Energy communities

23rd September 2019

- [x] Libre
- [ ] Interne
- [ ] Restreinte
- [ ] Confidentielle

EU Clean Energy Package : the intent

Rapidly falling technology costs : more and more consumers able to use technologies such as rooftop solar panels and batteries. Energy management facilitated by digital

L**ack of common rules for 'prosumers'** e.g. by guaranteeing consumers' rights to generate energy for their own consumption and sell surplus into the grid, while taking into account the costs and benefits for the system as a whole (e.g. appropriate participation in grid costs).

Local Energy Communities can be an efficient way of managing energy at community level

New market design to be proposed to enable LECs activities while preserving EU and national electricity system stability.

ERC and CEC : some overlapping

	Renewable Energy Community	Citizen Energy Community
Reference text	Renewable Energy Directive II	Clean Energy Package
Définition	REC is a legal entity that: • Is based on open and voluntary participation, • is autonomous, • effectively controlled by shareholders or members in close proximity to the renewable energy projects to which the legal entity has subscribed and developed	CEC is a legal entity that • Is based on voluntary and open participation and can engage in productive activities, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency or charging of electric vehicles, or providing other energy services to its members or shareholders • Is an **Energy Market Actor**
Objective	Provide environmental, economic or social benefits to its shareholders or its members or to the local territories where it operates, rather than seeking profit	Provide environmental, economic or social benefits to its shareholders or its members or to the local territories where it operates, rather than seeking profit
Members	Individuals, SMEs, local authorities, including municipalities	Individuals, SMEs, local authorities, including municipalities

ERC, CEC and French « Self Consumption Communities »

	Renewable Energy Community	Citizen Energy Community	« Collective self consumption » (France)
Reference text	Renewable Energy Directive II	Clean Energy Package	Clean Energy Package
Définition	REC is a legal entity that: • Is based on open and voluntary participation, • is autonomous, • effectively controlled by shareholders or members in close proximity to the renewable energy projects to which the legal entity has subscribed and developed	CEC is a legal entity that • Is based on voluntary and open participation and can engage in productive activities, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency or charging of electric vehicles, or providing other energy services to its members or shareholders • Is an Energy Market Actor	• Group of Consumer and Producer sharing energy according to a preagreed rule through a legal entity • Legal entity and DSOs sign a contract discribing respective responsibilities • the consumption and injection points must be located "on the low-voltage grid" respecting a geographical proximity criterion (Law PACTE)
Objective	Provide environmental, economic or social benefits to its shareholders or its members or to the local territories where it operates, rather than seeking profit	Provide environmental, economic or social benefits to its shareholders or its members or to the local territories where it operates, rather than seeking profit	Energy sharing
Members	Individuals, SMEs, local authorities, including municipalities	Individuals, SMEs, local authorities, including municipalities	Individuals, SMEs, local authorities, including municipalities

Under French law ERC, CEC and Self Consumption communities are connected to public electricity network

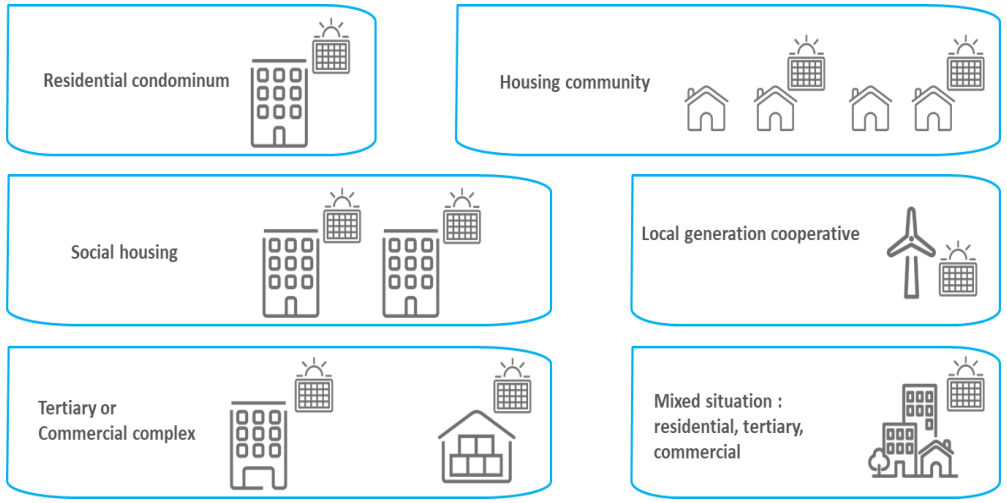
Enedis perspective

Enedis enable Energy Transition

Enedis develop industrial solutions to manage the local distribution loop and share data [DSO role]. Blueprint of a solution to support collective self consumption we set to ourselves was :

- Open access to local electricity generation
- Guarantee electricity supply even in the absence of local production
- Allow evacuation and recovery of local production not consumed
- Guarantee the quality of the electricity (stability in voltage and frequency)
- Produce reliable and certified metering data
- Leave free choice of complementary electricity supplier (no consumer to be forced)
- Support different cases of collective self-consumption

Enedis call for **improvement to existing regulation**, particularly with regard to tariff structure (rebalancing power and energy prices); Any tariff saving for customers must reflect a benefit for the grid

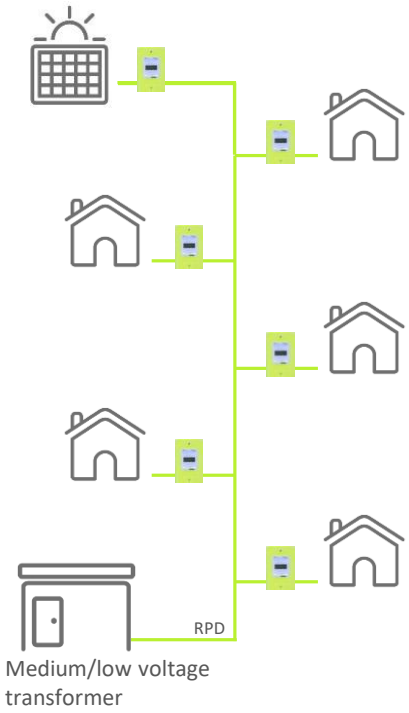


Housing community collective self-consumption

Imagine and develop the project

Homeowners finance photovoltaïc units in order to share production :

- … they take advantage of the power produced locally
- … in a collective self-consumption lifestyle.

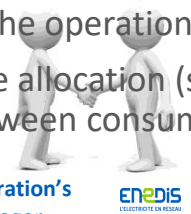


The project is developed through :

- The creation of a **legal entity**, contractually binding PV generator and consumers,
- The signature of a **collective self-consumption contract** between the legal entity and Enedis.

The collective self-consumption contract sets:

- The list of consumers involved in the operation,
- The practical details organizing the allocation (static or dynamic) of the generation between consumers.



Community self-consumption contract

Enedis proposes connection contract to the legal entity and adapts the grid to the expected consequences of the operation.

Alternative connection offer with modulating power capacity

Industrialization scheduled mid 2017

Optimisation of work plan with high voltage producers and the TSO (RTE).

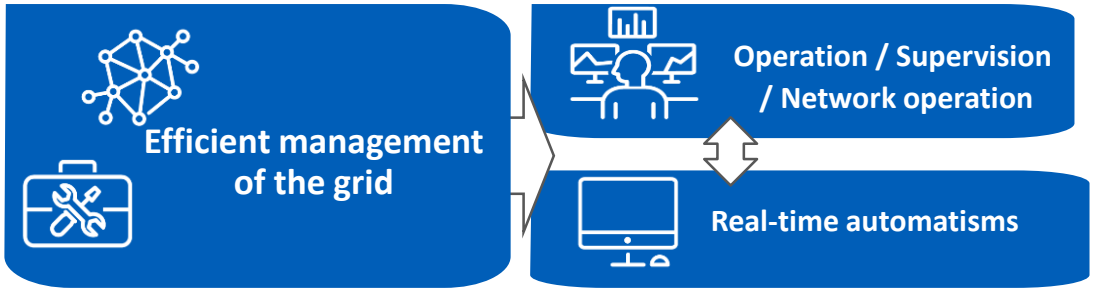
Industrialized in 2016

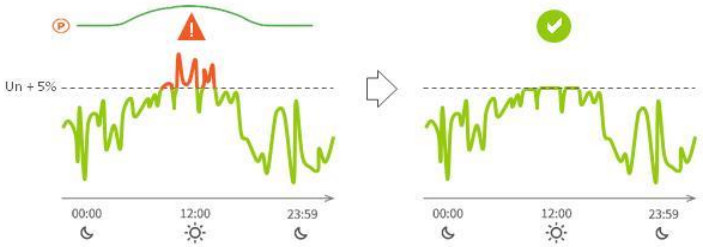
Collective self-consumption

Near real time management of local distribution loop

Enedis integrates in its management of the distribution system the anticipated consequences of the collective self-consumption operation …

… and operates the grid in near real-time.





For medium voltage grid, different solutions will be industrialized by 2018.

- Optimization of the work plan
- Optimization and programming of grid management
- Management of alternative connection offers
- Advanced voltage regulation

For the low-voltage grid, solutions are under development or in the testing phase.

- LV supervision, detection and diagnosis of incidents (« Linky réseau »)
- State estimators
- Transformers equipped with on-load tap changers (MV/LV)
- Load shedding

smart GRID VENDÉE

GreenLys NICE GRID evolvDSO SOGRID SOLENN

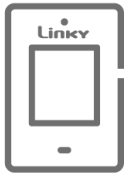
Collective self-consumption

Near real-time metering and data management

B2B

100 %

B2C



62 % today

IS

+ Communication system

Collection of synchronized data metering

Calculation of generation/consumption balances

Provision of certified information

2017

2018

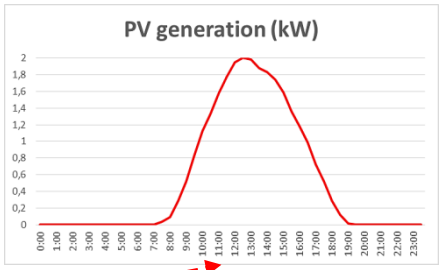
22M - sept 2019

Collective self-consumption

Step 1 : near real time metering and data processing

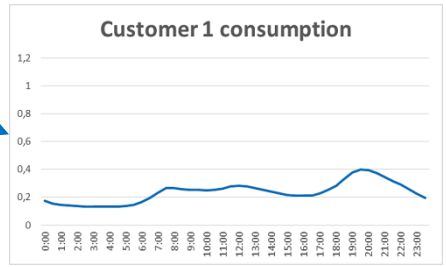
Enedis counts and collects

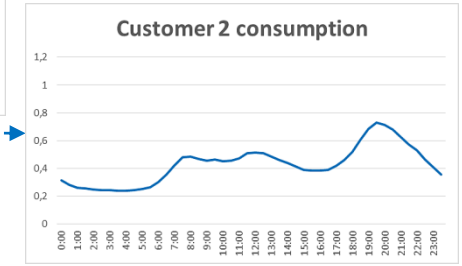
- … the electricity generation injected into the grid by the PV plant

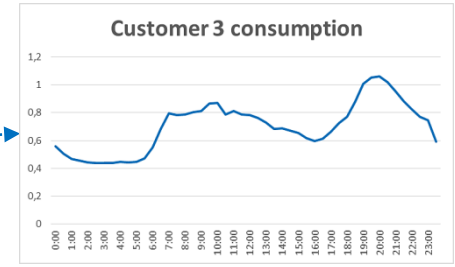


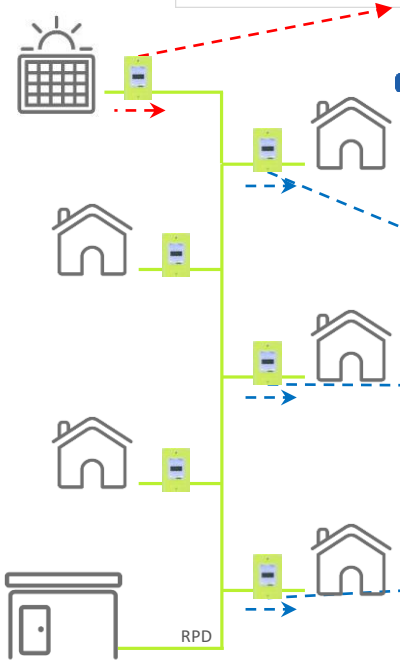
Synchronous load curves
30 min increments (currently)
No risk of net metering

- … the electricity consumption of each participant regardless generation sourcing







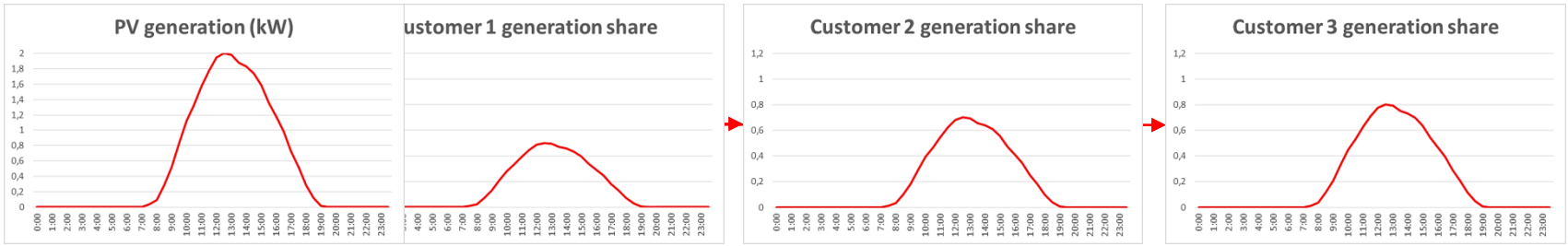


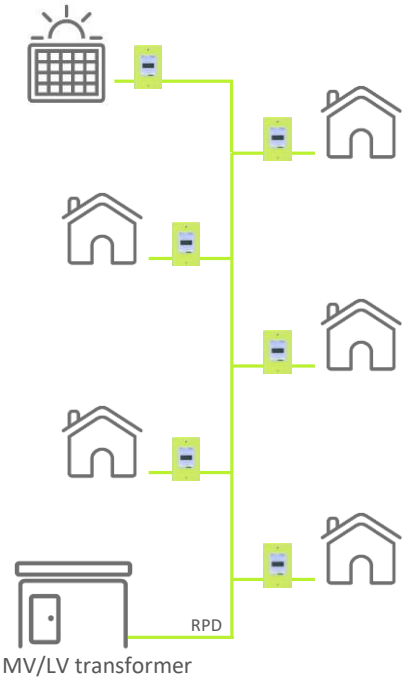
Collective self-consumption

Step 2 : Periodic calculations

Enedis calculates …

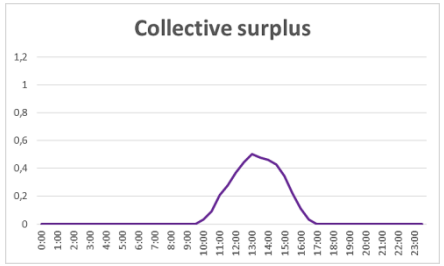
- … the share (determined by contract) of PV generation to be allocated to each participant.





- … the share of electricity self-consumed by each occupant (share of local generation actually consumed by each occupant).

- … the operation's potential "surplus" (equal, in this case, to the sum of individual excess of generation vs consumption)
- **The surplus resulting from the self-consumption operation can be sold to the market by the legal entity**



Collective self-consumption

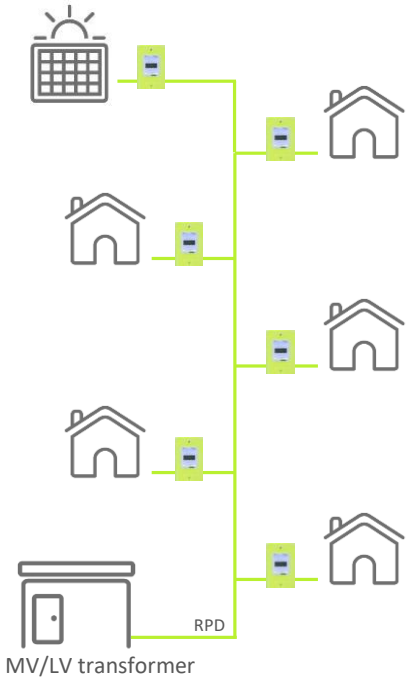
Step 3 : periodic data production and publication

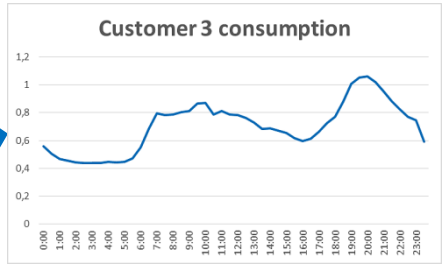
Enedis generates the necessary data for collective self-consumption :

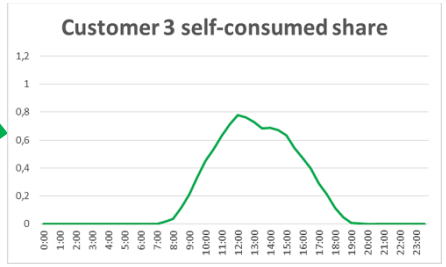
- the overall consumption of each occupant,
- its share in the electricity self-consumed,
- the supply of additional electricity.

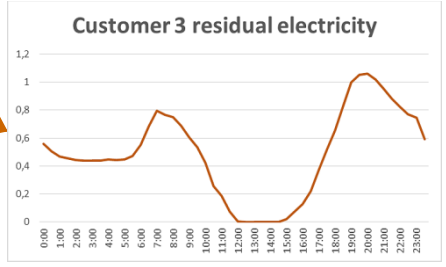
Enedis provides these data to different stakeholders :

- customers,
- manager of the self-consumption operation,
- residual electricity suppliers,
- balancing entities.









These data are used to :

- bill the electricity transit through the network,
- bill the residual electricity supplied,
- apply taxes and contributions,
- implement the balancing mechanism.

Lessons learnt

20 collective self-consumption went live since 2018. 100 are in project

- **Location all over France**
- **Local authorities leading most of projects**

Good satisfaction of stakeholders for this state of the art solution**.** However, request for additional support in setting legal entity

However, some risk to be managed :

- **Insufficient safeguard of consumers right**
- **Communities used to circumvent existing regulation (“free rider”)**

Retrouvez-nous sur Internet

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