



*Greening Energy
Market and Finance*

Project website: <http://grenfin.eu>

Renewable Energy Community in Valencia Spain

Team 1c

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Location



📍 Carrer de la costera



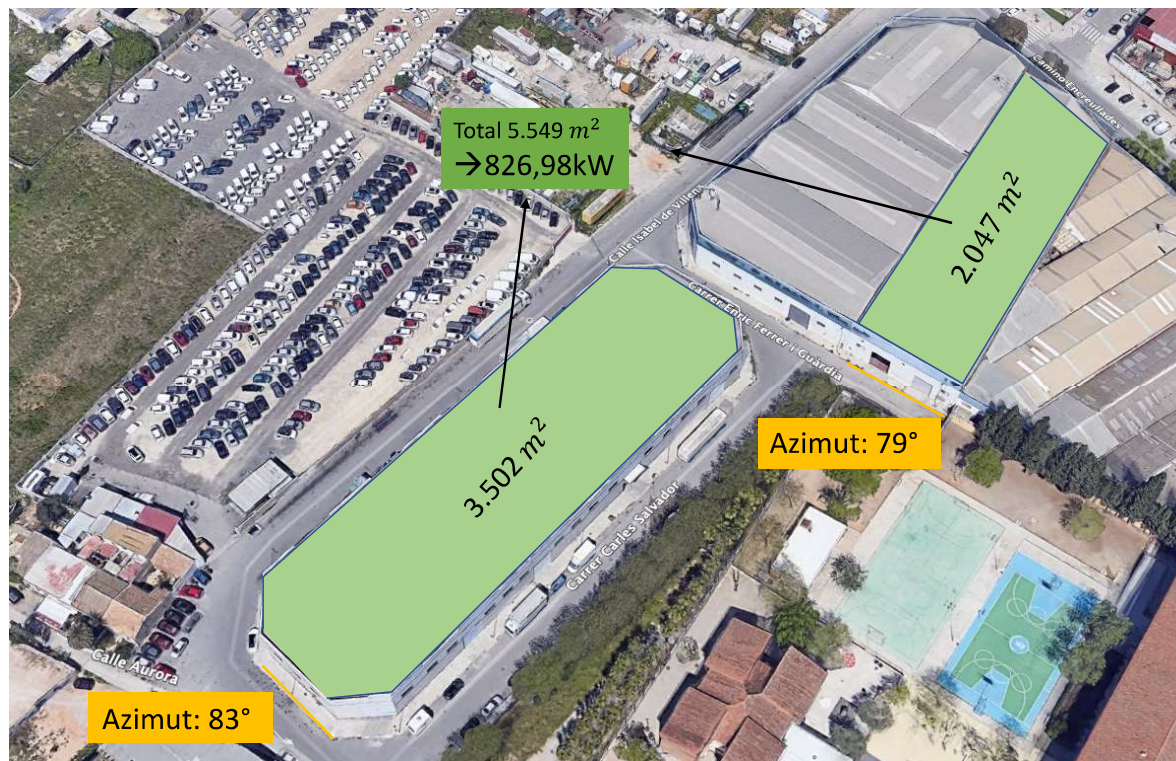
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Prosumers

Prosumers:

- Juvan Industrias del Mueble - a furniture shop
- Mecanizados y Barnizados Aldaia – a furniture industry





Small consumers

Small consumer:

- Different residents within a 200m radius



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Large consumers

Large consumers:

- Floor tiles industries
- Supermarket
- Professional manufacturer
- school



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Cost structure

*Under the assumption of no taxes

Selling	Price - Grid Fee	Percent Sold to:	Costs	Price
Small Consumer	60,00 €	10%	Grid Fee (annualy)	40,00 €
Large Consumer	80,00 €	10%	Cost of PV	537.537,00 €
			Yearly Cost	48.000,00 €
Cost opportunity	Price	Percent Sold to:	Project size	Power
Prosumer	140,00 €	80%	Installed kW	826,98 kW

Usual cost for the small conumer: **200€**

- Given a 100€ discount and 40€ Grid fee we earn **60€**
- Cost for the small consumer → 100€

Usual cost for the large conumer: **130€**

- Given a 10€ discount and 40€ Grid fee we earn **80€**
- Cost for the large consumer → 120€



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Return and cashflow

$$IRR = \sum_{t=1}^t \frac{C_t}{(1+r)^t} - C_o$$

IRR - 20 Years	15,497%
Final NPV	719.070 €
NPV Positive after	6 years

$$NPV = \sum_{t=0}^n \frac{CF_t}{(1+i)^t}$$

*Under the assumption of no taxes

	Year	Yearly energy production	Yearly Return	Cash Flow	Present value	NPV
1	2022	1146225,95	144.424,47 €	-441.113 €	-424.147 €	-424.146,66 €
2	2023	1138202,37	143.413,50 €	95.413 €	88.215 €	-335.932 €
3	2024	1130234,95	142.409,60 €	94.410 €	83.930 €	-252.002 €
4	2025	1122323,31	141.412,74 €	93.413 €	79.850 €	-172.152 €
5	2026	1114467,04	140.422,85 €	92.423 €	75.965 €	-96.187 €
6	2027	1106665,77	139.439,89 €	91.440 €	72.266 €	-23.921 €
7	2028	1098919,11	138.463,81 €	90.464 €	68.745 €	44.824 €
8	2029	1091226,68	137.494,56 €	89.495 €	65.393 €	110.217 €
9	2030	1083588,09	136.532,10 €	88.532 €	62.201 €	172.418 €
10	2031	1076002,98	135.576,38 €	87.576 €	59.163 €	231.582 €
11	2032	1068470,96	134.627,34 €	86.627 €	56.271 €	287.853 €
12	2033	1060991,66	133.684,95 €	85.685 €	53.519 €	341.372 €
13	2034	1053564,72	132.749,15 €	84.749 €	50.898 €	392.270 €
14	2035	1046189,76	131.819,91 €	83.820 €	48.404 €	440.674 €
15	2036	1038866,44	130.897,17 €	82.897 €	46.030 €	486.704 €
16	2037	1031594,37	129.980,89 €	81.981 €	43.770 €	530.474 €
17	2038	1024373,21	129.071,02 €	81.071 €	41.620 €	572.094 €
18	2039	1017202,60	128.167,53 €	80.168 €	39.573 €	611.667 €
19	2040	1010082,18	127.270,35 €	79.270 €	37.625 €	649.292 €
20	2041	1003011,60	126.379,46 €	78.379 €	35.771 €	685.063 €
21	2042	995990,52	125.494,81 €	77.495 €	34.007 €	719.070 €
Sum	-	22458194,29	2.829.732,48 €	1.284.195 €	-	-



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Savings for the actors in the energy community

Average Yearly generated energy	1069,44 MWh			
Energy to the Small consumer:	106,9437823 MWh			
Energy to the Large consumer:	106,9437823 MWh			
Number of Small consumers with about 4.5 MW	23,76528		Yearly Saving	10.694,38 €
Number of large consumer with about 100MW	1,069437823		Yearly Saving	1.069,44 €

Comparison to 10% system loss with 750€ installation cost per kW:

IRR - 20 Years	15,497%	→	IRR - 20 Years	14,105%
Final NPV	719.070 €		Final NPV	756.902 €
NPV Positive after	6 years		NPV Positive after	6 years

Average Yearly generated energy	1135,17 MWh			
Energy to the Small consumer:	113,51661 MWh			
Energy to the Large consumer:	113,51661 MWh			
Number of Small consumers with about 4.5 MW	25,22591		Yearly Saving	11.351,66 €
Number of large consumer with about 100MW	1,1351661		Yearly Saving	1.135,17 €



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