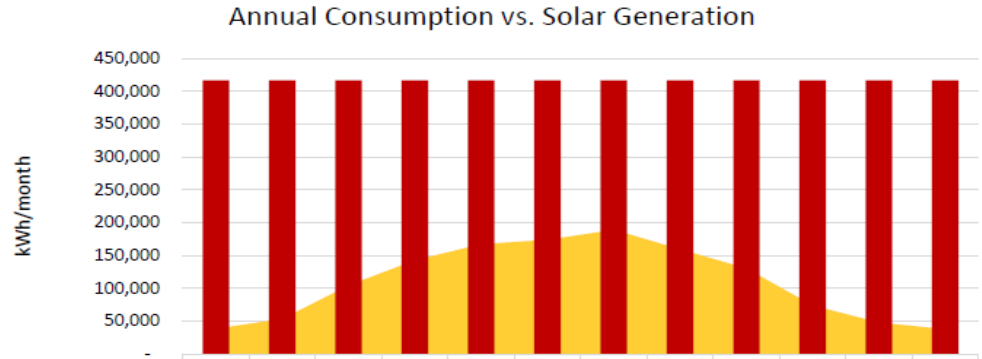
Front side 370 W

30 Year product warranty | 87% Power warranty | 30 Year efficiency warranty

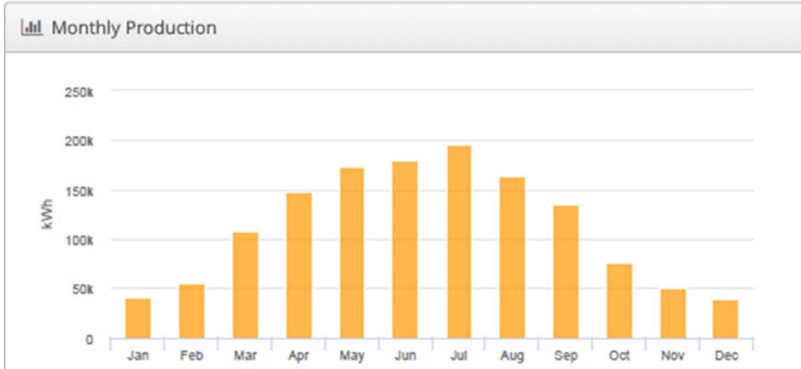
Stoughton- Consumption Vs. Generation

Solar System Characteristics:

- **1160kW system**
  - **Roof Mounted- ballasted rooftop system distributed on top of the cold storage, processing and office space roofs**
  - **Ground Mounted- Eighty-two 475-watt bifacial modules**
  - **Trestle System- Two 6.6kW sets at employee patio**
- **Egauge monitoring system- delivers historic and real-time monitoring**
- **1363 GWh expected annual production**
- **At it's peak performance period (July) the system will provide approximately 45% of our electricity requirements**



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Solar Production	38,57	53,28	104,2	142,6	167,3	173,7	189,1	159,2	130,5	73,73	47,71	37,75
Electric Usage	416,6	416,6	416,6	416,6	416,6	416,6	416,6	416,6	416,6	416,6	416,6	416,6



Month	GHI (kWh/m²)	POA (kWh/m²)	Shaded (kWh/m²)	Nameplate (kWh)	Grid (kWh)
January	47.6	57.6	55.6	39,855.9	40,183.8
February	66.8	78.0	76.7	55,268.1	55,341.7
March	117.1	131.5	130.1	109,274.9	107,962.4
April	154.5	164.7	163.1	155,891.0	147,400.1
May	175.5	180.7	179.1	191,733.4	172,835.8
June	188.3	190.9	189.4	202,870.0	179,263.0
July	202.6	207.3	205.5	220,239.1	195,228.3
August	165.3	173.7	172.3	184,490.7	164,543.9
September	139.7	154.3	152.9	145,878.5	135,078.1
October	84.5	96.8	95.6	79,953.0	76,459.8
November	54.5	67.3	65.7	50,858.2	49,688.6
December	44.2	57.9	54.8	39,194.8	39,493.0

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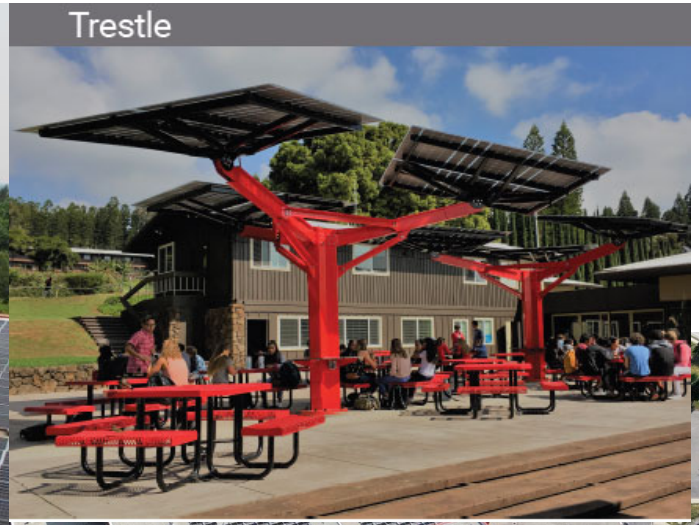
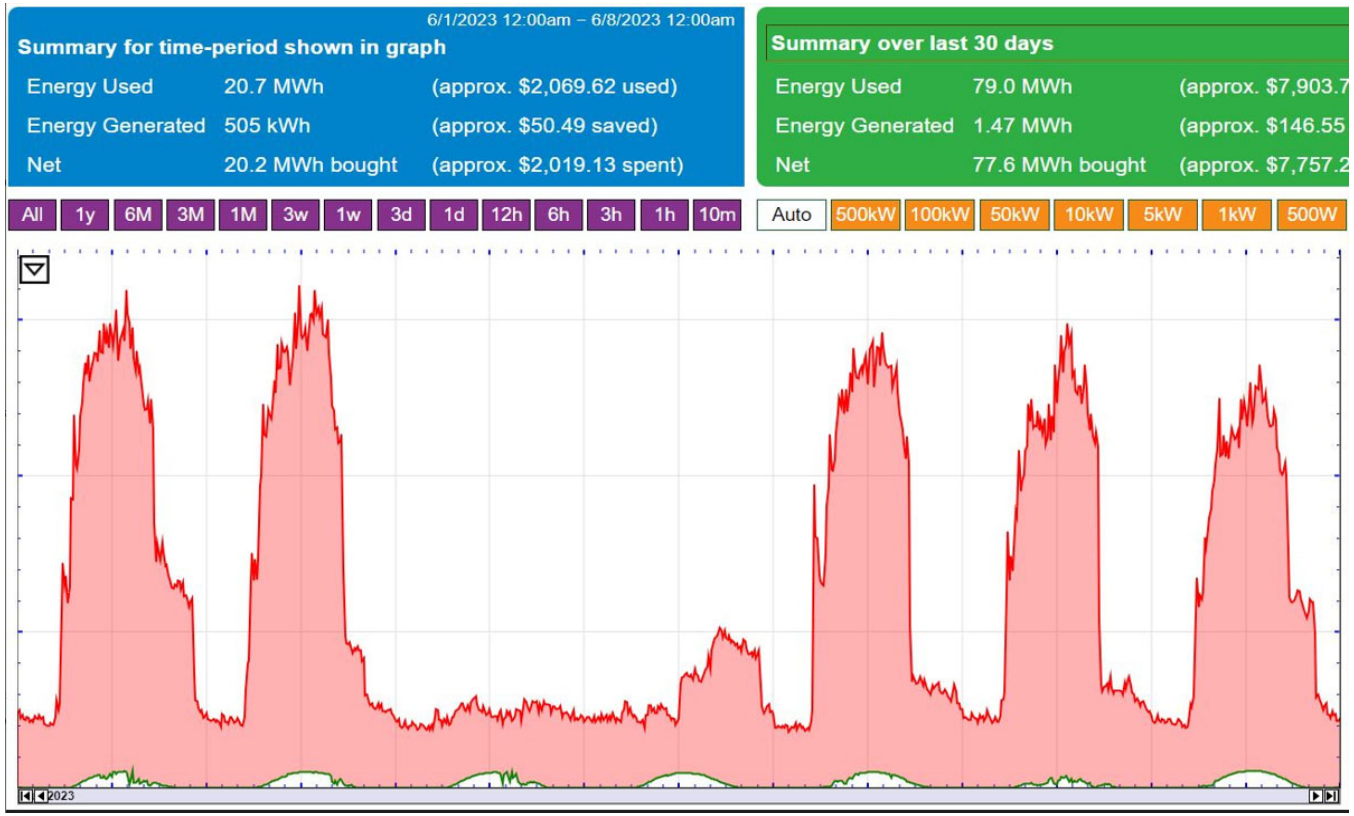
Emmi Roth- Stoughton Solar Project- Representative Examples

EMMI ROTH



Emmi Roth- Stoughton Solar Project- *Egauge* Management System (screenshot)



Emmi Roth- Stoughton Solar Project Projected Environmental Impacts

2,422,596.7 miles driven by an average passenger vehicle.

CO2 emission from burning 1,076,709.7 pounds of coal.

329.6 tons of waste recycled instead of being sent to a landfill

The carbon sequestered by 1,258.5 acres of forests a year.

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