ANEXA 1

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

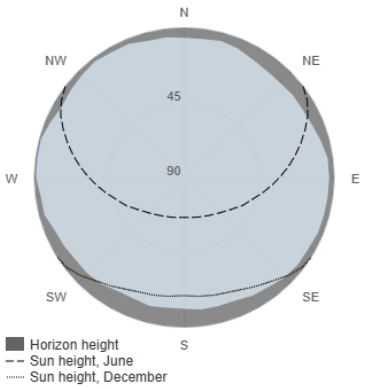
Provided inputs:

Latitude/Longitude:	47.343,25.371
Horizon:	Calculated
Database used:	PVGIS-SARAH3
PV technology:	Crystalline silicon
PV installed:	39.56 kWp
System loss:	14 %

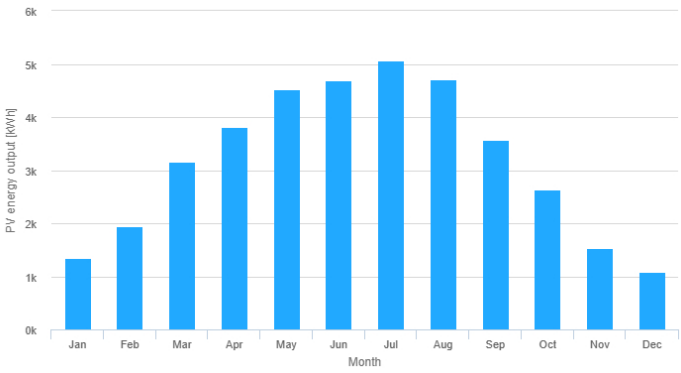
Simulation outputs

Slope angle:	10 °
Azimuth angle:	-60 °
Yearly PV energy production:	38077.97 kWh
Yearly in-plane irradiation:	1236.89 kWh/m²
Year-to-year variability:	1620.26 kWh
Changes in output due to:	
Angle of incidence:	-3.84 %
Spectral effects:	1.36 %
Temperature and low irradiance:	-7.17 %
Total loss:	-22.18 %

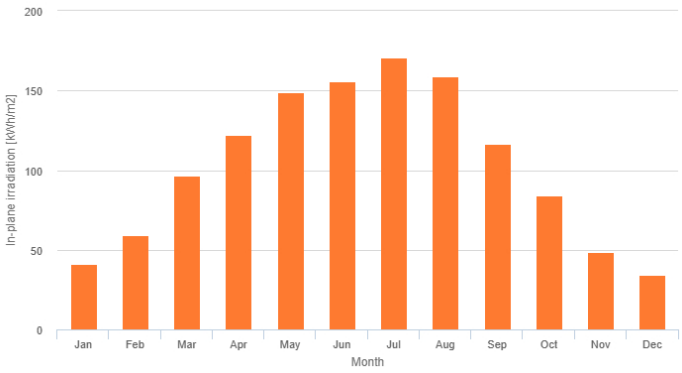
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	1338.7	41.1	265.6
February	1945.9	59.3	278.5
March	3160.6	96.7	415.6
April	3821.8	121.9	630.4
May	4522.9	148.7	532.5
June	4686.9	156.0	526.9
July	5064.8	170.7	420.7
August	4709.6	158.6	453.2
September	3571.6	116.8	455.7
October	2642.5	84.3	353.4
November	1533.4	48.7	243.6
December	1079.2	34.2	222.1

E_m: Average monthly electricity production from the defined system [kWh].

H(i)_m: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

SD_m: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].

Report generated on 2025/05/30

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

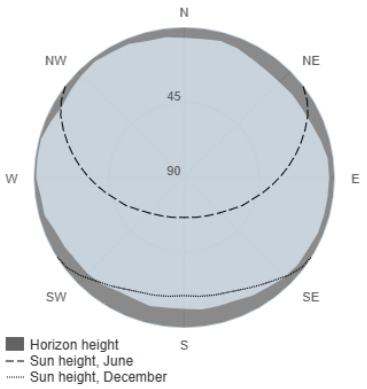
Provided inputs:

Latitude/Longitude:	47.343,25.371
Horizon:	Calculated
Database used:	PVGIS-SARAH3
PV technology:	Crystalline silicon
PV installed:	38.64 kWp
System loss:	14 %

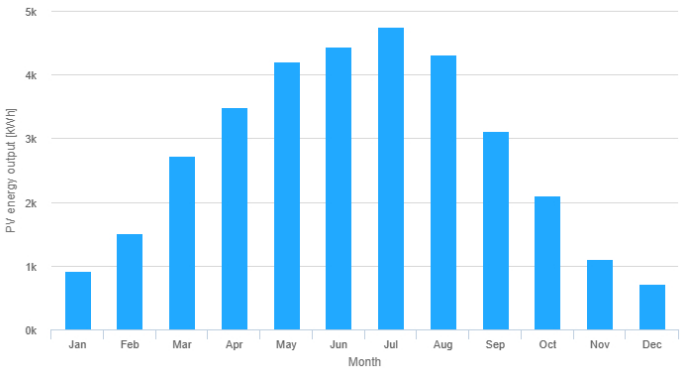
Simulation outputs

Slope angle:	10 °
Azimuth angle:	120 °
Yearly PV energy production:	33384.19 kWh
Yearly in-plane irradiation:	1120.2 kWh/m²
Year-to-year variability:	1317.49 kWh
Changes in output due to:	
Angle of incidence:	-4.71 %
Spectral effects:	1.31 %
Temperature and low irradiance:	-7.1 %
Total loss:	-22.87 %

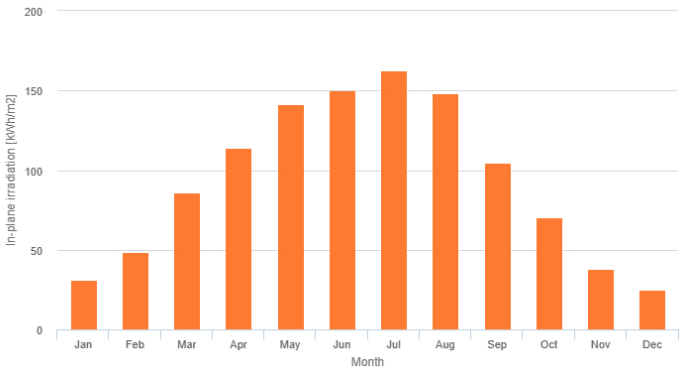
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	919.1	31.0	124.0
February	1515.4	48.8	171.5
March	2719.6	85.9	334.3
April	3483.8	113.7	528.5
May	4212.2	141.2	469.7
June	4435.6	150.4	498.5
July	4745.1	162.9	378.4
August	4313.1	148.0	377.9
September	3118.4	104.7	369.0
October	2104.3	70.4	245.1
November	1105.0	37.9	132.5
December	712.6	25.2	92.0

E_m: Average monthly electricity production from the defined system [kWh].

H(i)_m: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

SD_m: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].

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Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

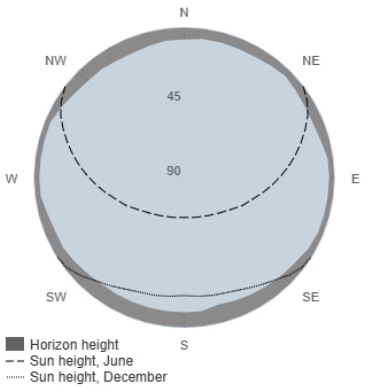
Provided inputs:

Latitude/Longitude:	47.345,25.348
Horizon:	Calculated
Database used:	PVGIS-SARAH3
PV technology:	Crystalline silicon
PV installed:	10.12 kWp
System loss:	14 %

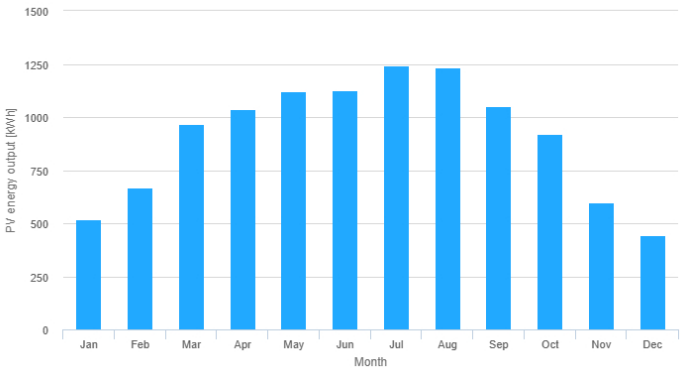
Simulation outputs

Slope angle:	35 °
Azimuth angle:	22 °
Yearly PV energy production:	10923.4 kWh
Yearly in-plane irradiation:	1379.27 kWh/m²
Year-to-year variability:	491.77 kWh
Changes in output due to:	
Angle of incidence:	-3.05 %
Spectral effects:	1.46 %
Temperature and low irradiance:	-7.49 %
Total loss:	-21.74 %

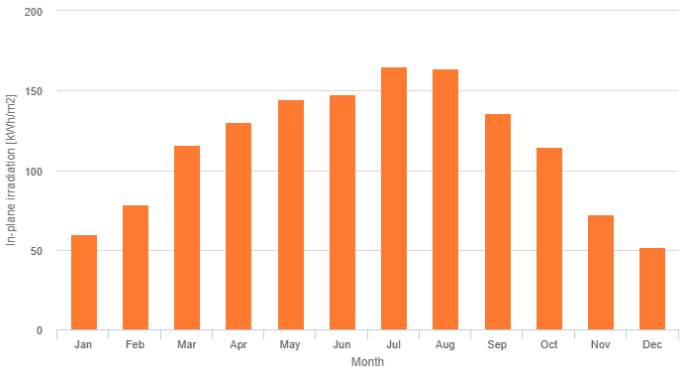
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	517.5	59.7	140.2
February	666.5	78.5	131.7
March	966.5	115.9	158.5
April	1035.8	130.1	194.0
May	1119.8	144.7	131.3
June	1128.1	147.7	139.3
July	1242.6	164.8	101.0
August	1233.3	163.8	114.8
September	1051.9	135.7	146.9
October	920.7	114.7	142.3
November	597.9	72.0	123.8
December	442.8	51.7	118.7

E_m: Average monthly electricity production from the defined system [kWh].

H(i)_m: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

SD_m: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].

Report generated on 2025/05/30

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

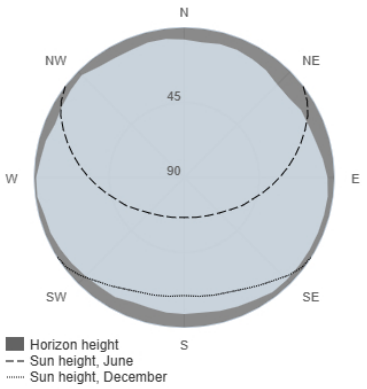
Provided inputs:

Latitude/Longitude:	47.348,25.369
Horizon:	Calculated
Database used:	PVGIS-SARAH3
PV technology:	Crystalline silicon
PV installed:	18.4 kWp
System loss:	14 %

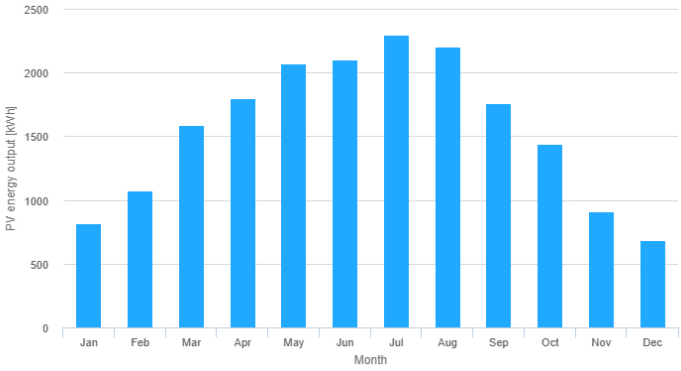
Simulation outputs

Slope angle:	35 °
Azimuth angle:	-53 °
Yearly PV energy production:	18750.95 kWh
Yearly in-plane irradiation:	1306.88 kWh/m²
Year-to-year variability:	873.00 kWh
Changes in output due to:	
Angle of incidence:	-3.07 %
Spectral effects:	1.42 %
Temperature and low irradiance:	-7.76 %
Total loss:	-22.02 %

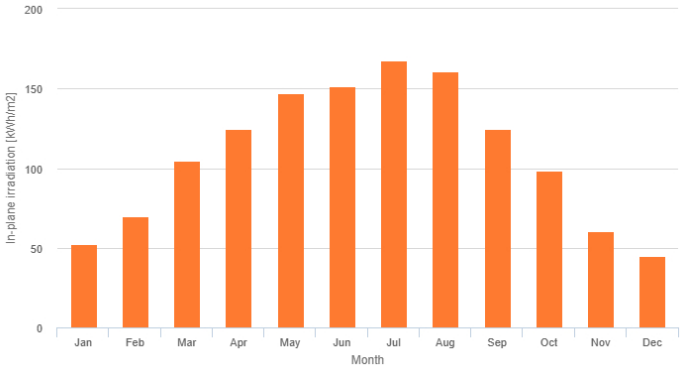
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	816.7	52.2	198.2
February	1077.0	69.8	184.6
March	1586.3	104.7	223.0
April	1799.5	124.4	320.8
May	2070.2	147.2	253.8
June	2103.5	151.4	237.5
July	2300.8	167.7	197.5
August	2203.7	161.0	226.6
September	1759.5	124.7	245.0
October	1437.7	98.4	214.3
November	910.7	60.6	173.3
December	685.5	44.7	178.5

E_m: Average monthly electricity production from the defined system [kWh].

H(i)_m: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

SD_m: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].

Report generated on 2025/05/30

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

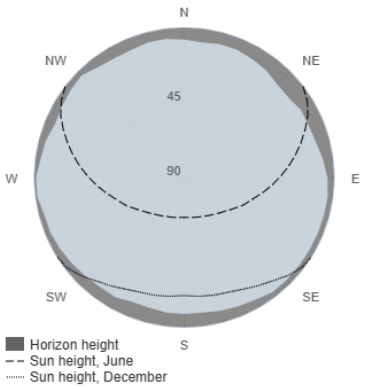
Provided inputs:

Latitude/Longitude:	47.348,25.369
Horizon:	Calculated
Database used:	PVGIS-SARAH3
PV technology:	Crystalline silicon
PV installed:	21.62 kWp
System loss:	14 %

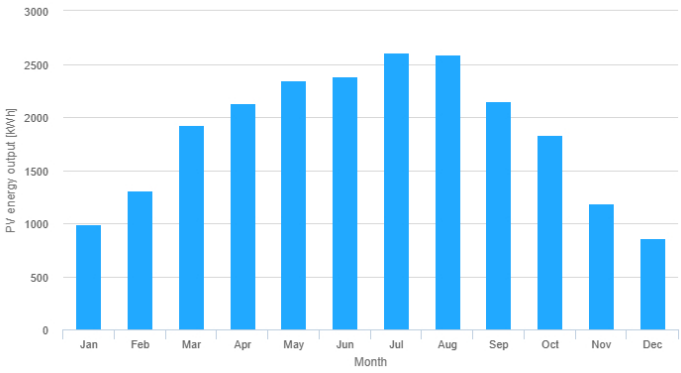
Simulation outputs

Slope angle:	35 °
Azimuth angle:	37 °
Yearly PV energy production:	22311.87 kWh
Yearly in-plane irradiation:	1323.2 kWh/m²
Year-to-year variability:	1050.77 kWh
Changes in output due to:	
Angle of incidence:	-3.19 %
Spectral effects:	1.45 %
Temperature and low irradiance:	-7.66 %
Total loss:	-22.01 %

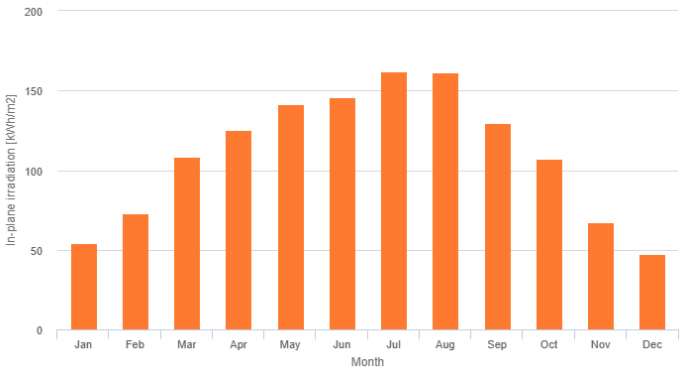
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	989.4	54.0	247.2
February	1311.9	72.7	239.9
March	1927.3	108.6	320.5
April	2129.6	125.3	394.5
May	2342.0	141.6	280.5
June	2384.6	145.9	280.7
July	2606.7	161.8	217.5
August	2592.4	161.1	249.2
September	2146.0	129.8	315.6
October	1833.2	107.3	283.6
November	1189.2	67.5	252.9
December	859.7	47.6	230.9

E_m: Average monthly electricity production from the defined system [kWh].

H(i)_m: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

SD_m: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].

Report generated on 2025/05/30

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

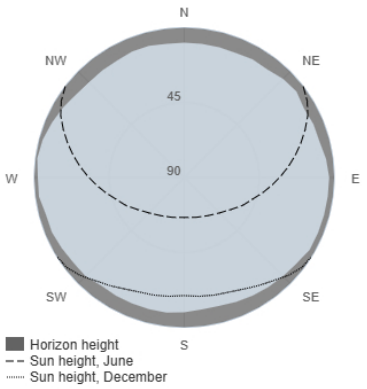
Provided inputs:

Latitude/Longitude:	47.347,25.352
Horizon:	Calculated
Database used:	PVGIS-SARAH3
PV technology:	Crystalline silicon
PV installed:	17.48 kWp
System loss:	14 %

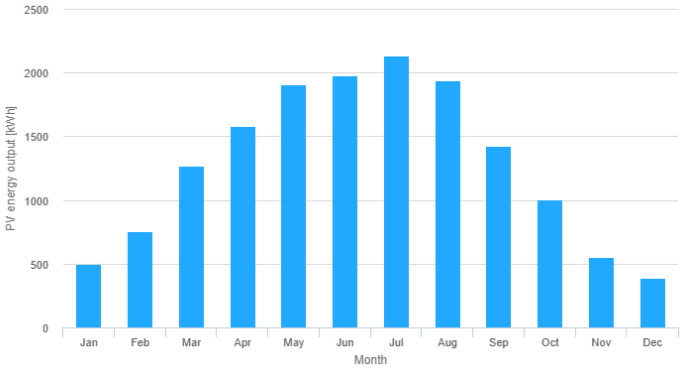
Simulation outputs

Slope angle:	25 °
Azimuth angle:	-96 °
Yearly PV energy production:	15434.7 kWh
Yearly in-plane irradiation:	1139.26 kWh/m²
Year-to-year variability:	661.57 kWh
Changes in output due to:	
Angle of incidence:	-4.01 %
Spectral effects:	1.33 %
Temperature and low irradiance:	-7.34 %
Total loss:	-22.49 %

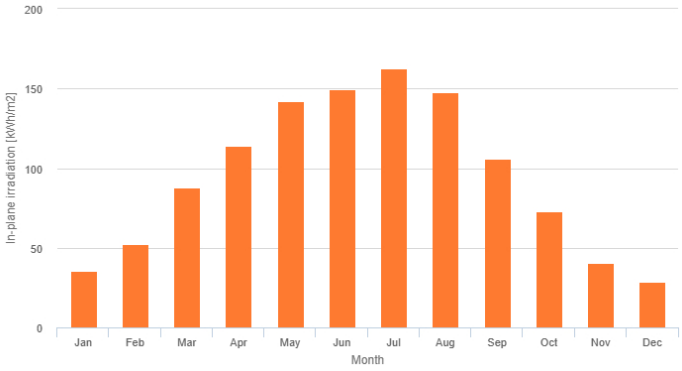
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	497.7	35.4	87.9
February	758.4	52.6	95.7
March	1268.5	87.8	142.9
April	1578.4	114.0	245.1
May	1909.1	142.0	221.5
June	1978.0	149.3	216.8
July	2131.9	162.7	175.9
August	1942.8	148.0	186.2
September	1427.1	105.7	170.2
October	1002.9	72.8	122.6
November	549.4	40.3	69.7
December	390.5	28.8	68.6

E_m: Average monthly electricity production from the defined system [kWh].

H(i)_m: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

SD_m: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].

Report generated on 2025/05/30

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

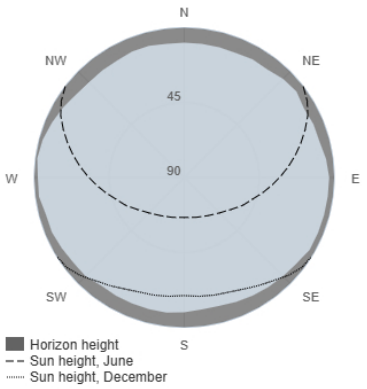
Provided inputs:

Latitude/Longitude:	47.347,25.352
Horizon:	Calculated
Database used:	PVGIS-SARAH3
PV technology:	Crystalline silicon
PV installed:	13.8 kWp
System loss:	14 %

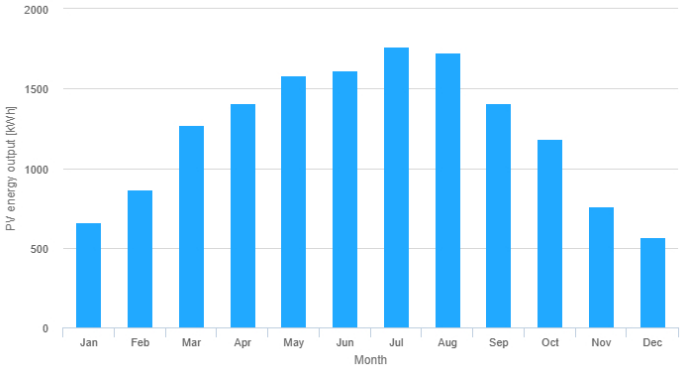
Simulation outputs

Slope angle:	25 °
Azimuth angle:	-3 °
Yearly PV energy production:	14808.95 kWh
Yearly in-plane irradiation:	1373.32 kWh/m²
Year-to-year variability:	686.58 kWh
Changes in output due to:	
Angle of incidence:	-3.12 %
Spectral effects:	1.44 %
Temperature and low irradiance:	-7.54 %
Total loss:	-21.86 %

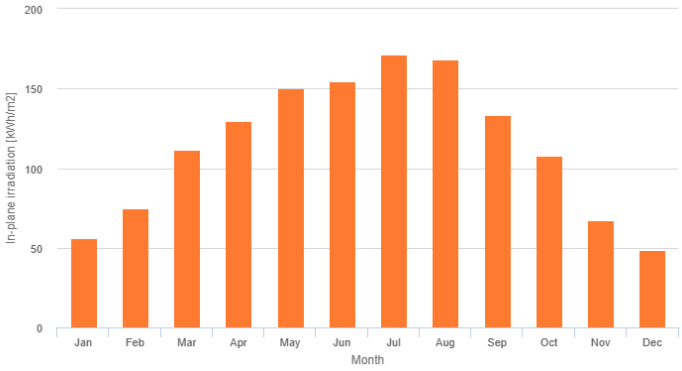
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	659.0	55.8	163.1
February	866.0	74.7	155.4
March	1269.1	111.6	199.6
April	1409.4	129.9	257.8
May	1583.5	150.2	192.3
June	1611.7	154.7	183.4
July	1760.9	171.3	147.2
August	1725.4	168.1	172.9
September	1410.5	133.2	202.9
October	1186.0	108.0	181.7
November	762.0	67.1	156.0
December	565.4	48.6	150.1

E_m: Average monthly electricity production from the defined system [kWh].

H(i)_m: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

SD_m: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].

Report generated on 2025/05/30

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

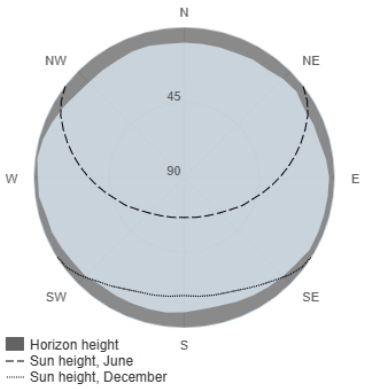
Provided inputs:

Latitude/Longitude:	47.347,25.352
Horizon:	Calculated
Database used:	PVGIS-SARAH3
PV technology:	Crystalline silicon
PV installed:	17.48 kWp
System loss:	14 %

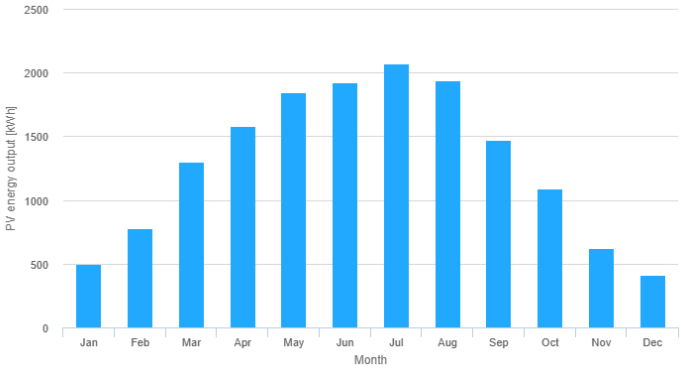
Simulation outputs

Slope angle:	25 °
Azimuth angle:	84 °
Yearly PV energy production:	15553.56 kWh
Yearly in-plane irradiation:	1148.69 kWh/m²
Year-to-year variability:	644.08 kWh
Changes in output due to:	
Angle of incidence:	-4.07 %
Spectral effects:	1.35 %
Temperature and low irradiance:	-7.36 %
Total loss:	-22.54 %

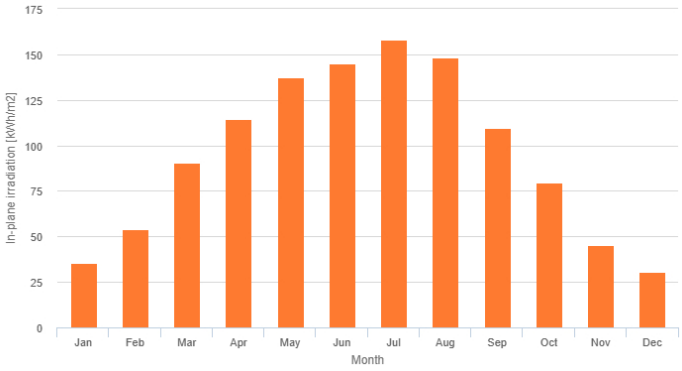
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	501.6	35.7	90.0
February	777.5	54.1	108.3
March	1303.1	90.7	184.4
April	1583.3	114.7	256.8
May	1844.7	137.4	207.7
June	1921.7	144.8	222.6
July	2071.7	158.2	167.7
August	1940.4	148.2	169.1
September	1474.7	109.6	190.6
October	1093.7	79.5	143.5
November	626.6	45.3	104.0
December	414.7	30.4	80.0

E_m: Average monthly electricity production from the defined system [kWh].

H(i)_m: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

SD_m: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].

Report generated on 2025/05/30

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

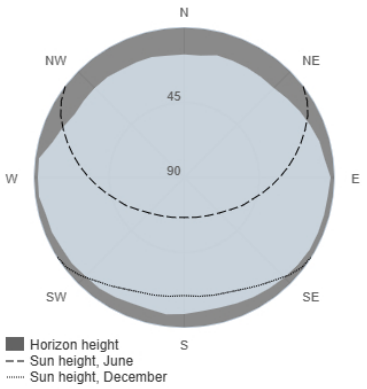
Provided inputs:

Latitude/Longitude:	47.348,25.352
Horizon:	Calculated
Database used:	PVGIS-SARAH3
PV technology:	Crystalline silicon
PV installed:	52.9 kWp
System loss:	14 %

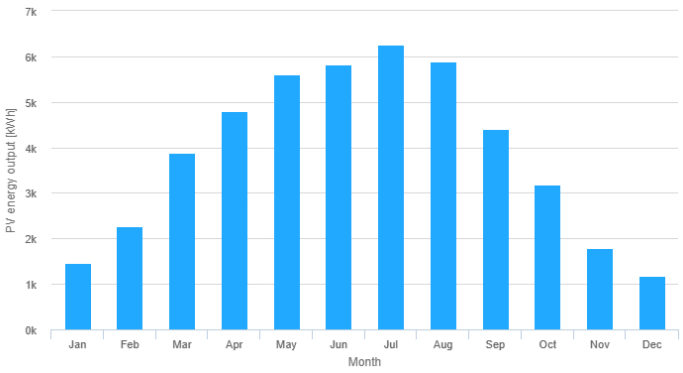
Simulation outputs

Slope angle:	20 °
Azimuth angle:	90 °
Yearly PV energy production:	46545.37 kWh
Yearly in-plane irradiation:	1137.16 kWh/m²
Year-to-year variability:	1888.52 kWh
Changes in output due to:	
Angle of incidence:	-4.26 %
Spectral effects:	1.34 %
Temperature and low irradiance:	-7.27 %
Total loss:	-22.63 %

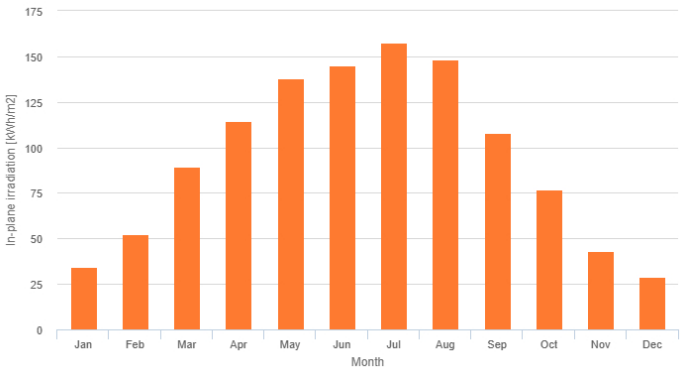
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	1451.0	34.5	243.7
February	2272.9	52.5	299.4
March	3884.9	89.3	529.1
April	4798.2	114.7	760.9
May	5605.8	137.8	624.4
June	5831.9	145.3	663.1
July	6253.8	157.8	493.8
August	5879.6	148.0	512.8
September	4405.3	108.2	553.7
October	3192.3	76.9	405.7
November	1793.3	43.3	276.6
December	1176.5	28.9	207.3

E_m: Average monthly electricity production from the defined system [kWh].

H(i)_m: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

SD_m: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].

Report generated on 2025/06/04

Anexa 2.1. Calcul secțiuni CABLU AC/DC C.E.F CENTRALA TERMICA, STRADA UNIRII F.N., VATRA DORNEI, JUDEȚUL SUCEAVA
Obiectiv: "CONSTRUIREA DE NOI CAPACITĂȚI DE PRODUCERE A ENERGIEI ELECTRICE PRODUSĂ DIN SURSE REGENERABILE
Beneficiar: PRIMARIA VATRA DORNEI, VATRA DORNEI, STRADA MIHAI EMINESCU NR. 17, JUDEȚUL SUCEAVA
Proiectant: S.C. MRB ELECTRIC S.R.L

MRB ELECTRIC

Anexa 2.1 CALCUL SENCTIUNI CABLU AC/DC C.E.F

2.1.1. CALCUL SECTIUNI CABLU DC

Traseu cablu		Tip Cablu	Sectiune Cablu	Lungime Traseu	Nr. Panouri / String	Putere totala	Tensiune nominala	Curent	Rezistenta / km la 20°C	Rezistenta / km la 40°C	Rezistenta traseu cablu	Conductivitatea materilalului conductorului	Cadere de tensiune		Curent admisibil	Coeficient de corectie pentru montarea cablurilor in jgheab si temperatura 40°C	Coeficient de corectie pentru gruparea circuitelor	Coeficient de corectie total	Curent admisibil in urma aplicarii factorilor de corectie
DE LA	CATRE	-	s [mm2]	L [m]	-	Ptot [kWp]	U [V]	I [A]	Rref [Ω/km]	Re [Ω/km]	R [Ω]	m/(Ω*mm²)	ΔU [V]	ΔU [%]	Ib [A]	-	-	-	Ib* [A]
STRING 1	INVERTOR 1	H1Z2Z2-K	6	22	17	7.82	768.4	10.18	3.390	3.62	0.080	57	0.213	0.028	41	0.77	0.72	0.554	22.73
STRING 2		H1Z2Z2-K	6	28	17	7.82	768.4	10.18	3.390	3.62	0.101	57	0.271	0.035	41	0.77	0.72	0.554	22.73
STRING 3		H1Z2Z2-K	6	38	17	7.82	768.4	10.18	3.390	3.62	0.138	57	0.367	0.048	41	0.77	0.72	0.554	22.73
STRING 4		H1Z2Z2-K	6	38	17	7.82	768.4	10.18	3.390	3.62	0.138	57	0.367	0.048	41	0.77	0.72	0.554	22.73
STRING 5		H1Z2Z2-K	6	22	18	8.28	813.6	10.18	3.390	3.62	0.080	57	0.213	0.026	41	0.77	0.72	0.554	22.73
STRING 6		H1Z2Z2-K	6	50	18	8.28	813.6	10.18	3.390	3.62	0.181	57	0.483	0.059	41	0.77	0.72	0.554	22.73
				198	104	47.84													

Traseu cablu		Tip Cablu	Sectiune Cablu	Lungime Traseu	Nr. Panouri / String	Putere totala	Tensiune nominala	Curent	Rezistenta / km la 20°C	Rezistenta / km la 40°C	Rezistenta traseu cablu	Conductivitatea materilalului conductorului	Cadere de tensiune		Curent admisibil	Coeficient de corectie pentru montarea cablurilor in jgheab si temperatura 40°C	Coeficient de corectie pentru gruparea circuitelor	Coeficient de corectie total	Curent admisibil in urma aplicarii factorilor de corectie
DE LA	CATRE	-	s [mm2]	L [m]	-	Ptot [kWp]	U [V]	I [A]	Rref [Ω/km]	Re [Ω/km]	R [Ω]	m/(Ω*mm²)	ΔU [V]	ΔU [%]	Ib [A]	-	-	-	Ib* [A]
STRING 7	INVERTOR 2	H1Z2Z2-K	6	44	16	7.36	723.2	10.18	3.390	3.62	0.159	57	0.425	0.059	41	0.77	0.72	0.554	22.73
STRING 8		H1Z2Z2-K	6	50	16	7.36	723.2	10.18	3.390	3.62	0.181	57	0.483	0.067	41	0.77	0.72	0.554	22.73
STRING 9		H1Z2Z2-K	6	44	17	7.82	768.4	10.18	3.390	3.62	0.159	57	0.425	0.055	41	0.77	0.72	0.554	22.73
STRING 10		H1Z2Z2-K	6	44	17	7.82	768.4	10.18	3.390	3.62	0.159	57	0.425	0.055	41	0.77	0.72	0.554	22.73
				182	66	30.36													

2.1.2. CALCUL SECTIUNI CABLU AC

Traseu cablu		Tip Cablu	Sectiune Cablu	Lungime Traseu	Putere totala	Factor de putere	Tensiune nominala	Curent	Conductivitatea materilalului conductorului	Cadere de tensiune		Curent admisibil	Coeficient de corectie pentru montarea cablurilor in jgheab si temperatura	Coeficient de corectie pentru gruparea circuitelor	Coeficient de corectie total	Curent admisibil in urma aplicarii factorilor de corectie	Cablu selectat este OK / NOT OK
DE LA	CATRE	-	s [mm2]	L [m]	P [kWp]	-	U [V]	I [A]	m/(Ω*mm²)	ΔU [V]	ΔU [%]	Ib [A]	-	-	-	Ib* [A]	-
INVERTOR 1	TE-AC	RV-K	35	7	50	0.9	400	80.19	57	0.44	0.11	99	1	0.88	0.88	87.12	OK
INVERTOR 2	TE-AC	RV-K	16	7	30	0.9	400	48.11	57	0.58	0.14	62	1	0.88	0.88	54.56	OK
TE-AC	TEG	CYABY	50	35	80	0.9	400	128.30	57	2.46	0.61	185	1	0.89	0.89	164.65	OK

Anexa 2.1. Calcul secțiuni CABLU AC/DC C.E.F SALA DE SPORT, STRADA MIHAI EMINESCU NR. 50, VATRA DORNEI, JUDEȚUL SUCEAVA

Obiectiv: "CONSTRUIREA DE NOI CAPACITĂȚI DE PRODUCERE A ENERGIEI ELECTRICE PRODUSĂ DIN SURSE REGENERABILE DE ENERGIE SOLARĂ PENTRU AUTOCONSUM ÎN MUNICIPIUL VATRA DORNEI, JUDEȚUL SUCEAVA"

Beneficiar: PRIMARIA VATRA DORNEI, VATRA DORNEI, STRADA MIHAI EMINESCU NR. 17, JUDEȚUL SUCEAVA

Proiectant: S.C. MRB ELECTRIC S.R.L

MRB ELECTRIC

Anexa 2.2 CALCUL SENCTIUNI CABLU AC/DC C.E.F

2.2.1. CALCUL SECTIUNI CABLU DC

Traseu cablu		Tip Cablu	Sectiune Cablu	Lungime Traseu	Nr. Panouri / String	Putere totala	Tensiune nominala	Curent	Rezistenta / km la 20°C	Rezistenta / km la 40°C	Rezistenta traseu cablu	Conductivitatea materialului conductorului	Cadere de tensiune		Curent admisibil	Coeficient de corectie pentru montarea cablurilor in jgheab si temperatura 40°C	Coeficient de corectie pentru gruparea circuitelor	Coeficient de corectie total	Curent admisibil in urma aplicarii factorilor de corectie
DE LA	CATRE	-	s [mm2]	L [m]	-	Ptot [kWp]	U [V]	I [A]	Rref [Ω/km]	Re [Ω/km]	R [Ω]	m/(Ω*mm²)	ΔU [V]	ΔU [%]	Ib [A]	-	-	-	Ib* [A]
STRING 1	INVERTOR 1	H1Z2Z2-K	6	35	17	7.82	768.4	10.18	3.390	3.62	0.127	57	0.338	0.044	41	0.77	0.72	0.554	22.73
STRING 2		H1Z2Z2-K	6	45	17	7.82	768.4	10.18	3.390	3.62	0.163	57	0.435	0.057	41	0.77	0.72	0.554	22.73
STRING 3		H1Z2Z2-K	6	50	16	7.36	723.2	10.18	3.390	3.62	0.181	57	0.483	0.067	41	0.77	0.72	0.554	22.73
STRING 4		H1Z2Z2-K	6	50	16	7.36	723.2	10.18	3.390	3.62	0.181	57	0.483	0.067	41	0.77	0.72	0.554	22.73
STRING 5		H1Z2Z2-K	6	47	16	7.36	723.2	10.18	3.390	3.62	0.170	57	0.454	0.063	41	0.77	0.72	0.554	22.73
STRING 6		H1Z2Z2-K	6	45	16	7.36	723.2	10.18	2.390	2.55	0.115	57	0.435	0.060	41	0.77	0.72	0.554	22.73
STRING 7		H1Z2Z2-K	6	35	17	7.82	768.4	10.18	3.390	3.62	0.127	57	0.338	0.044	41	0.77	0.72	0.554	22.73
				307	115	52.9													

2.2.2. CALCUL SECTIUNI CABLU AC

Traseu cablu		Tip Cablu	Sectiune Cablu	Lungime Traseu	Putere totala	Factor de putere	Tensiune nominala	Curent	Conductivitatea materialului conductorului	Cadere de tensiune		Curent admisibil	Coeficient de corectie pentru montarea cablurilor in jgheab si temperatura	Coeficient de corectie pentru gruparea circuitelor	Coeficient de corectie total	Curent admisibil in urma aplicarii factorilor de corectie	Cablu selectat este OK / NOT OK
DE LA	CATRE	-	s [mm2]	L [m]	P [kWp]	-	U [V]	I [A]	m/(Ω*mm²)	ΔU [V]	ΔU [%]	Ib [A]	-	-	-	Ib* [A]	-
INVERTOR 1	TE-AC	RV-K	35	7	50	0.9	400	80.19	57	0.44	0.11	99	1	0.88	0.88	87.12	OK
TE-AC	TEG	RV-K	35	43	50	0.9	400	80.19	57	2.69	0.67	99	1	0.88	0.88	87.12	OK
TEG	BMPT	CYABY	35	50	50	0.9	400	80.19	57	3.13	0.78	157	1	0.89	0.89	139.73	OK

Anexa 2.1. Calcul secțiuni CABLU AC/DC C.E.F **SCOALA GIMNAZIALA NR. 1, STRADA REPUBLICII NR. 53, VATRA DORNEI, JUDEȚUL SUCEAVA**

Obiectiv: "CONSTRUIREA DE NOI CAPACITĂȚI DE PRODUCERE A ENERGIEI ELECTRICE PRODUSĂ DIN SURSE REGENERABILE DE ENERGIE SOLARĂ PENTRU AUTOCONSUM ÎN MUNICIPIUL VATRA DORNEI, JUDEȚUL SUCEAVA"

Beneficiar: PRIMARIA VATRA DORNEI, VATRA DORNEI, STRADA MIHAI EMINESCU NR. 17, JUDEȚUL SUCEAVA

Proiectant: S.C. MRB ELECTRIC S.R.L

MRB ELECTRIC

Anexa 2.3 CALCUL SENCTIUNI CABLU AC/DC C.E.F
2.3.1. CALCUL SECTIUNI CABLU DC

Traseu cablu		Tip Cablu	Sectiune Cablu	Lungime Traseu	Nr. Panouri / String	Putere totala	Tensiune nominala	Curent	Rezistenta / km la 20°C	Rezistenta / km la 40°C	Rezistenta traseu cablu	Conductivitatea materialului conductorului	Cadere de tensiune		Curent admisibil	Coeficient de corectie pentru montarea cablurilor in jgheab si temperatura 40°C	Coeficient de corectie pentru gruparea circuitelor	Coeficient de corectie total	Curent admisibil in urma aplicarii factorilor de corectie
DE LA	CATRE	-	s [mm2]	L [m]	-	Ptot [kWp]	U [V]	I [A]	Rref [Ω/km]	Re [Ω/km]	R [Ω]	m/(Ω*mm²)	ΔU [V]	ΔU [%]	Ib [A]	-	-	-	Ib* [A]
STRING 1	**INVERTOR 1**	H1Z2Z2-K	6	17	11	5.06	497.2	10.18	3.390	3.62	0.062	57	0.164	0.033	41	0.77	0.72	0.554	22.73
STRING 2		H1Z2Z2-K	6	18	11	5.06	497.2	10.18	3.390	3.62	0.065	57	0.174	0.035	41	0.77	0.72	0.554	22.73
				35	**22**	**10.12**													

2.3.2. CALCUL SECTIUNI CABLU AC

Traseu cablu		Tip Cablu	Sectiune Cablu	Lungime Traseu	Putere totala	Factor de putere	Tensiune nominala	Curent	Conductivitatea materialului conductorului	Cadere de tensiune		Curent admisibil	Coeficient de corectie pentru montarea cablurilor in jgheab si temperatura	Coeficient de corectie pentru gruparea circuitelor	Coeficient de corectie total	Curent admisibil in urma aplicarii factorilor de corectie	Cablu selectat este OK / NOT OK
DE LA	CATRE	-	s [mm2]	L [m]	P [kWp]	-	U [V]	I [A]	m/(Ω*mm²)	ΔU [V]	ΔU [%]	Ib [A]	-	-	-	Ib* [A]	-
INVERTOR 1	TE-AC	RV-K	6	10	10	0.9	400	16.04	57	0.73	0.18	34	1	0.88	0.88	29.92	OK
TE-AC	TEG	ACYABY	16	120	10	0.9	400	16.04	36	5.21	1.30	78	1	0.89	0.89	69.42	OK

Anexa 2.1. Calcul secțiuni CABLU AC/DC C.E.F SCOALA GIMNAZIALA NR. 3, STRADA CHILIEI NR. 11, VATRA DORNEI, JUDEȚUL SUCEAVA
Obiectiv: "CONSTRUIREA DE NOI CAPACITĂȚI DE PRODUCERE A ENERGIEI ELECTRICE PRODUSĂ DIN SURSE REGENERABILE DE
Beneficiar: PRIMARIA VATRA DORNEI, VATRA DORNEI, STRADA MIHAI EMINESCU NR. 17,
JUDEȚUL SUCEAVA
Proiectant: S.C. MRB ELECTRIC S.R.L

Anexa 2.4 CALCUL SENCTIUNI CABLU AC/DC C.E.F

2.4.1. CALCUL SECTIUNI CABLU DC

Traseu cablu		Tip Cablu	Sectiune Cablu	Lungime Traseu	Nr. Panouri / String	Putere totala	Tensiune nominala	Curent	Rezistenta / km la 20°C	Rezistenta / km la 40°C	Rezistenta traseu cablu	Conductivitatea materialului conductorului	Cadere de tensiune		Curent admisibil	Coeficient de corectie pentru montarea cablurilor in jgheab si temperatura 40°C	Coeficient de corectie pentru gruparea circuitelor	Coeficient de corectie total	Curent admisibil in urma aplicarii factorilor de corectie
DE LA	CATRE	-	s [mm2]	L [m]	-	Ptot [kWp]	U [V]	I [A]	Rref [Ω/km]	Re [Ω/km]	R [Ω]	m/(Ω*mm²)	ΔU [V]	ΔU [%]	Ib [A]	-	-	-	Ib* [A]
STRING 1	INVERTOR 1	H1Z2Z2-K	6	44	16	7.36	723.2	10.18	3.390	3.62	0.159	57	0.425	0.059	41	0.77	0.72	0.554	22.73
STRING 2		H1Z2Z2-K	6	44	16	7.36	723.2	10.18	3.390	3.62	0.159	57	0.425	0.059	41	0.77	0.72	0.554	22.73
STRING 3		H1Z2Z2-K	6	42	15	6.9	678	10.18	3.390	3.62	0.152	57	0.406	0.060	41	0.77	0.72	0.554	22.73
STRING 4		H1Z2Z2-K	6	32	13	5.98	587.6	10.18	3.390	3.62	0.116	57	0.309	0.053	41	0.77	0.72	0.554	22.73
STRING 5		H1Z2Z2-K	6	35	13	5.98	587.6	10.18	3.390	3.62	0.127	57	0.338	0.058	41	0.77	0.72	0.554	22.73
STRING 6		H1Z2Z2-K	6	33	14	6.44	632.8	10.18	2.390	2.55	0.084	57	0.319	0.050	41	0.77	0.72	0.554	22.73
				230	87	40.02													

2.4.2. CALCUL SECTIUNI CABLU AC

Traseu cablu		Tip Cablu	Sectiune Cablu	Lungime Traseu	Putere totala	Factor de putere	Tensiune nominala	Curent	Conductivitatea materialului conductorului	Cadere de tensiune		Curent admisibil	Coeficient de corectie pentru montarea cablurilor in jgheab si temperatura	Coeficient de corectie pentru gruparea circuitelor	Coeficient de corectie total	Curent admisibil in urma aplicarii factorilor de corectie	Cablu selectat este OK / NOT OK
DE LA	CATRE	-	s [mm2]	L [m]	P [kWp]	-	U [V]	I [A]	m/(Ω*mm²)	ΔU [V]	ΔU [%]	Ib [A]	-	-	-	Ib* [A]	-
INVERTOR 1	TE-AC	N2XH	35	10	40	0.9	400	64.15	57	0.50	0.13	99	1	0.88	0.88	87.12	OK
TE-AC	TEG	N2XH	35	10	40	0.9	400	64.15	57	0.50	0.13	99	1	0.88	0.88	87.12	OK
TEG	BMPT	CYABY	35	10	40	0.9	400	64.15	57	0.50	0.13	157	1	0.89	0.89	139.73	OK

Anexa 2.1. Calcul secțiuni CABLU AC/DC C.E.F SCOALA GIMNAZIALA NR. 4, STRADA MIHAI EMINESCU NR. 50, VATRA DORNEI, JUDEȚUL SUCEAVA
Obiectiv: "CONSTRUIREA DE NOI CAPACITĂȚI DE PRODUCERE A ENERGIEI ELECTRICE PRODUSĂ DIN SURSE REGENERABILE DE
Beneficiar: PRIMARIA VATRA DORNEI, VATRA DORNEI, STRADA MIHAI EMINESCU NR. 17,
JUDEȚUL SUCEAVA
Proiectant: S.C. MRB ELECTRIC S.R.L

Anexa 2.5 CALCUL SENCTIUNI CABLU AC/DC C.E.F

2.5.1. CALCUL SECTIUNI CABLU DC

Traseu cablu		Tip Cablu	Sectiune Cablu	Lungime Traseu	Nr. Panouri / String	Putere totala	Tensiune nominala	Curent	Rezistenta / km la 20°C	Rezistenta / km la 40°C	Rezistenta traseu cablu	Conductivitatea materialului conductorului	Cadere de tensiune		Curent admisibil	Coeficient de corectie pentru montarea cablurilor in jgheab si temperatura 40°C	Coeficient de corectie pentru gruparea circuitelor	Coeficient de corectie total	Curent admisibil in urma aplicarii factorilor de corectie
DE LA	CATRE	-	s [mm2]	L [m]	-	Ptot [kWp]	U [V]	I [A]	Rref [Ω/km]	Re [Ω/km]	R [Ω]	m/(Ω*mm²)	ΔU [V]	ΔU [%]	Ib [A]	-	-	-	Ib* [A]
STRING 3	INVERTOR 1	H1Z2Z2-K	6	45	13	5.98	587.6	10.18	3.390	3.62	0.163	57	0.435	0.074	41	0.77	0.72	0.554	22.73
STRING 4		H1Z2Z2-K	6	45	13	5.98	587.6	10.18	3.390	3.62	0.163	57	0.435	0.074	41	0.77	0.72	0.554	22.73
STRING 5		H1Z2Z2-K	6	47	12	5.52	542.4	10.18	3.390	3.62	0.170	57	0.454	0.084	41	0.77	0.72	0.554	22.73
STRING 6		H1Z2Z2-K	6	65	13	5.98	587.6	10.18	3.390	3.62	0.235	57	0.628	0.107	41	0.77	0.72	0.554	22.73
STRING 7		H1Z2Z2-K	6	65	13	5.98	587.6	10.18	3.390	3.62	0.235	57	0.628	0.107	41	0.77	0.72	0.554	22.73
STRING 8		H1Z2Z2-K	6	65	12	5.52	542.4	10.18	3.390	3.62	0.235	57	0.628	0.116	41	0.77	0.72	0.554	22.73
				332	76	34.96													

Traseu cablu		Tip Cablu	Sectiune Cablu	Lungime Traseu	Nr. Panouri / String	Putere totala	Tensiune nominala	Curent	Rezistenta / km la 20°C	Rezistenta / km la 40°C	Rezistenta traseu cablu	Conductivitatea materialului conductorului	Cadere de tensiune		Curent admisibil	Coeficient de corectie pentru montarea cablurilor in jgheab si temperatura 40°C	Coeficient de corectie pentru gruparea circuitelor	Coeficient de corectie total	Curent admisibil in urma aplicarii factorilor de corectie
DE LA	CATRE	-	s [mm2]	L [m]	-	Ptot [kWp]	U [V]	I [A]	Rref [Ω/km]	Re [Ω/km]	R [Ω]	m/(Ω*mm²)	ΔU [V]	ΔU [%]	Ib [A]	-	-	-	Ib* [A]
STRING 1	INVERTOR 2	H1Z2Z2-K	6	55	15	6.9	678	10.18	3.390	3.62	0.199	57	0.532	0.078	41	0.77	0.72	0.554	22.73
STRING 2		H1Z2Z2-K	6	55	15	6.9	678	10.18	3.390	3.62	0.199	57	0.532	0.078	41	0.77	0.72	0.554	22.73
				110	30	13.8													

2.5.2. CALCUL SECTIUNI CABLU AC

Traseu cablu		Tip Cablu	Sectiune Cablu	Lungime Traseu	Putere totala	Factor de putere	Tensiune nominala	Curent	Conductivitatea materilalului conductorului	Cadere de tensiune		Curent admisibil	Coeficient de corectie pentru montarea cablurilor in jgheab si temperatura	Coeficient de corectie pentru gruparea circuitelor	Coeficient de corectie total	Curent admisibil in urma aplicarii factorilor de corectie	Cablu selectat este OK / NOT OK
DE LA	CATRE	-	s [mm2]	L [m]	P [kWp]	-	U [V]	I [A]	m/(Ω*mm²)	ΔU [V]	ΔU [%]	Ib [A]	-	-	-	Ib* [A]	-
INVERTOR 1	TE-AC	RV-K	25	7	36	0.9	400	57.74	57	0.44	0.11	80	1	0.88	0.88	70.4	OK
INVERTOR 2	TE-AC	RV-K	10	7	15	0.9	400	24.06	57	0.46	0.12	80	1	0.88	0.88	70.4	OK
TE-AC	TE-JCA	CYABY	35	7	51	0.9	400	81.79	57	0.45	0.11	99	1	0.88	0.88	87.12	OK
TE-JCA	TEG	CYABY	35	70	51	0.9	400	81.79	58	4.40	1.10	157	1	0.89	0.89	139.73	OK