Next-Generation Integrated Energy Services fOr Citizen Energy CommuNities

SUSTAINABLE PLACES 2023

SUSTAINABLE PLACES 2023. MADRID

Strategies to engage through innovative technologies and services in the NEON pilot Industrial Park Las Cabezas (Spain)

SPANISH PILOT (CEC 03) – POLÍGONO INDUSTRIAL LAS CABEZAS

Date 16.06.2023

SERGIO LUJÁN. GFM FOTOVOLTAICA

GFM

What is NEON?

Next-Generation Integrated Energy Services fOr Citizen Energy CommuNities

New business models and possibilities for Citizen Energy Communities

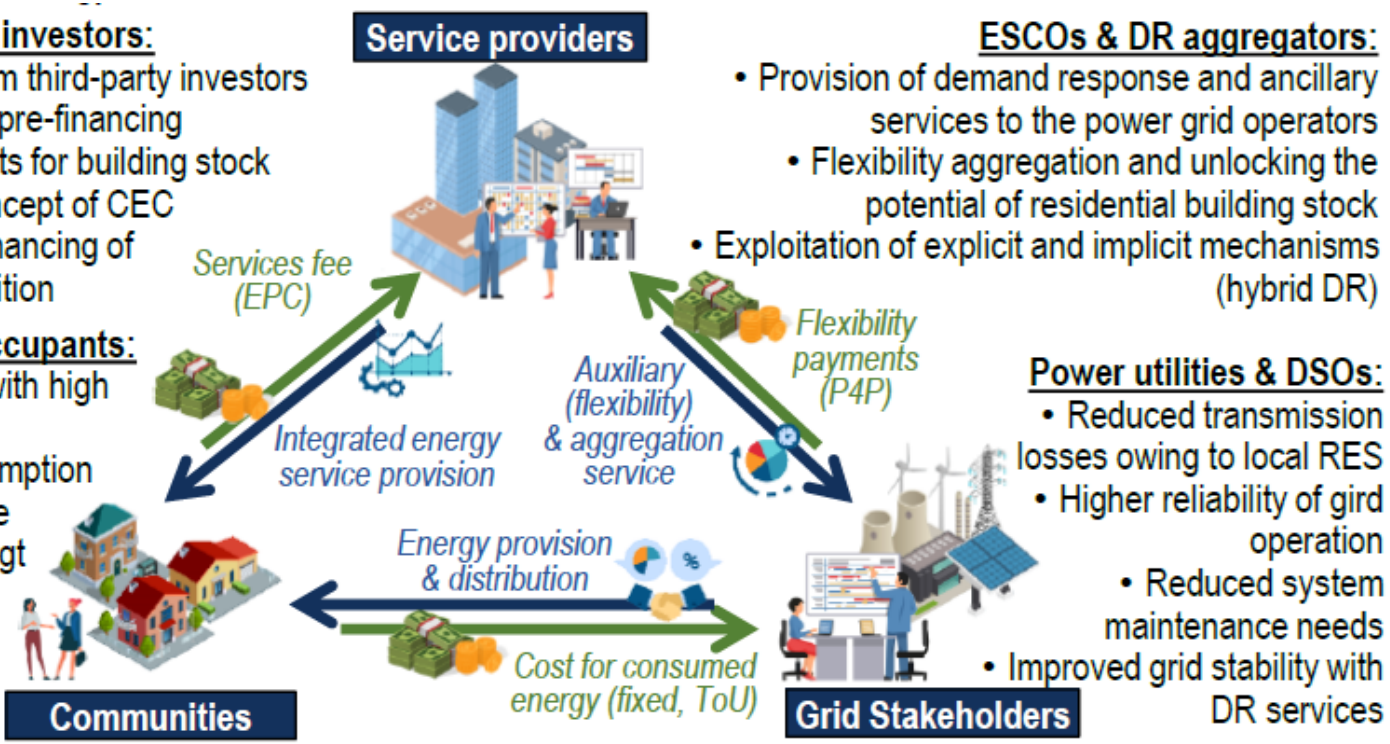
SUSTAINABLE PLACES 2023

WHAT IS EXPECTED THANKS TO NEON?

GFM

Service facilitators & investors:
- Financial support from third-party investors for energy efficiency pre-financing
- Unlocking investments for building stock renovation under concept of CEC
- Setting the path to financing of communities in transition

Building owners & occupants:
- Renovated building with high energy efficiency
- Increased self-consumption with RES and storage
- Integrated building mgt (HVAC, EVs…)
- Improved comfort, health and safety
- Reduced energy bills



ESCOs & DR aggregators:
- Provision of demand response and ancillary services to the power grid operators
- Flexibility aggregation and unlocking the potential of residential building stock
- Exploitation of explicit and implicit mechanisms (hybrid DR)

Power utilities & DSOs:
- Reduced transmission losses owing to local RES
- Higher reliability of gird operation
- Reduced system maintenance needs
- Improved grid stability with DR services

PARTICIPANTS

2 - Participants & contacts

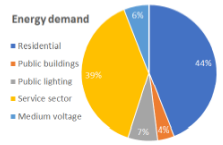
#	Participant Legal Name	Country
1	ENGIE	FR
2	AXPO ENERGY SOLUTIONS ITALIA-SOCIETA PER AZIONI	Italy
3	ALBEDO ENERGIE	FR
4	R2M SOLUTION SPAIN SL	ES
5	GRID ABILITY SCARL	IT
6	FORUM PER LA FINANZA SOSTENIBILE	IT
7	INSTITUTO PARA LA DIVERSIFICACION Y AHORRO DE LA ENERGIA	ES
8	ASOCIACION DE EMPRESAS DE ENERGIAS RENOVABLES - APPA / GFM	ES
9	UNIVERSITY OF CYPRUS	CY
10	CSEM CENTRE SUISSE D'ELECTRONIQUE ET DE MICROTECHNIQUE SA - RECHERCHE ET DEVELOPPEMENT	CH
11	INSTITUT MIHAJLO PUPIN	RS
12	Improvistos Creatividad y Territorio, S.L.L.	ES
13	COMET GESINCO SL	ES

GFM

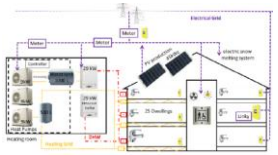
SUSTAINABLE PLACES 2023

FOUR DIFFERENT PILOTS

CEC 1 DESCRIPTION			
Name:	BERCHIDDA (IT)	**CEC location:**	Berchidda municipality, Italy (map)
Building types:	mixed residential & public	**Community:**	25 dwellings & 5 public buildings
Potential outreach:	1300 dwellings across municipality	**Service provider:**	AXPO



CEC 2 DESCRIPTION			
Name:	DOMAINE DE LA SOURCE (FR)	**CEC location:**	Villard de Lans, France (map)
Buildings type:	residential buildings	**Community:**	25 dwellings in 3 buildings
Potential outreach:	500 dwellings in town under service	**Service provider:**	ALB (CTX as LTP)



CEC 3 DESCRIPTION			
Name:	POLÍGONO INDUSTRIAL LAS CABEZAS (ES)	**CEC location:**	Villacañas (Toledo), Spain (map)
Building types:	industrial & residential buildings	**Community:**	5 industrial & 10 preselected + 10 more residential houses
Potential outreach:	100 companies & 25 houses under service	**Service provider:**	APPA (GFM as LTP)

CEC 4 DESCRIPTION			
Name:	STAINS CITY (FR)	**CEC location:**	Joséphine Baker, Stains, France (map)
Building types:	office buildings and service areas	**Community:**	2 buildings/sites, area of approx. 34,500m²
Potential outreach:	4 similar office buildings under service	**Service provider:**	ENGIE

SPANISH PILOT DESCRIPTION (CEC 03)

1. Existing energy services identification:
   - PV Self-consumption (GFM)
   - Storage (GFM)
   - EV Recharging Stations (GFMCA)

DESCRIPTION PV SYSTEM
- 32.08 kWp (Bifacial Mono PERC + Polycristaline)
- 33.5 kWn PV inverters (Fronius SYMO 10 kW (1) + Fronius PRIMO GEN 24 5 kW (3) + Fronius PRIMO 5 kW (1) + Fronius PRIMO 3.5 kW(1)

OWNER:
- GFM

DESCRIPTION STORAGE SYSTEM
- INGECON RAPID TRIO EV RECHARGING STATION (INGETEAM). 50 kW DC (CHADEMO & CCS) + 40 kW AC (MENNEKES)

OWNER:
- GFMCA

DESCRIPTION STORAGE SYSTEM
- 2000AH LEAD ACID BATTERIES. 48V
- Inverters/Charger Victron Multiplus 48/5000/70

OWNER:
- GFM

SPANISH PILOT DESCRIPTION (CEC 03)

LOCATION: CALLE LAS CABEZAS 16.
45860 VILLACAÑAS (TOLEDO - SPAIN)

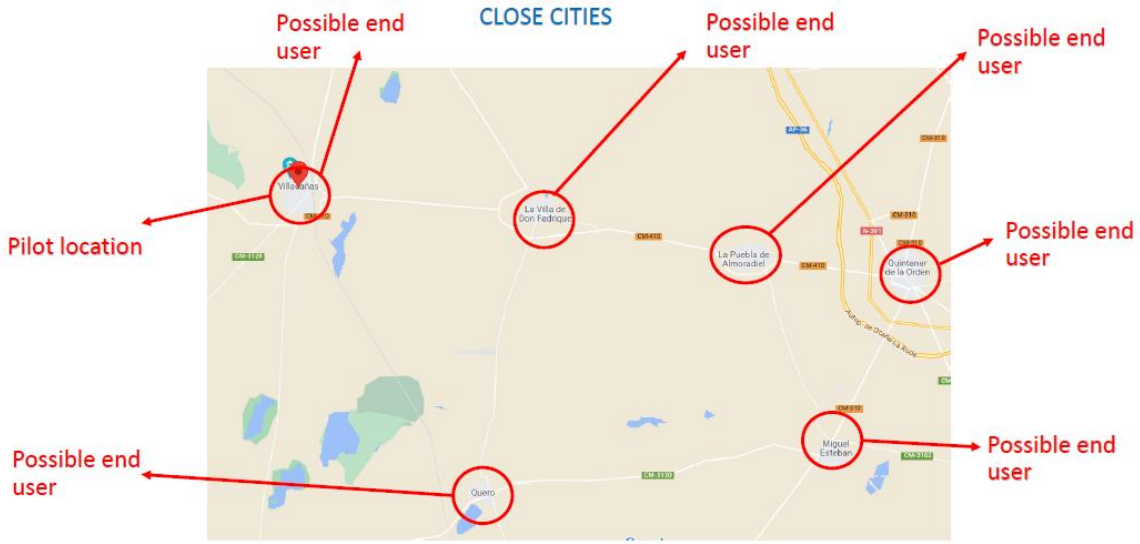
CURRENT END USERS / STAKEHOLDERS FOR ENERGY COMMUNITY

PILOT LOCATION: CALLE LAS CABEZAS 16. 45860 VILLACAÑAS (TOLEDO - SPAIN)

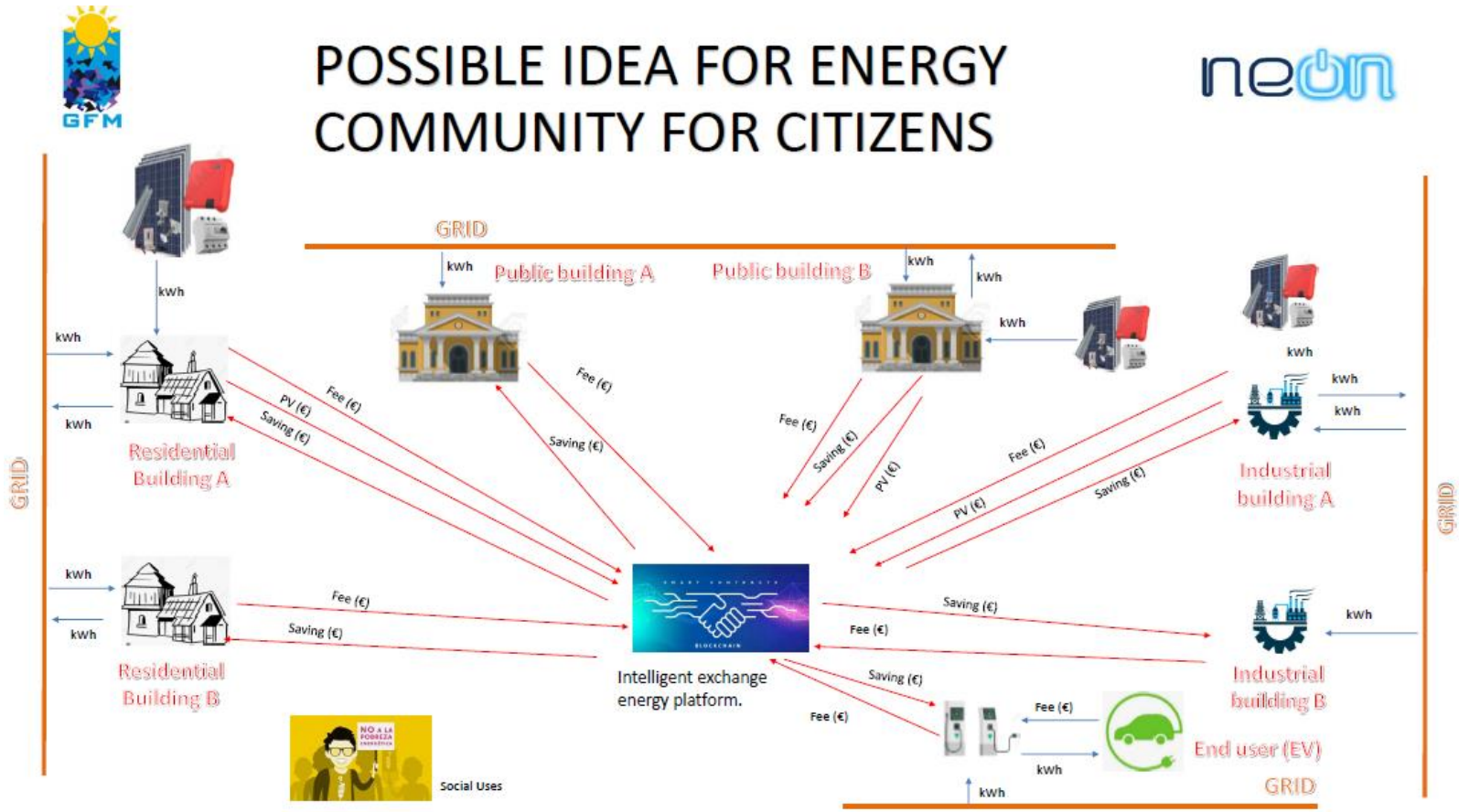
SUSTAINABLE PLACES 2023

SPANISH PILOT DESCRIPTION (CEC 03)

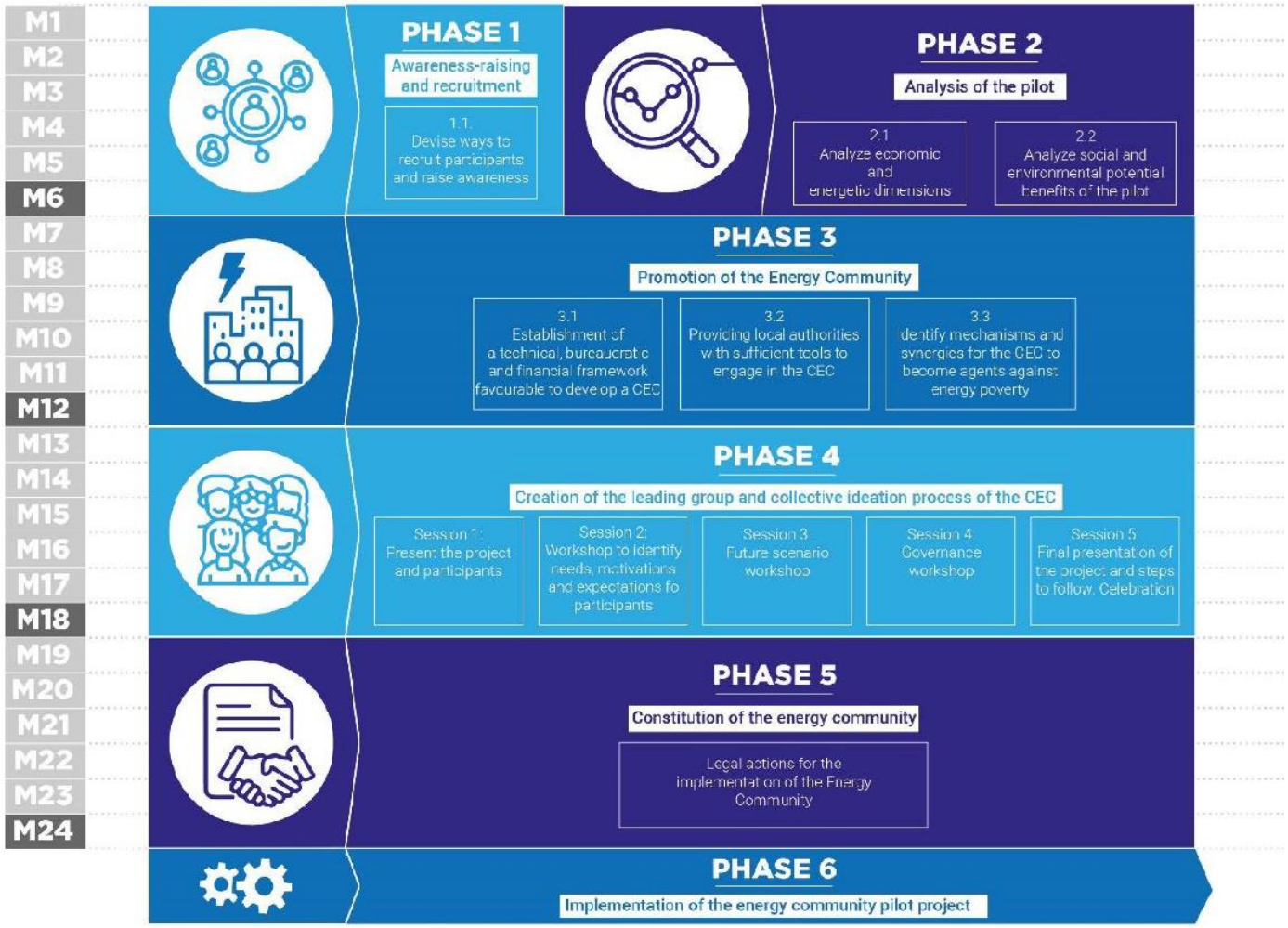
DESCENTRALIZED END USERS



SPANISH PILOT DESCRIPTION (CEC 03)



GUIDELINE FOR CEC CONSTITUTION



Important points:

- Technical aspects
- Financial aspects
- Regulatory aspects
- Social aspects
- Environmental aspects
- Governance aspects

ENGAGEMENT STRATEGY

ENGAGEMENT STRATEGY

Main difficulties in recruiting members:

- Low understanding of energy market.
- Low expected profitability.
- Low environmental sensitivity.
- Fear due to lack of knowledge of the mechanisms of the system.
- Fear of the upward trend in energy prices.

ENGAGEMENT STRATEGY

Phases for engagement strategies:

1. Workshops to get a clearer definition of the needs and fears of potential members.	→	This will establish the benefits that the community can bring to future members.
1. Workshop to determine the possible scenarios that the community will need to face in the future.	→	This will help to see weaknesses and prevent these situations from negatively affecting members.
1. Governance workshop to co-ideate the way the association will operate and agree on the statutes of the association	→	There will be a draft of the different agreements as well as possible engagement strategies.
1. New workshops with clear guidelines for action, conducted jointly by members of the community.	→	The number of workshops will depend on the number of people interested.

ENGAGEMENT STRATEGY

Phase 1:

In this first phase, workshops will be held at the GFM offices with the various interested current and prospective members.

It will explain what the community consists of from a technical, economic and environmental point of view.

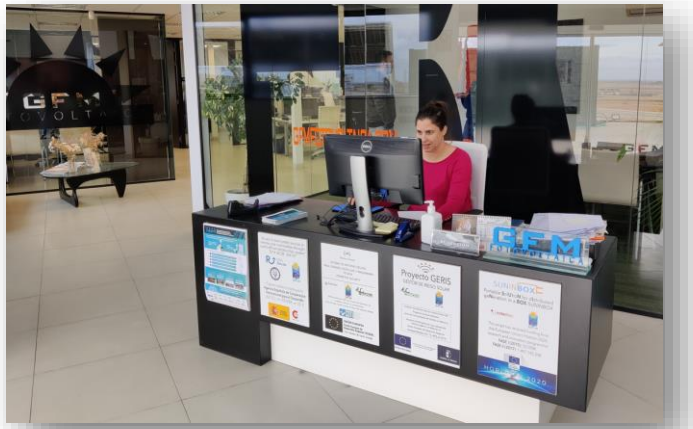
At the end of each workshop an internal report will be drawn up with the conclusions.

Workshops have been held to convey to people the possibilities of the community and learn what role they could have in the community

ENGAGEMENT STRATEGY

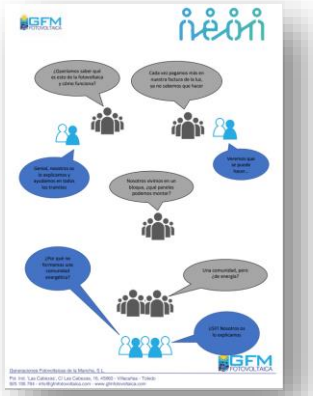
Phase 1:

The project was publicized within GFM in order to attract potential community members.



Street-level publications have been produced in the location of the CEC.

A small workshop was organized to inform local people about the possibilities within the community and how they could be part of it.

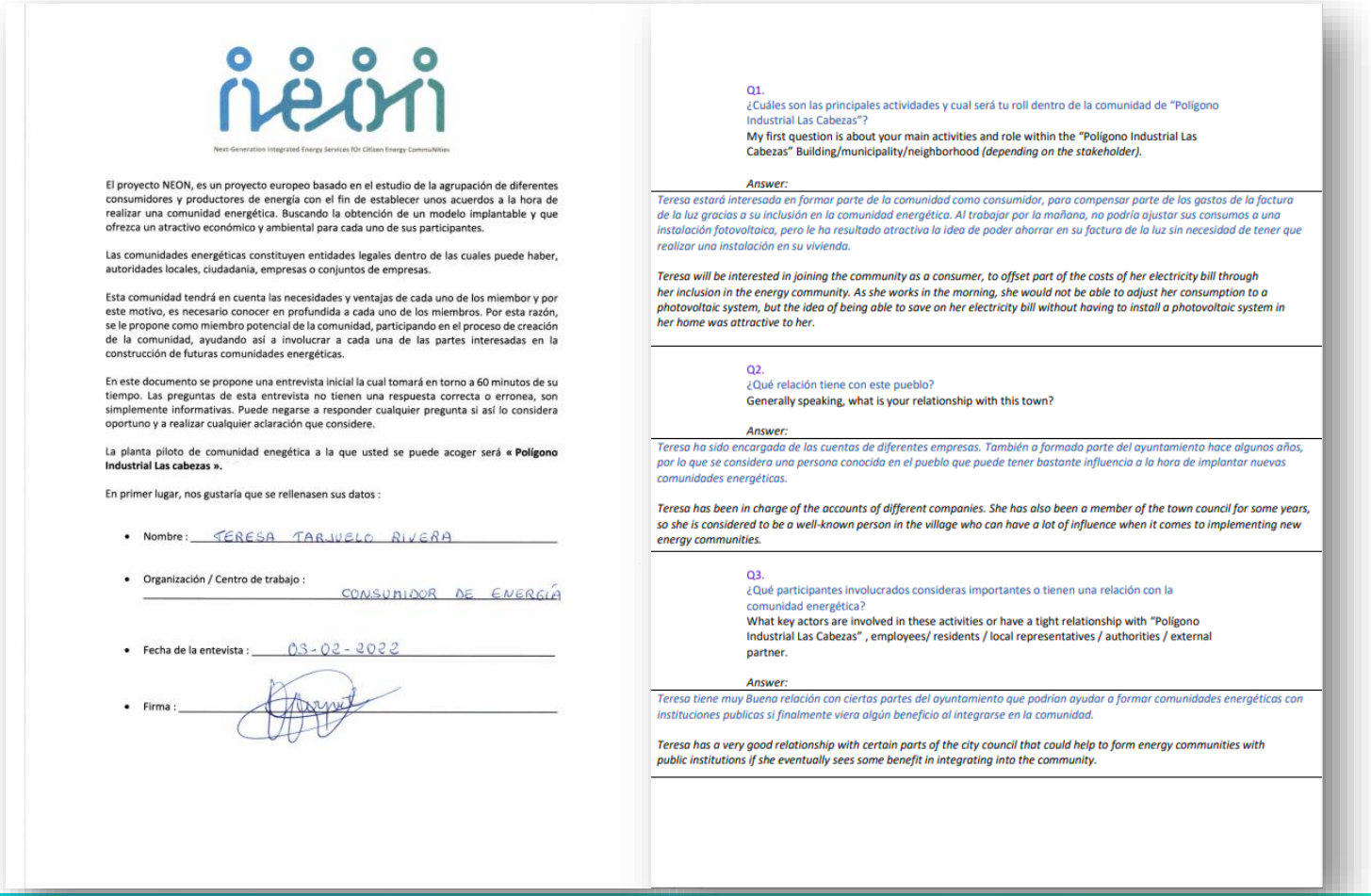


ENGAGEMENT STRATEGY

Phase 1:

Questionnaires have been made to the people and companies that had an initial predisposition to be part of the project.

With these questionnaires we have sought to know the relationship of the user with the energy community and its location.



Next-Generation Integrated Energy Services FOr Citizen Energy CommuNities

El proyecto NEON, es un proyecto europeo basado en el estudio de la agrupación de diferentes consumidores y productores de energía con el fin de establecer unos acuerdos a la hora de realizar una comunidad energética. Buscando la obtención de un modelo implantable y que ofrezca un atractivo económico y ambiental para cada uno de sus participantes.

Las comunidades energéticas constituyen entidades legales dentro de las cuales puede haber, autoridades locales, ciudadania, empresas o conjuntos de empresas.

Esta comunidad tendrá en cuenta las necesidades y ventajas de cada uno de los miembor y por este motivo, es necesario conocer en profundida a cada uno de los miembros. Por esta razón, se le propone como miembro potencial de la comunidad, participando en el proceso de creación de la comunidad, ayudando así a involucrar a cada una de las partes interesadas en la construcción de futuras comunidades energéticas.

En este documento se propone una entrevista inicial la cual tomará en torno a 60 minutos de su tiempo. Las preguntas de esta entrevista no tienen una respuesta correcta o erronea, son simplemente informativas. Puede negarse a responder cualquier pregunta si así lo considera oportuno y a realizar cualquier aclaración que considere.

La planta piloto de comunidad enegética a la que usted se puede acoger será **« Polígono Industrial Las cabezas ».**

En primer lugar, nos gustaría que se rellenasen sus datos :

- Nombre : TERESA TARJUELO RIVERA
- Organización / Centro de trabajo : CONSUMIDOR DE ENERGÍA
- Fecha de la entevista : 03-02-2022
- Firma :

Q1.
¿Cuáles son las principales actividades y cual será tu roll dentro de la comunidad de "Polígono Industrial Las Cabezas"?
My first question is about your main activities and role within the "Polígono Industrial Las Cabezas" Building/municipality/neighborhood *(depending on the stakeholder)*.

Answer:

Teresa estará interesada en formar parte de la comunidad como consumidor, para compensar parte de los gastos de la factura de la luz gracias a su inclusión en la comunidad energética. Al trabajar por la mañana, no podría ajustar sus consumos a una instalación fotovoltaica, pero le ha resultado atractiva la idea de poder ahorrar en su factura de la luz sin necesidad de tener que realizar una instalación en su vivienda.

Teresa will be interested in joining the community as a consumer, to offset part of the costs of her electricity bill through her inclusion in the energy community. As she works in the morning, she would not be able to adjust her consumption to a photovoltaic system, but the idea of being able to save on her electricity bill without having to install a photovoltaic system in her home was attractive to her.

Q2.
¿Qué relación tiene con este pueblo?
Generally speaking, what is your relationship with this town?

Answer:

Teresa ha sido encargada de las cuentas de diferentes empresas. También a formado parte del ayuntamiento hace algunos años, por lo que se considera una persona conocida en el pueblo que puede tener bastante influencia a la hora de implantar nuevas comunidades energéticas.

Teresa has been in charge of the accounts of different companies. She has also been a member of the town council for some years, so she is considered to be a well-known person in the village who can have a lot of influence when it comes to implementing new energy communities.

Q3.
¿Qué participantes involucrados consideras importantes o tienen una relación con la comunidad energética?
What key actors are involved in these activities or have a tight relationship with "Polígono Industrial Las Cabezas" , employees/ residents / local representatives / authorities / external partner.

Answer:

Teresa tiene muy Buena relación con ciertas partes del ayuntamiento que podrían ayudar a formar comunidades energéticas con instituciones publicas si finalmente viera algún beneficio al integrarse en la comunidad.

Teresa has a very good relationship with certain parts of the city council that could help to form energy communities with public institutions if she eventually sees some benefit in integrating into the community.

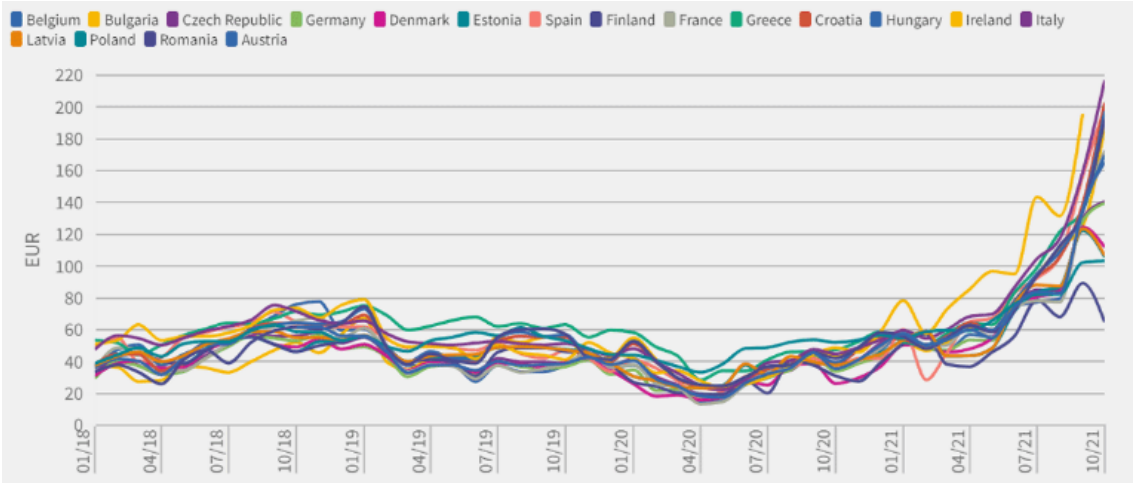
ENGAGEMENT STRATEGY

Phase 2:

Based on the findings of the first phase workshops, the current and future needs of the members will be established.

The current energy market and its trend will be assessed to determine how it could be affected in the future.

With this set of values, a set of requirements will be established which will have to be taken into account when forming the basis of the community in phase 3.



ENGAGEMENT STRATEGY

Phase 2:

Financial aspects

It has collaborated at the time of the technical-economic feasibility studies, presenting current data from the Spanish energy market as well as relevant data from the CEC03.

EXISTING BUILDING DATA

Stakeholder number	Type of building	Number of Apartment (NOT	Number of possible customers	Total electricity consumption	Total DHW electricity	Total SPECIFIC electricity	Energy for Heating (Gaz)	Total consumption Energy for Mobility	FUTURE DATA: Electric mobility consumption	FUTURE DATA: Solar plant power production 100kWp
1	Residential	1	4	26,280	17,155	9,125		0	81	0
2	EV end-user	1	1	3,000	0	3,000		3,000	0	0
3	Residential	1	4	26,280	17,155	9,125		0	81	0
4	Residential	1	4	26,280	17,155	9,125		0	81	0
5	Residential	1	4	26,280	17,155	9,125		0	81	0
6	EV end-user	1	1	3,000	0	3,000		3,000	0	0
7	EV Recharging point	1	1	11,168	0	11,168		11,168	11,168	0
8	GFM - As customer	1	40	38,400	7,520	30,880		0	0	0
9	GFM - PV generacion system	1	40	-49,218	0	-49,218		0	0	164,060
	GFM- Storage (linked with self consumption)	1	59	-10,320	0	-10,320		0	0	0
Total building SURFACE - living surface (m²)		3936	10	59	101,150	76,140	25,010	0	17,168	11,492	164,060
CEC Grid consumption ACC Allo produit (€/kWh)	€	0.00421		12	https://www.esios.ree.es/es/pvpc?date=19-01-2022					
CEC self consumption ACC Autoproduit (€/kWh)	€	0.00028		50	https://www.esios.ree.es/es/pvpc?date=19-01-2022					
Grid injection (€/kWh)	€	0.07000		50	Normal price of the energy feed in the grid for selfconsumption installations.					
Gaz price for HVAC (€/kWh)	€	0.06150		230	https://preciogas.com/suministro-gas/tarifas-gas/precio-kwh					
Industrial/Office price of energy (€/kWh)	€	0.16200		12	https://www.mincotur.gob.es/es-es/indicadoresyEstadisticas/BoletinEstadistico/Energy%C3%ADa%20y%20emisiones/4_12.pdf					
Conversion CO2 (44g/mol) ⇒ C(12g/mol) - 1kg CO2 × 12/44 kg C										

CEC CONTROL PANEL

Electric mobility rate (%)	3 %	to be modified https://www.hibridosyelectricos.com/articulo/actualidad/millones-vehiculos-electricos-espana-necesita-2030/20220429103312057318.html
Self consumption rate (%)	48.66 %	Considering the members of the comunity (Generated VS Consumed)
Rate of local energy consumption (%)	60.91 %	Actually value in GFM (Generated vs consumed)
Self consumption volume (kWh)	49,218	
Grid injection volume (kWh)	9,648	Measured with our monitoring system
Inflation rate for energy price	15 %	to be modified

CEC SERVICES ANALYSIS

	Unit	Consumption analysis: EXISTING 2022 Consumption (kWh/m²shab)	EXISTING 2022 HVAC gaz DHW Elec (kWh)	Service 1 : Refurbishment FULL GAZ without CeC (kWh/m²shab)	Service 1 : Refurbishment FULL GAZ without CeC (kWh)	Service 2 CEC Efficiency rate	Service 2 CeC HVAC DHW MOBILITY Elec with ACC (kWh)	Service 3 Efficiency rate	Service 3 (kWh)	Costs analysis: EXISTING 2022 HVAC gaz DHW Elec (€HT)	Scénario 1 futur FULL GAZ without CeC (€HT)	Scenario 2 CeC HVAC DHW MOBILITY Elec with ACC (€HT)	Extra production grid injection revenu 7c€/kWh (€Ht)
Grid consumption Electricity DHW	kWh	0.00	-	9.00	35,424	20.00 %	-			0 €	1,195 €	0 €	8,039 €
SELF CONSUMPTION Electricity DHW	kWh	19.34	76,140	0.00	-		-			3,292 €		0 €	8,039 €
Grid consumption Electricity (lighting-domestic usage) Specific	kWh	6.35	25,010	6.35	25,010	20.00 %	7,821			22,393 €	844 €	33 €	8,039 €
SELF CONSUMPTION (lighting-domestic usage)	kWh						12,187			0 €		3 €	8,039 €
Grid consumption Electricity Heating (Heat Pump)	kWh					300.00 %	-			0 €	0 €	0 €	8,039 €
SELF CONSUMPTION Electricity Heating (Heat Pump)	kWh						-			0 €		0 €	8,039 €
Grid consumption Electricity Mobility	kWh					30.00 %	4,996					924 €	8,039 €
SELF CONSUMPTION Electricity Mobility	kWh						155			0 €		0 €	8,039 €
Gazoil Mobility	kWh		17,168		17,168		16,653			3,177 €	3,177 €	3,082 €	8,039 €
GAZ for DHW gaz	kWh			12.00	47,232						2,905 €		8,039 €
GAZ for Heating Chauffage gaz	kWh	0.00	-	0.00	-	63.50 %				0 €	0 €		8,039 €
Grid consumption Electricity Industrial / Office Usage	kWh	9.76											
SELF CONSUMPTION Electricity Industrial / Office Usage	kWh	5.94											
TOTAL CONSUMPTION AND ENERGY COSTS (Without subscription)			118,318		124,834		41,811			28,862 €	8,121 €	4,042 €	88,428 €
										2,886 €	812 €	404 €	0.140058342

ENGAGEMENT STRATEGY

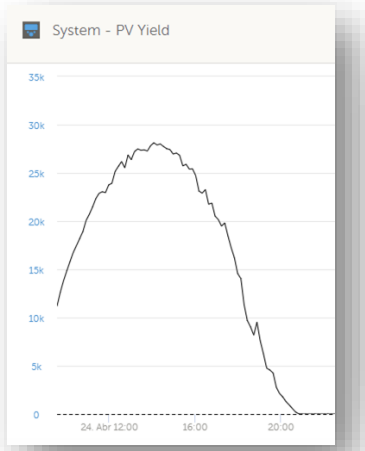
Phase 2:

Monitoring and control platform development

The tasks carried out have consisted in the identification of the necessary data to implement the optimization model that will be used in the NEON project.

It is necessary to know what data is measured, in what units and how often the data is obtained.

Of all the data obtained, some will be presented to the users, so it is necessary to determine which ones.



Family	Value	Unit
Energy Storage	SoC available	%
	Energy available	kWh
	Instant power of the PV installation	kW
	Energy generated by PV installation	kWh
	Estimated energy avaliable from the CEC	kWh
	Ess status	-
ENERGY CONSUMERS	Own instant consumption power	kW
	Energy consumed	kWh
	Percentage of energy used from the CEC	%
EV RECHARGING STATION	Energy used from PV system in the EV	kWh

Fecha y hora	Power VA | Primo 3.5-1 (2)	Power VA | Primo 5.0-1 (3)	Power VA | Primo GEN24 5.0	Power VA | Primo GEN24 5.0	Power VA | Primo GEN24 5.0	Power VA | Symo 10.0-3-M (1)
[dd.MM.yyyy HH:mm]	[VA]	[VA]	[VA]	[VA]	[VA]	[VA]
23.10.2022 08:55	0.00	0.00	0.00	0.00	0.00	0.00
23.10.2022 09:00	0.00	0.33	27.47	0.00	14.94	42.36
23.10.2022 09:05	0.00	32.89	53.47	11.17	59.94	95.08
23.10.2022 09:10	0.00	64.20	100.00	71.35	107.35	152.14
23.10.2022 09:15	33.83	129.13	175.99	126.62	183.04	286.41
23.10.2022 09:20	77.57	152.17	195.03	140.91	203.11	329.00
23.10.2022 09:25	83.17	182.60	240.65	174.86	249.01	388.38
23.10.2022 09:30	118.00	262.69	340.85	247.56	351.75	547.55
23.10.2022 09:35	178.55	364.60	463.09	335.65	475.00	748.56
23.10.2022 09:40	247.64	460.51	543.76	395.23	556.26	940.82
23.10.2022 09:45	243.42	385.98	455.26	330.94	470.25	797.93
23.10.2022 09:50	213.90	342.99	393.98	285.61	409.87	712.96
23.10.2022 09:55	162.76	290.75	371.82	270.32	384.97	600.08
23.10.2022 10:00	174.69	284.55	306.63	221.23	316.99	588.43
23.10.2022 10:05	127.96	246.28	316.47	228.60	326.94	503.98
23.10.2022 10:10	180.26	377.72	525.97	383.27	541.44	773.43
23.10.2022 10:15	348.62	690.09	799.50	586.16	821.94	1393.25
23.10.2022 10:20	617.37	1492.40	1793.74	1305.04	1842.03	3008.34
23.10.2022 10:25	923.21	1247.23	1348.69	988.66	1379.11	2515.85
23.10.2022 10:30	528.53	742.03	794.78	577.45	815.28	1508.71
23.10.2022 10:35	318.01	443.20	515.17	371.98	528.51	897.89
23.10.2022 10:40	239.23	462.20	578.93	416.69	590.24	941.95
23.10.2022 10:45	355.23	669.18	801.04	580.50	816.17	1335.93
23.10.2022 10:50	382.79	596.02	695.83	503.02	708.70	1201.05
23.10.2022 10:55	383.78	774.16	992.01	716.33	1009.37	1564.03
23.10.2022 11:00	567.35	1024.26	1178.48	849.91	1191.32	2060.32
23.10.2022 11:05	563.31	985.84	1186.55	861.33	1203.24	1998.93
23.10.2022 11:10	664.93	1282.24	1483.37	1070.45	1501.15	2580.76
23.10.2022 11:15	801.09	1404.55	1796.12	1316.23	1831.19	2823.07
23.10.2022 11:20	1015.83	1639.17	1780.56	1300.86	1802.79	3301.21
23.10.2022 11:25	953.07	1743.97	2068.74	1510.94	2106.84	3509.47
23.10.2022 11:30	1073.94	1783.90	2012.50	1466.58	2049.25	3589.26
23.10.2022 11:35	1183.46	2066.34	2392.00	1740.29	2417.24	4156.34
23.10.2022 11:40	1519.67	2697.37	3231.39	2377.30	3270.92	5436.10
23.10.2022 11:45	1845.39	2616.26	2716.89	1971.38	2735.57	5258.28
23.10.2022 11:50	1084.59	1694.46	1850.64	1360.08	1879.13	3392.58
23.10.2022 11:55	855.28	1246.66	1444.09	1065.87	1470.59	2504.83
23.10.2022 12:00	711.44	1017.20	1135.81	811.87	1145.44	2045.28
23.10.2022 12:05	592.18	1966.03	2470.41	1800.92	2483.79	3931.98
23.10.2022 12:10	1512.55	1736.38	1849.04	1351.02	1873.84	3500.47
23.10.2022 12:15	818.73	1637.01	2071.53	1503.22	2094.04	3282.20
23.10.2022 12:20	1300.61	1919.34	1966.55	1390.87	1949.91	3832.12
23.10.2022 12:25	630.15	840.07	996.76	718.92	1010.47	1698.24

ENGAGEMENT STRATEGY

Phase 3:

In order to establish co-governance, it will be necessary to identify the different collectives found in the community.

An elected representative of each collective will be established.

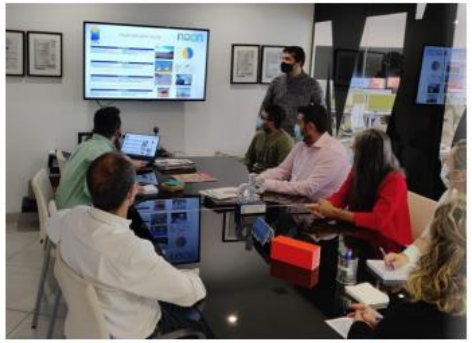
Once the representatives have been established, the statutes will be drawn up, as well as the first technical guidelines that will shape the community.

Periodically, whenever necessary, new meetings will be held to promote internal changes within the community that will help to improve it.

ENGAGEMENT STRATEGY

Phase 3:






- CEC Constitution
- Initial assembly
- CEC statutes
- Periodic assemblies
- Social aspects
- Environmental aspects
- Uses of energy
- Engagement strategies for new stakeholders

ENGAGEMENT STRATEGY

Phase 4:

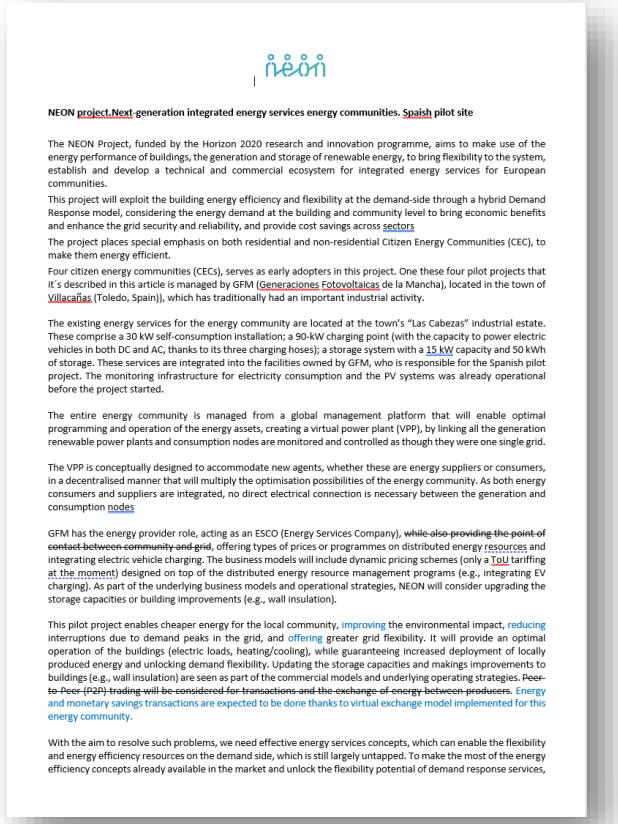
In order to attract new customers, workshops will be held for interested parties.

They will be carried out according to the number of interested parties and their capacity to contribute to the community.

Awareness of social and environmental issues will be promoted.

ENGAGEMENT STRATEGY

Phase 4:



NEON project.Next-generation integrated energy services energy communities. Spaish pilot site

The NEON Project, funded by the Horizon 2020 research and innovation programme, aims to make use of the energy performance of buildings, the generation and storage of renewable energy, to bring flexibility to the system, establish and develop a technical and commercial ecosystem for integrated energy services for European communities.

This project will exploit the building energy efficiency and flexibility at the demand-side through a hybrid Demand Response model, considering the energy demand at the building and community level to bring economic benefits and enhance the grid security and reliability, and provide cost savings across sectors

The project places special emphasis on both residential and non-residential Citizen Energy Communities (CEC), to make them energy efficient.

Four citizen energy communities (CECs), serves as early adopters in this project. One these four pilot projects that it´s described in this article is managed by GFM (Generaciones Fotovoltaicas de la Mancha), located in the town of Villacañas (Toledo, Spain)), which has traditionally had an important industrial activity.

The existing energy services for the energy community are located at the town's "Las Cabezas" industrial estate. These comprise a 30 kW self-consumption installation; a 90-kW charging point (with the capacity to power electric vehicles in both DC and AC, thanks to its three charging hoses); a storage system with a 15 kW capacity and 50 kWh of storage. These services are integrated into the facilities owned by GFM, who is responsible for the Spanish pilot project. The monitoring infrastructure for electricity consumption and the PV systems was already operational before the project started.

The entire energy community is managed from a global management platform that will enable optimal programming and operation of the energy assets, creating a virtual power plant (VPP), by linking all the generation renewable power plants and consumption nodes are monitored and controlled as though they were one single grid.

The VPP is conceptually designed to accommodate new agents, whether these are energy suppliers or consumers, in a decentralised manner that will multiply the optimisation possibilities of the energy community. As both energy consumers and suppliers are integrated, no direct electrical connection is necessary between the generation and consumption nodes

GFM has the energy provider role, acting as an ESCO (Energy Services Company), ~~while also providing the point of contact between community and grid~~, offering types of prices or programmes on distributed energy resources and integrating electric vehicle charging. The business models will include dynamic pricing schemes (only a ToU tariffing at the moment) designed on top of the distributed energy resource management programs (e.g., integrating EV charging). As part of the underlying business models and operational strategies, NEON will consider upgrading the storage capacities or building improvements (e.g., wall insulation).

This pilot project enables cheaper energy for the local community, improving the environmental impact, reducing interruptions due to demand peaks in the grid, and offering greater grid flexibility. It will provide an optimal operation of the buildings (electric loads, heating/cooling), while guaranteeing increased deployment of locally produced energy and unlocking demand flexibility. Updating the storage capacities and makings improvements to buildings (e.g., wall insulation) are seen as part of the commercial models and underlying operating strategies. ~~Peer-to-Peer (P2P) trading will be considered for transactions and the exchange of energy between producers.~~ Energy and monetary savings transactions are expected to be done thanks to virtual exchange model implemented for this energy community.

With the aim to resolve such problems, we need effective energy services concepts, which can enable the flexibility and energy efficiency resources on the demand side, which is still largely untapped. To make the most of the energy efficiency concepts already available in the market and unlock the flexibility potential of demand response services,

Technical articles have been presented

Stakeholder number	Gender	Description	Knowledge of PV installations	Type of user in the CEC	Contact number	Contact email	Positive feedback to be part of the community
1	Male	Town's neighbour, doesn't have the proper roof distribution to achieve a feasible installation. Their main intention is to find a way to reduce their electricity bill.	NO	END-USER (RESIDENTIAL)	Available	Available	YES
2	Male	EV end user. helping to reduce the impact of CO2 on mobility and seeking a more competitive price when it comes to recharging.	YES	END-USER (EV VEHICLE)	Available	Not Available	YES
3	Male	Town's neighbour, he already have a PV installations but he consider that its not enought to cover all the daily demand. He want to improve his selfconsumption ratio and also have a lower electricity bill.	YES	END-USER (RESIDENTIAL)	Not Available	Available	YES
4	Male	Town's neighbour (move to Villacañas 2 years ago). He lives in an apartment which form part of a community of neighbours so it's no possible the installations of his own PV installation.	YES	END-USER (RESIDENTIAL)	Available	Available	YES
5	Female	Town's neighbour. Consumer, considers that he would not benefit from the performance of a typical PV system, as his consumption pattern differs from the off-peak hours.	NO	END-USER (RESIDENTIAL)	Available	Not Available	YES
6	Male	EV end user. You are looking to benefit from lower prices for the recharging of your electric vehicle.	YES	END-USER (EV VEHICLE)	Not Available	Available	YES
7	Not apply	EV RECHARGING POINT FOR THE CEC	YES	SERVICE PROVIDER	Available	Available	YES
8	Not apply	PV production system which will generate the energy that will be consumed by the end-users.	YES	SERVICE PROVIDER	Available	Available	YES
9	Not apply	Energy storage system. Will bring the flexibility necessary to improve the feasibility of system.	YES	SERVICE PROVIDER	Available	Available	YES
10	Male	Potential end-user. Currently not inclined to join the community as he feels distrustful of the large number of possibilities currently on offer.	YES	END-USER (RESIDENTIAL)	Available	Available	NO
11	Not apply	Industrial energy consumer. Does not see optimal economic return from being part of the community. Believes that the time it would take to join would not compensate him economically.	NO	END-USER (INDUSTRIAL)	Available	Available	NO
12	Male	Potential residential user. He does not consider joining NEON as he already has his own self-consumption installation, which, with his tariff, costs him practically no energy at all. In addition, he would not be willing to have some of his consumption patterns affected.	YES	END-USER (RESIDENTIAL)	Not Available	Available	NO
13	Female	These stakeholders would not be willing to be part of the community, as they have doubts about the transparency of the process and are unwilling to change their consumption pattern.	NO	END-USER (RESIDENTIAL)	Available	Not Available	NO
14	Female	This prospective member, however, is reluctant to join the energy community as she believes that his comfort level will be affected.	NO	END-USER (RESIDENTIAL)	Available	Not Available	NO
15	Male	This person no longer lives in Villacañas and I do not consider myself to be part of the community.	YES	END-USER (RESIDENTIAL)	Not Available	Not Available	NO
16	Male	This stakeholder does not currently live in the area where the community is to be established. He was initially attracted by the possibility of being part of the community.	NO	END-USER (RESIDENTIAL)	Not Available	Not Available	NO

Contact lists have been created

These contact lists have not been useful to be able to see potential customers and establish different profiles.

Flyers for the events where the CEC have been promoted

SUSTAINABLE PLACES 2023

THANK YOU

GFM