

Greenleaf Energy Solutions

**Renewable &
Energy Efficiency Solutions**

Prepared for:

New Fairfield Public Schools

September 19, 2023



About the Company



Through our alliances with utility companies, manufacturers, and financial institutions, we design and execute energy efficiency upgrades to provide our customers with the most technologically innovative and sustainable products available. We offer a high level of customer care in the industry with an exclusive five-year warranty that is unsurpassed.

Greenleaf Energy Solutions is dedicated to delivering practical energy solutions one customer at a time.

Who We Are

Greenleaf Energy Solutions (GES) is a leading national provider of turnkey LED lighting, HVAC energy conservation services and Solar/Storage Engineering, with a track record of success.

With Offices in **CT (Corporate), VT, FL and TX**, GES has for over 20 years provided our customers operational and environmental benefits that have improved their facilities and reduced their energy use saving them a significant amount of money. Our experience staff of energy professionals have expertise in lighting, energy efficiency, energy management, and solar. With over 5000 installed projects GES is a leader in energy solutions nationwide.

Our Core Values

Customer satisfaction drives all of our behavior.

Attention to details - large and small - is a pillar of GES' core values. We consistently develop and implement practical solutions in a timely and ethical fashion, earning customers' trust and establishing mutually rewarding, long-term relationships.

Greenleaf is committed to becoming exemplary stewards of the world around us.

Every project completed, materials are properly disposed and recycled as it is our responsibility to use natural resources carefully and carry out our business with environmental, economic, and social sustainability in mind.

About **Scope** And Warranties



Inclusions

- Structural Engineering
- Electrical Engineering
- Town Permitting
- Utility Permitting
- Commissioning of System
- Post-install ZREC certification process, if applicable
- Access to Online System Monitoring
- Existing Roof Warranty Continuation, if applicable
- Stepdown Transformer

Additional Services

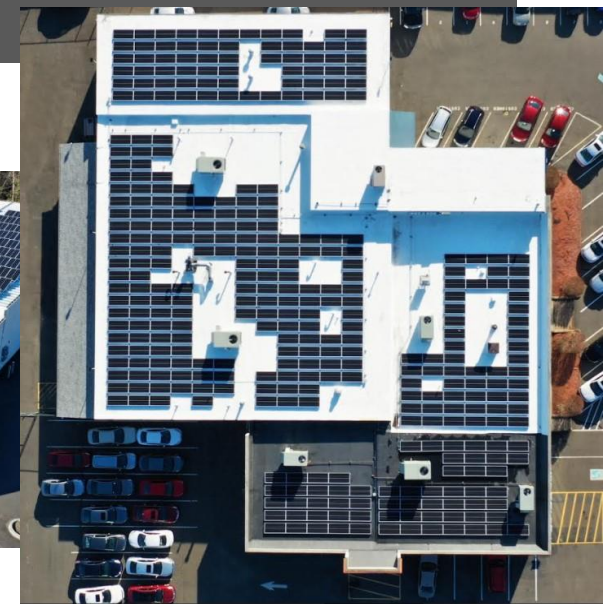
- Energy Efficiency Upgrades
- Structural Reinforcement
- Utility Upgrades
- Roofing Work
- Yearly Maintenance
- Snow Guards
- Battery Storage

Warranties

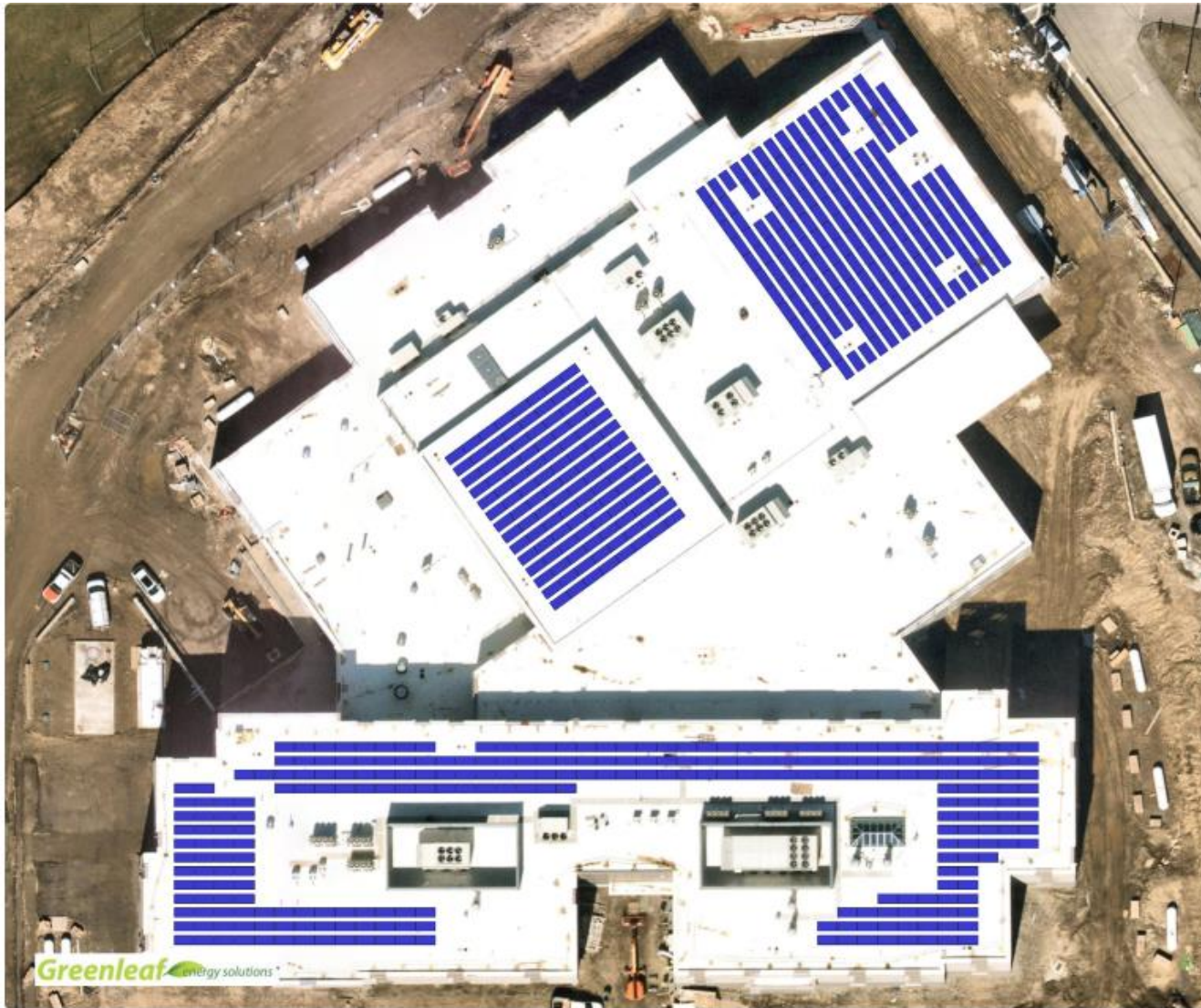
- Solar Panels – 25 Years
- Batteries/System – 10-20 Years
- Racking - 20 Years
- Inverters – 12 Years w/options to extend to 20 or 25 Years
- Installer Workmanship – 15 Years

Solar Life Expectancy Can Exceed 30 years

Today's solar equipment exceeds ASHRAE life expectancy and efficiency. Most Tier One equipment manufacturers will extend warranties up to 25 years giving you peace of mind that your system is covered and can be expected to operate as intended well beyond financial models.



Project Investment-Grade Design & Layout



System Metrics	
Design	Design 2 Small Tariff
Module DC Nameplate	268.5 kW
Inverter AC Nameplate	200.0 kW Load Ratio: 1.34
Annual Production	329.8 MWh
Performance Ratio	80.4%
kWh/kWp	1,228.3
Weather Dataset	TMY, 10km grid (41.45,-73.55), NREL (prospector)
Simulator Version	5686e6d1d3-4b9e29ceb3-ec7ff0ec4b-5d69337d00

Components		
Component	Name	Count
Inverters	PVI 25TL (Yaskawa)	8 (200.0 kW)
Strings	10 AWG (Copper)	40 (6,216.3 ft)
Module	Hanwha Q Cells, Q.Peak DUO XL-G10.3/BFG 490 (490W)	548 (268.5 kW)

Project

Summary – Municipal Financing – High School



Project Specifications	
System Size (KWs) DC	268.5
First Year kWh production	329,819
Utility kWh cost or Tariff	\$ 0.2010
Financed Amount (with closing fees)	\$ 625,683
Total Tax Credits and Depreciation	\$ 184,025
First Year Tariff Benefit	\$ 33,142
Roof Cost	\$ -
Net Solar PV System Cost after Incentives	\$ 408,517

25 Year Operating Income Increase	
\$	859,544

Year	Capital Needed	System Production	Utility Rate	Savings/ Revenue	Other Incentive (RECs)	Loan Payment	Investment Tax Credit	State/Fed Depreciation	Total Annual Increase	Cumulative
1	0	329,819	\$ 0.2010	\$ 33,142	\$ -				\$ 33,142	\$ 33,142
2		328,500	\$ 0.2010	\$ 66,019	\$ -	\$ (64,779)		\$ -	\$ 1,240	\$ 34,382
3	\$ (184,025)	327,186	\$ 0.2010	\$ 65,755	\$ -	\$ (44,001)	\$ 184,025	\$ -	\$ 21,754	\$ 56,136
4		325,877	\$ 0.2010	\$ 65,492	\$ -	\$ (44,001)		\$ -	\$ 21,491	\$ 77,627
5		324,574	\$ 0.2010	\$ 65,230	\$ -	\$ (44,001)		\$ -	\$ 21,229	\$ 98,856
6		323,275	\$ 0.2010	\$ 64,969	\$ -	\$ (44,001)		\$ -	\$ 20,968	\$ 119,824
7		321,982	\$ 0.2010	\$ 64,709	\$ -	\$ (44,001)		\$ -	\$ 20,708	\$ 140,532
8		320,694	\$ 0.2010	\$ 64,450	\$ -	\$ (44,001)		\$ -	\$ 20,449	\$ 160,982
9		319,412	\$ 0.2010	\$ 64,192	\$ -	\$ (44,001)		\$ -	\$ 20,192	\$ 181,173
10		318,134	\$ 0.2010	\$ 63,935	\$ -	\$ (44,001)		\$ -	\$ 19,935	\$ 201,108
11		316,861	\$ 0.2010	\$ 63,680	\$ -	\$ (44,001)		\$ -	\$ 19,679	\$ 220,787
12		315,594	\$ 0.2010	\$ 63,425	\$ -	\$ (44,001)		\$ -	\$ 19,424	\$ 240,212
13		314,332	\$ 0.2010	\$ 63,171	\$ -	\$ (44,001)		\$ -	\$ 19,171	\$ 259,382
14		313,074	\$ 0.2010	\$ 62,919	\$ -	\$ (44,001)		\$ -	\$ 18,918	\$ 278,300
15		311,822	\$ 0.2010	\$ 62,667	\$ -	\$ (44,001)		\$ -	\$ 18,666	\$ 296,967
16		310,575	\$ 0.2010	\$ 62,416	\$ -	\$ (44,001)		\$ -	\$ 18,416	\$ 315,382
17		309,332	\$ 0.2010	\$ 62,167	\$ -	\$ -		\$ -	\$ 62,167	\$ 377,549
18		308,095	\$ 0.2010	\$ 61,918	\$ -	\$ -		\$ -	\$ 61,918	\$ 439,467
19		306,863	\$ 0.2010	\$ 61,670	\$ -	\$ -		\$ -	\$ 61,670	\$ 501,137
20		305,635	\$ 0.2010	\$ 61,424	\$ -	\$ -		\$ -	\$ 61,424	\$ 562,561
21		304,413	\$ 0.1871	\$ 56,965	\$ -	\$ -		\$ -	\$ 56,965	\$ 619,526
22		303,195	\$ 0.1918	\$ 58,156	\$ -	\$ -		\$ -	\$ 58,156	\$ 677,682
23		301,982	\$ 0.1966	\$ 59,371	\$ -	\$ -		\$ -	\$ 59,371	\$ 737,053
24		300,774	\$ 0.2015	\$ 60,612	\$ -	\$ -		\$ -	\$ 60,612	\$ 797,665
25		299,571	\$ 0.2066	\$ 61,879	\$ -	\$ -		\$ -	\$ 61,879	\$ 859,544
Totals	(184,025)	7,861,572		\$ 1,540,330	\$ -	\$ (680,786)	\$ 184,025	\$ -	\$ 859,544	\$ 859,544

Pricing is valid for 60 days from proposal date - 9/19/23

Solar

Benefits and Site Use Offset – High School



Project Specifications	
System Size (KWs) DC	268.5
First Year kWh Production	329,819
Gross Project Cost	\$ 613,415
Projects Assumptions	
Avoided Utility Cost	0.114200948
Additional Incentive \$/MWh	\$ -
Aggregated Savings	
Year One Total Revenue	\$ 66,284
Additional Incentive Gross Income	\$ -
Federal & State Combined Depreciation (@87% Value)	\$ -
Income Tax Credit (30% of System Cost)	\$ 184,025
25 Year Revenue Minus Investment	\$ 1,144,081
10 Year IRR	8%
IRR - Term Purchase	14%



Environmental Benefits			
Installation of energy efficient measures identified for this project will save an estimated 7,861,572 kWh over 20 years of solar production			
Greenhouse Gases Avoided			
12,106,820 Pounds of Carbon Dioxide (CO2)			
23,585 Pounds of Nitrogen Oxides (NOx)			
47,169 Pounds of Sulfur Dioxide (SO2)			
By reducing greenhouse gas emissions and other harmful environmental pollutants, this project will reduce air pollution and improve air quality.			
This is equivalent to:			
5,877,097 Pounds of coal not burned			
1,501 Acres of forestation (trees) added			
1,056 Cars removed from road			
657 Homes provided with electricity			
Environmental Impact calculations are estimates based on the 2007 Energy Star Campaign Facts and Assumptions Sheet & EPA Clean Energy Calculations & References Guide.			
Monthly PV Production Offset			
Month	Current Usage kWh	Estimated PV Production kWh	Percentage of Use
January	267,840.00	13,187.50	5%
February	249,120.00	16,266.80	7%
March	244,800.00	27,117.30	11%
April	200,160.00	33,074.90	17%
May	115,200.00	37,184.60	32%
June	112,320.00	41,799.80	37%
July	116,640.00	42,051.30	36%
August	119,520.00	35,220.20	29%
September	106,560.00	31,050.90	29%
October	138,240.00	22,837.70	17%
November	168,480.00	16,155.10	10%
December	246,240.00	13,873.10	6%
Total	2,085,120.00	329,819.20	16%

Next **Steps & Project** Timeline



Preliminary Design & LOI

- *Collect Utility Bills -Done*
- *Budgetary Proposal - Done*
- Sign Letter of Intent (LOI)
- 15 Minute Interval Data from Utility
- Conduct Site Visit
- Preliminary Engineering Design & Final Proposal

Development: 3 - 6 Months

- Submit for Incentives
- Finalize Design and Sign Contract
- Utility Interconnection Application
- Permits and Town Approvals
- Order Equipment

Construction: 3 - 5 Months

- Receive All Permits & Utility Approvals
- Install Solar Array (Racking, Modules, Inverters, etc.)
- Perform System Inspection & Commissioning
- Final Utility Approval and Energize System