

Connecticut SCEF projects

July 08, 2020

To whom it may concern,

Project Name : STAG - MILFOR
Street: : 40 Pepes Farm rd.
City: : Milford
State: : CT
Zip Code: : 06460

I herewith certify in terms of Section 2.4.2 of this RFP, that the Average Annual Production for the Facility, based on the typical facility conditions for an average year, is 2675 MWh/year. (see attached PVSYST calculation result)

This Certification is an expression of my professional opinion regarding facts or findings that are the subject of the certification and does not constitute an express or implied warranty or guarantee.

Sincerely,



7/8/2020

HENDRIK BURGER, P.E.
Vice President, Engineering

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 **Dynamic Energy™**

Grid-Connected System: Simulation parameters

Project : **Stag Industrial - 40 Pepes Farm**

Geographical Site **Milford** Country **United States**

Situation Latitude 41.24° N Longitude -73.02° W
 Time defined as Legal Time Time zone UT-5 Altitude 26 m
 Albedo 0.20

Meteo data: **Milford** Meteonorm 7.1 (1991-2005) - Synthetic

Simulation variant : **New simulation variant**

Simulation date 30/06/20 15h13

Simulation parameters System type **No 3D scene defined**
Collector Plane Orientation Tilt 10° Azimuth -36°
Models used Transposition Perez Diffuse Perez, Meteonorm
Horizon Free Horizon
Near Shadings No Shadings

PV Array Characteristics

PV module Si-mono Model **JKM400M-72HL-V**
 Custom parameters definition Manufacturer Jinkosolar
 Number of PV modules In series 15 modules In parallel 360 strings
 Total number of PV modules Nb. modules 5400 Unit Nom. Power 400 Wp
 Array global power Nominal (STC) **2160 kWp** At operating cond. 1971 kWp (50°C)
 Array operating characteristics (50°C) U mpp 560 V I mpp 3517 A
 Total area Module area **10865 m²** Cell area 9798 m²

Inverter Model **CPS SCA50KTL-DO/US-480 V2.0**
 Custom parameters definition Manufacturer Chint Power Systems
 Characteristics Operating Voltage 200-850 V Unit Nom. Power 50.0 kWac
 Inverter pack Nb. of inverters 90 * MPPT 33 % Total Power 1500 kWac
 Pnom ratio 1.44

PV Array loss factors

Array Soiling Losses Loss Fraction 4.0 %
 Thermal Loss factor Uc (const) 20.0 W/m²K Uv (wind) 0.0 W/m²K / m/s
 Wiring Ohmic Loss Global array res. 2.6 mOhm Loss Fraction 1.5 % at STC
 Serie Diode Loss Voltage Drop 0.7 V Loss Fraction 0.1 % at STC
 Module Quality Loss Loss Fraction -0.8 %
 Module Mismatch Losses Loss Fraction 1.0 % at MPP
 Strings Mismatch loss Loss Fraction 0.10 %

Incidence effect (IAM): User defined IAM profile

0°	30°	50°	65°	70°	75°	80°	85°	90°
1.000	0.999	0.993	0.958	0.928	0.880	0.792	0.604	0.000

Unavailability of the system 7.3 days, 3 periods Time fraction 2.0 %

User's needs : Unlimited load (grid)

Grid-Connected System: Main results

Project : Stag Industrial - 40 Pepes Farm

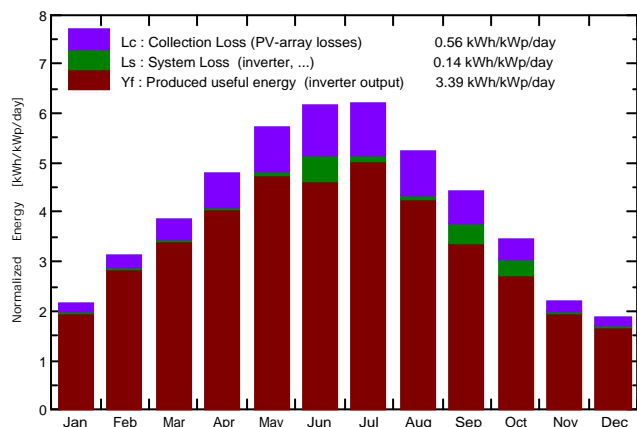
Simulation variant : New simulation variant

Main system parameters		System type	No 3D scene defined	
PV Field Orientation		tilt	10°	azimuth -36°
PV modules		Model	JKM400M-72HL-V	Pnom 400 Wp
PV Array		Nb. of modules	5400	Pnom total 2160 kWp
Inverter		Model	CPS SCA50KTL-DO/US-480 V2.0	50.0 kW ac
Inverter pack		Nb. of units	30.0	Pnom total 1500 kW ac
User's needs		Unlimited load (grid)		

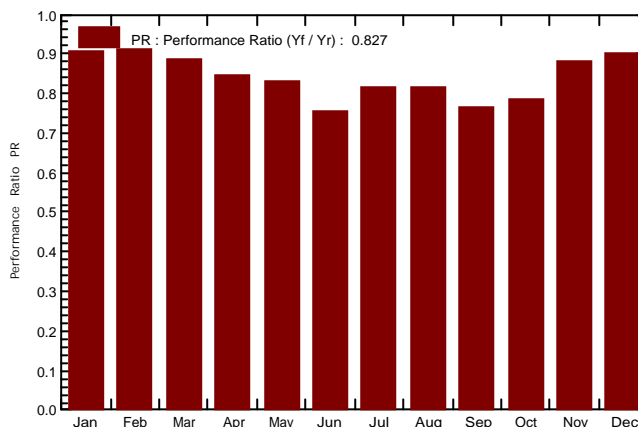
Main simulation results

System Production **Produced Energy 2675 MWh/year** Specific prod. 1238 kWh/kWp/year
 Performance Ratio PR **82.74 %**

Normalized productions (per installed kWp): Nominal power 2160 kWp



Performance Ratio PR



**New simulation variant
Balances and main results**

	GlobHor	DiffHor	T Amb	GlobInc	GlobEff	EArray	E_Grid	PR
	kWh/m ²	kWh/m ²	°C	kWh/m ²	kWh/m ²	MWh	MWh	
January	57.2	28.81	-1.94	67.0	62.3	133.8	131.5	0.908
February	76.4	33.34	-0.63	87.3	81.6	174.3	171.5	0.909
March	111.7	56.75	3.90	119.4	112.0	232.4	228.5	0.886
April	137.3	65.51	9.75	143.3	134.7	266.9	262.1	0.847
May	173.9	81.35	15.16	176.9	166.4	323.5	317.7	0.831
June	183.8	88.23	20.24	184.6	173.6	332.7	301.0	0.755
July	190.0	87.89	23.25	191.8	180.5	344.0	337.6	0.815
August	156.8	75.39	23.17	161.8	152.1	290.8	285.2	0.816
September	126.6	60.62	18.79	133.2	125.0	243.9	219.5	0.763
October	95.6	41.84	12.38	106.9	100.2	203.6	181.4	0.785
November	58.0	31.43	7.46	66.5	61.9	128.8	126.5	0.880
December	49.3	27.46	1.11	58.0	53.7	114.7	112.7	0.900
Year	1416.7	678.63	11.12	1496.8	1404.2	2789.4	2675.2	0.827

Legends: GlobHor Horizontal global irradiation GlobEff Effective Global, corr. for IAM and shadings
 DiffHor Horizontal diffuse irradiation EArray Effective energy at the output of the array
 T Amb Ambient Temperature E_Grid Energy injected into grid
 GlobInc Global incident in coll. plane PR Performance Ratio

Grid-Connected System: Loss diagram

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Loss diagram over the whole year

