PLAN FOR SCALING UP FLEXIBILITIES IN BUILDINGS

Technical guidelines from the French Smartgrids sector

Summary

think SMARTGRIDS

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SPECIAL THANKS

This report is the result of an analysis work, field-trips and discussions conducted by the working group dedicated to flexibility. This working group created by and within the professional organization Think Smartgrids is comprised of DSO, TSO, electricity suppliers, aggregators, competitiveness clusters, consulting agencies, digital services businesses...

Think Smartgrids thanks the FNCCR, and local energy unions such as USEDA, Sydev, Territoire d'Energie Flandre, SIDEC, Morbihan Energies and the Hauts-de-France Region for their contribution and their time.

Last but not least, special thanks to the French Directorate General of Energy and Climate for their financial support.

SUMMARY

The French smart grids sector, working together within the Think Smartgrids association, recommends the development of BACS[1] (Building Automation and Control Systems within tertiary buildings, i.e office buildings, public libraries, council offices…) capable of receiving and interpreting signals from the following three stakeholder categories: electricity providers (price monitoring), load shedding operators (modulation management orders both increasing and decreasing), and network operators (DSO/TSO).

Under the above-mentioned cumulative conditions of the technical characteristics described in the document, the BACS could qualify for the Flex Ready brand.

Only the connections to the power system, upstream of the BACS, are mentioned here. Downstream interoperability/behind-the-meter issues, in other words the BACS and their uses, are not covered in this document, but by dedicated authorities.

Consequently, it is suggested that the three categories of stakeholder, examine the feasibility of implementing standardised API[2] (provider API, agreggator API and DSO/TSO API), examples of which are provided as appendices to this summary.

The aim is to develop the monitoring of electricity consumption in tertiary buildings in coordination with the power system, which is almost non-existent to date. The standardisation of data exchange would enable mass deployment of technical equipment in buildings, while the connections created between buildings and the power system would enable programming and automation of actions within buildings depending on the price of electricity and the state of the electric system.

This white paper also alludes to the residential context. Proposals for implementation are described similarly to those for tertiary buildings. However, more work needs to be done with the sector to determine the criteria to be made obligatory for residential HEMS[3].

This white paper **completes the first introductory report by TSG[4]** on the challenges for demand response deployment and the existing levers to accelerate said deployment. It proposes an analysis of the current situation as well as recommendations for hardware and software infrastructures connecting buildings to the power system (electricity providers, aggregators and network operators).

This white paper was also written in collaboration with the Flexibilities Coordination working group facilitated by RTE and mobilised many different sector stakeholders on the effective up scaling of demand-response (also known as "consumption flexibilities").

It **meets the guidelines of the CRE[5]** in its report on the supervision of tertiary buildings, by escalating experimentation towards:

- **The analysis of offers encouraging the adoption of practices meeting the needs for structural and dynamic flexibilities in tertiary buildings.**
- **The integration in electricity supply contracts, of incentives for modulating/**shifting consumption times, through time and season-related pricing.
- **Bidirectional exchanges between flexibility operators and buildings through the identification of the data activation chains required for increasing demand-response.** This bidirectionality is based on standardised APIs, so that building control systems, which are de facto diverse, interpret the price signals emitted by suppliers, modulation requests proposed by aggregators, and the transport and system backup pricing from the DSO and TSO.

Ultimately, the stakeholders have agreed **to create a collective branding, called Flex Ready for BACS**, which will be extended to other control and automation systems capable of receiving and interpreting the signals of the three stakeholders - providers, aggregators and DSO/TSO. This communal brand uses a Flex Ready framework, with a 1st adaptation for BACS, currently being written by the stakeholders.

1, 2, 3. See Glossary p.18.

4. Think Smartgrids. (2024, January 9). *Collaborate to meet the challenges of upscaling flexibilities in electricity consumption: Think Smartgrids.* https://www.thinksmartgrids.fr/actualites/collaborer-pour-relever-le-defi-du-passage-a-lechelle-des-flexibilites-de-la-consommation-electrique

5. CRE. (September 2023). *Report by the Energy regulation commission on the supervision of tertiary buildings.* https://www.cre.fr/documents/rapports-et-etudes/rapport-de-la-commission-de-regulation-de-l-energie-sur-le-pilotage-des-batiments-tertiaires.html

CONTEXT

The aim of this document is to develop wide-scale energy consumption flexibility in France by 2030. In its 20233 forecast report, French TSO RTE[6] calculates that in a context of increasing electricification for fossil fuel phase-out, **guaranteeing the national balance between supply and demand by 2030 would require 6.5 GW in demand-response capabilities.** The French Senate's survey commission considers that "in terms of shedding, there is a potential for around 15 GW in France by 2030, and possibly 20 GW by 2033/2035, essentially in isolated sectors[7].

In this report, TSG aims to cover several avenues for facilitating the upscaling of these capabilities:

- Guarantee the installation of smart, open and secure consumption monitoring infrastructures to automate use monitoring and facilitate its scalability.
- Facilitate the development, commercialisation and adoption of incentive pricing for electricity use, adapted to the characteristics and constraints of the different types of users.
- Through the creation of the collective "Flex Ready" brand provide public and private building administrators with technical expertise for setting up their tertiary consumption flexibility projects and contribute to the visibility of these initiatives among national and international institutional lessors, ecosystem businesses, and public institutions.

It should be noted that the increasing need for power flexibility is a European-wide and even world-wide issue, with each region having its own specific energy mix.

Under construction by the ACER, ENTSO-E and EDSO Entity, the Network Code on Demand Response (NCDR) aims to clarify interactions between flexibility stakeholders and the quantification of the flexibility offer. While the document is still in the early stages of development (its application being estimated for 2029) as it is still under revision by ACER, it remains an important reference in the initial analysis of the technological stakes around data infrastructure (collection and exchange) while more and more buildings are being equipped with automation.

In this white paper, you will find elements of comparison between the interactions formalised in the NCDR and the reality, to date, of data exchanges within the French ecosystem. The technical elements contained in our white paper could, for example, fuel the thought process of European work groups.

6. RTE, *2023 Provisional Forecast*, https://www.rte-france.com/analyses-tendances-et-prospectives/les-bilans-previsionnels
7. Senate, *« Éclairer l'avenir : l'électricité aux horizons 2035 et 2050 »*, https://www.senat.fr/rap/r23-714-1/r23-714-147.html

1. GUARANTEE THE INSTALLATION OF SMART, OPEN AND SECURE CONSUMPTION MONITORING INFRASTRUCTURES TO AUTOMATE USE MONITORING AND FACILITATE ITS SCALABILITY

In addition to the educational efforts carried out by the sector on the necessity of adapting our electricity consumption, the deployment of **an infrastructure capable of interpreting the price of electricity or a modulation signal to automate the optimisation of certain uses has become vital.**

These solutions are based on **material installations and software (sensors, actuators, means of communication) that are more or less complex depending on the building. Each of these solutions also generates large volumes of data relating to the building that has to be stored and protected under precise governance.**

The question of data on the one hand, and interfaces between stakeholders on the other is therefore pivotal to enable upscaling and avoid non-interoperability situations (in other words non-functioning) within the flexibility activation chains. This report therefore endeavours to:

- **Assess data access conditions** (tariffs, consumption data, shedding order, etc.) between the different ecosystems' stakeholders for implicit[8] and explicit[9] flexibility.
- Identify missing data for the activation of flexibilities and **highlight interoperability requirements based on existing rules and standards.**

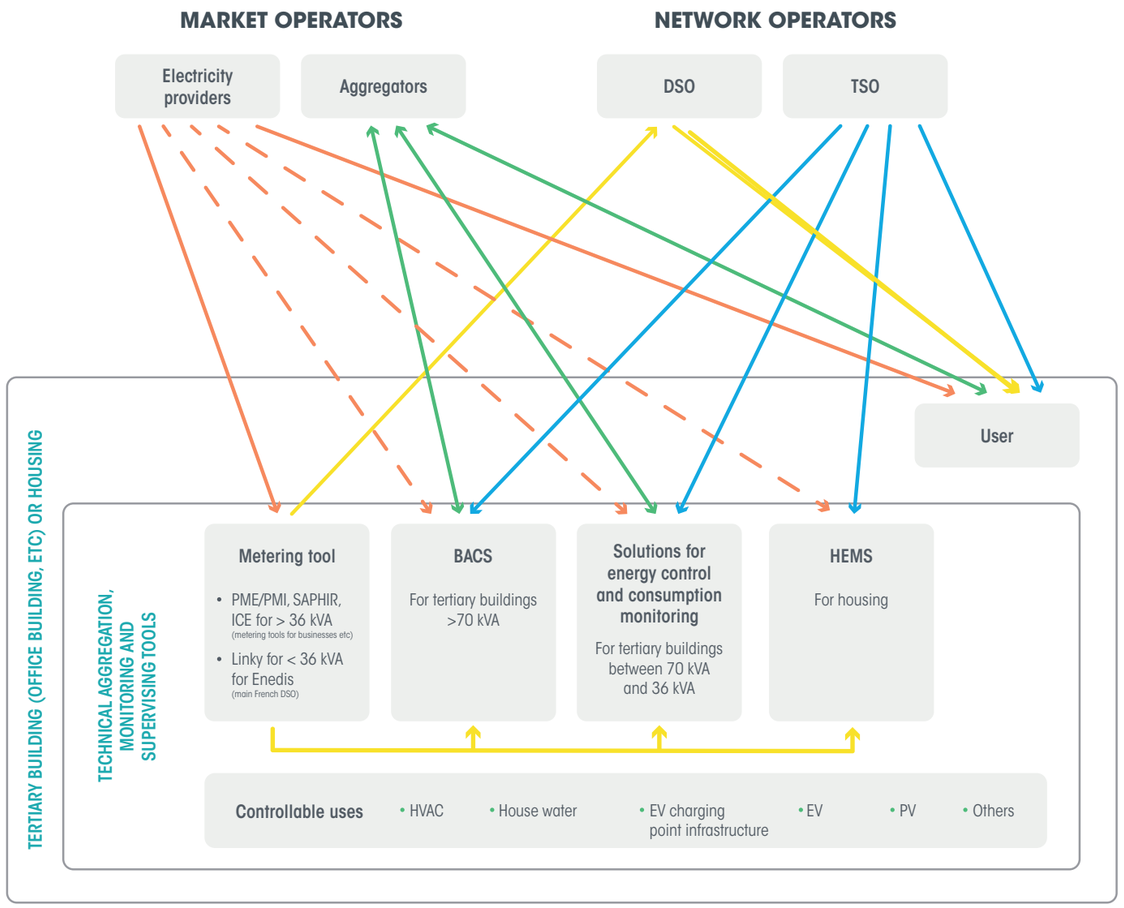
There are 3 groups of stakeholders or categories requiring the activation of flexibilities, outlined below:

1. **Network operators (TSO, DSO), owning consumption data from smart-meters and can themselves transfer non-commercial signals** with the aim of safeguarding the power system (e.g. eco-watt), or other information (such as decarbonized production via Ecowatt) and commercial signals (transmission of supplier grid indexes and pricing periods through the DSO electricity meters).
2. **Market stakeholders (suppliers and shedding operators)** who, to enable implicit and explicit flexibility, have to transfer data (supply grid, request for consumption adjustment, …), towards a receiver, the building, or an individual residence.
3. The term **"technical aggregators"** refers to all stakeholders and technologies (BACS, energy management system, smart meters, HEMS) capable of activating aggregated uses for one or several buildings depending on price signals. They have access to information related to the flexibility capacity of their areas of use in real time. They will be referred to as "aggregators" in the white paper.

8. Implicit flexibility: flexibility obtained through differentiated price offers (e.g. Peak and Off-peak times) from electricity suppliers, through the incentive to modulate power to optimise the electricity bill.
9. Explicit flexibility: flexibility operated by shedding operators / commercial aggregators through a request for power modulation during a given time slot.

DATA EXCHANGES FOR FLEXIBILITY ACTIVATION

This overview is not comprehensive: only key echanges are taken into account



Existing data exchange, yet to be standardized

Unimplemented data exchanges, yet necessary for flexibility activation - to be deployed as recommended by TSG

Value-chain stakeholders for demand-response

IMPLICIT FLEXIBILITY

Pricing info

- **Emitter :** Electricity provider
- **Receiver :** Meter, user
- Via the metering tool:
  - **Content :** price calendar 1,2, 3 etc (French terminology) without euro/kwh or short message for price signal or "moving peak" (French terminology) - not used to date
  - **How :** Via Enedis IS (through "SGE" or "data-connect" platforms) then monitoring via TIC
- To the user:
  - **Content :** €/kWh
  - **How :** Contract and customer area

Price-related data
Unimplemented

- To the BACS, monitoring solutions and HEMS:
  - **Content :** €/kWh every hour for the next 48hours, subscribed power, kgco2eq or tco2eq/kWh (optionnal)
  - **How :** log-in identification at the metering point, upon request sent to the electricity provider

EXPLICIT FLEXIBILITY

Load shedding order data

- **Emitter :** Aggregator
- **Content :** load shedding (to be raised or lowered), duration, remuneration etc
- **How :**
  - To the BACS: connection for each device, heterogenous model
    → Need for a standardized API carrying price information etc
  - To the monitoring solutions and HEMS: partnerships bewteen software developers and aggregators
  - Via proprietary infrastructure

Load shedding capacity

- **Emitter :** BACS, monitoring solutions
- **Receiver :** Commercial aggregator
- **Content :** available shedding, activation time, number of activations, etc
- **How :**
  - From the BACS : non-standar dized API by manufacturers
    → To be standardized
  - From the monitoring solutions: non-standardized API
    → To be standardized

EcoWatt data

- **Emitter :** RTE
- **Receiver :** Users, EMS, metering applications
- **Content :** Pressure on balance between supply and demand, safeguard provision ("flexibilité de sauvegarde" in French terminology)
- **How :**
  - To the BACS, monitoring solutions and HEMS: public API
  - To the user: SMS and EcoWatt application (smartphone)

METERING

Metering data

- **Emitter :** DSO-owned meter
- **Receiver :** DSO IS, monitoring and supervision tool
- **Content :** Consumption, production, contract info, technical data
- **How :**
  - Metering infrastructure

Consumption info

- **Emitter :** DSO SI
- **Receiver :** user
- **Content :** Consumption, production, contract info, technical data
- **Comment :**
  - SGE Tiers : partner API (SOAP protocol)
  - DataConnect : Public API TIC (French terminology)

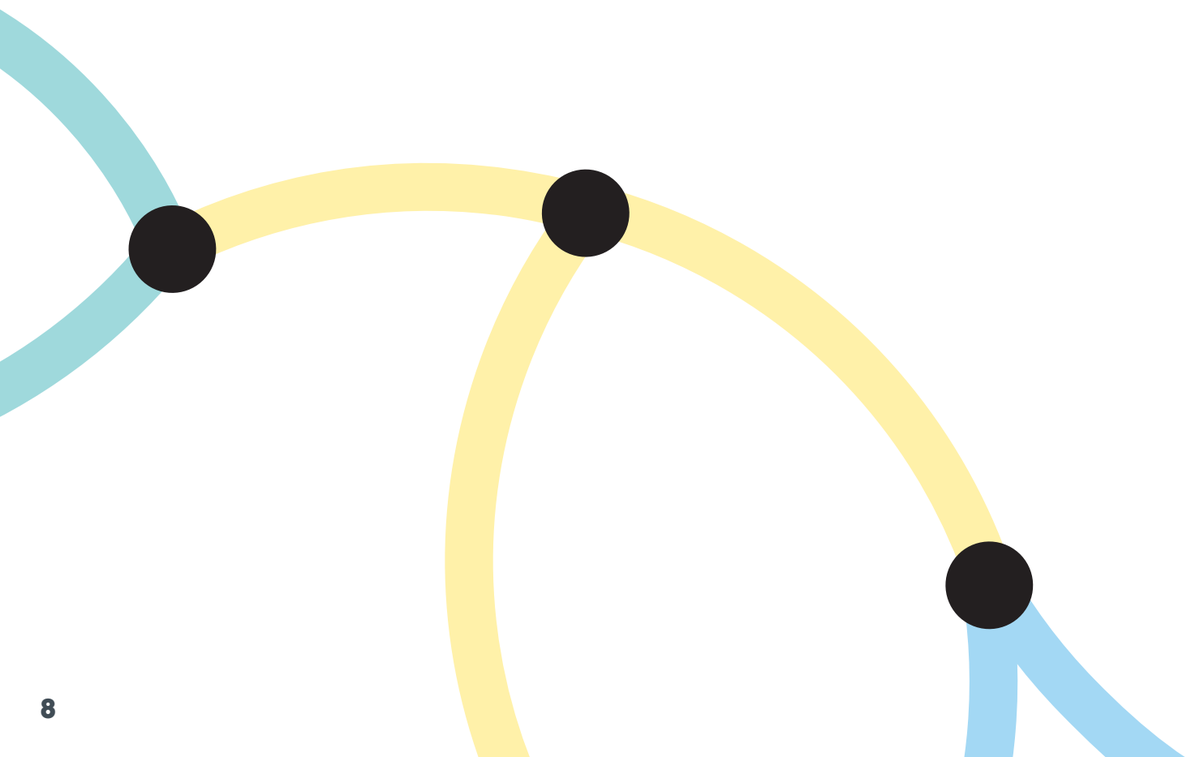
On the building's scale, supervision solutions differ depending on its size and use. To simplify, **the existing solutions are outlined in the report as follows:**

- Tertiary buildings with a nominal power of > 70 kW are equipped with BACS (such as BMS) as they are subject to the BACS decree with an enforcement date of January 1, 2027. Note that the decree has applied to buildings with a nominal power of > 290 kW since 2025.

- Intermediary tertiary buildings – power comprised between 36 and 70 kVA- non-subject to the decree, can, however, be equipped with small-tertiary energy management systems which are less advanced than BACS, but will still improve energy efficiency and demand response. Flexibility can be achieved through several different uses (EV charging points, smart thermostats, solar production units, HVAC etc).

- Small tertiary (shops, some schools, offices, business premises…) and residential buildings with a limited power of < 36 kVa can also supervise their use thanks to the Linky meter's dry contact (generally the hot water tank) or use a HEMS controlled via smartphone (automobile manufacturer APIS for controlling charging, smart radiator manufacturers…).

NB : All these energy consumption control systems (BACS, Building Management Systems Power managers, HEMS…) can also be found under the generic name of EMS, for Energy Management System.



THE FRENCH SMART GRID STAKEHOLDERS' ANALYSIS ON THE DEPLOYMENT OF INFRASTRUCTURES NECESSARY FOR DEMAND-RESPONSE ROLLOUT, SHOWS THE FOLLOWING FINDINGS:

	TERTIARY BUILDING > 70 KW (RECEIVER: BACS)	70 KW > TERTIARY BUILDING > 36 KW (RECEIVER: EMS)	TERTIARY < 36 KVA AND RESIDENTIAL BUILDING (RECEIVER: HEMS, OWNED SMART DEVICES, LINKY METER)
NETWORK INTERFACING / BUILDING	Supervision solutions in buildings are not generally connected externally in IP, and when they are, they are not capable of interpreting a signal from an electricity provider or commercial aggregator.		
MONITORING INSTALLATIONS OVER TIME	The roles and obligations of building stakeholders must be organised contractually. As this practice is not yet widespread, monitoring of installations over time and in consequence the performance of energy supervision remains insufficient. This is due to patchy coordination between building administrators and service providers (design offices, integrators, operators, manufacturers…) lacking the necessary human resources and skills for effectively managing the building.		The law dictates obligatory maintenance for certain supervision uses. However there is no follow-up. (For example, the Thermostat Decree for 2027 does not impose maintenance follow-up on renters).
RECEPTION OF PRICE SIGNAL (EMITTER: SUPPLIER)	The electricity supplier does not emit a price signal in euros towards the BACS / EMS. The capacity and financial incentive for controlling uses in buildings is therefore limited.		Supervision is currently effective via the Linky meter for 11M households (among the 35M in mainland France): for one use DHW[10], and on two indexes, one Off-peak hours[11], and the other Peak hours. Some electricity supplier calendars are unknown to Enedis.
RECEPTION MODULATION REQUEST (SIGNAL: AGGREGATOR)	Transmission methods for load-shedding orders to infrastructure already installed in buildings is disparate and incomplete.		Shedding occurs primarily through owner activation chains or through partnerships between aggregators and home automation manufacturers.
RECEPTION SYSTEM REQUIREMENT SIGNAL (EMITTER DSO/TSO)	Signals emitted by French TSO RTE (Ecowatt) are currently received primarily by tools external to the building, with the exception of a few early adopters who have interfaced with the Ecowatt API developed by RTE.	Other than the building's own tools	Through mainstream tools

10,11. See Glossary p.18.

To remedy those problems, **here are some (functional and technical) recommendations from the smart grid sector** for control systems roll-out in tertiary buildings.

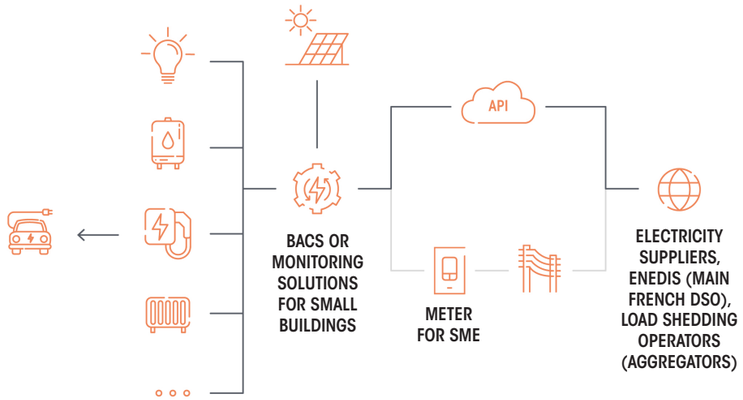
1.1 FLEXIBILITY SIGNALS RECEPTION IN TERTIARY BUILDINGS WITH A POWER THRESHOLD ABOVE 36 KVA

Electricity consumption in > 36 VA buildings is controlled:

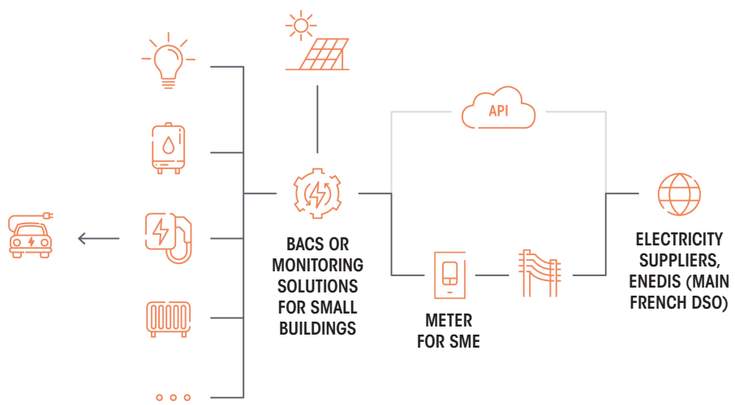
- Either by a BACS for buildings subject to the decree.
- Or by any other supervision solution such as a small tertiary energy management system

The three flexibility signals (provider, aggregator, DSO/TSO) must be able to be transmitted via cloud and API for suppliers, commercial aggregators, and TSO, in other words, via the ICT of the Commercial & Industrial Metering (solely accessible to the DSO and the provider), as shown in the diagram below.

Request via cloud and API through BACS (>70 kVa) or monitoring solutions for energy consumption (<70 kVa and >36 kVa)



Request via ICT and metering chain through BACS (>70kVa and >36kVa)



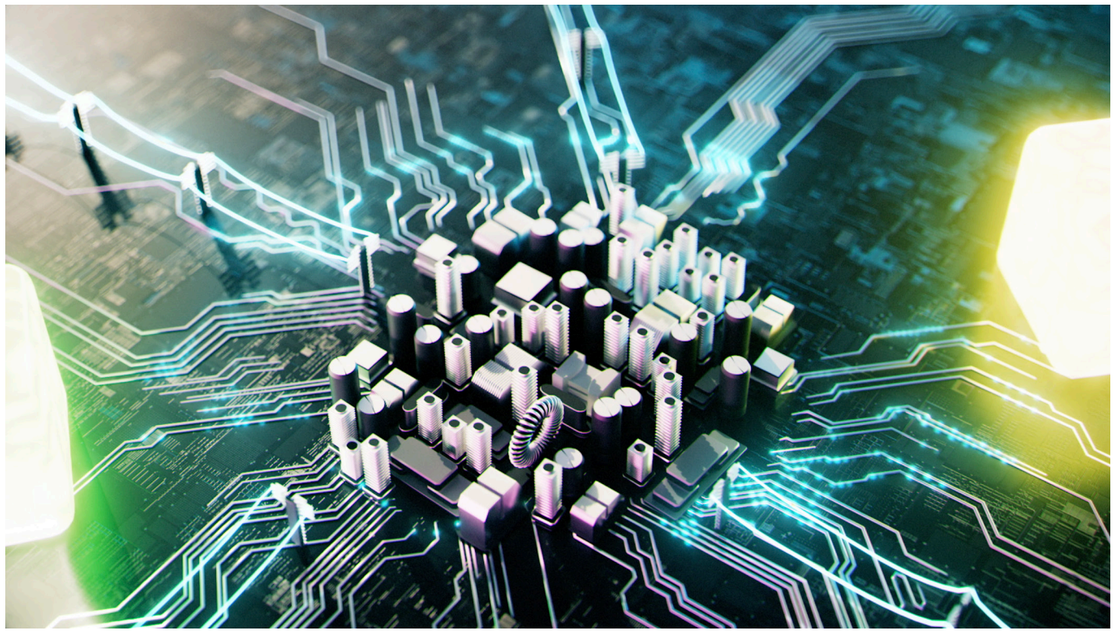
Theoretically, **controlling the DSO Commercial & Industrial Metering through the ICT provides real-time access** (instantaneous power extracted and maximum power limit, ongoing pricing period, start and end date of mobile Peak times) **which can be interpreted by the BACS.**

It is advisable to maximise the use of the ICT in the framework of implicit flexibility, as over 500,000 meters have already been deployed, but in reality**, there are still many problems with controlling via ICT:**

- It is **not possible for aggregators to transmit a shedding signal** either to a BACS or to an energy management system through the Commercial & Industrial Metering counting loop, it is therefore necessary to use a cloud and an API.
- **The feedback conditions for BACS to the ICT are specific to the French market**, whereas manufacturers tend to develop control solutions for normalised uses on a European or International scale. This feedback loop does not yet allow for integration of data in € or carbon footprint, which have become incentives. Finally, the Commercial & Industrial Metering ICT is capable of transmitting standard supply grids (such as Peak/Off-peak, summer, winter) but cannot transmit the information if the provider bills their customer according to load profile, requiring interfacing with the provider's IS. For all these reasons, manufacturers of BACS and power management solutions generally avoid developing compatibility between their solution and the ICT specifications and **focus on retrieving the data they require via an API connecting them to a cloud. It is important to note that the solution is not a matter of arbitrating between "ICT and API", but in finding a complementarity adapted to the needs of each user through the data standardisation and equipment interfacing.**

Complementary to controlling via ICT, **control via cloud and API has its own set of problems:**

- The proprietary systems commercialised by some manufacturers prevent external stakeholders, such as technical or commercial aggregators, from properly appropriating the BACS IT infrastructure, or from sending requests directly to teleprocessing automates.
- As most of the buildings equipped with BACS are not connected to the internet (it is not obligatory under the BACS decree), **the "native" ability for buildings equipped with BACS to receive and adapt to pricing signals is therefore very limited.** Manufacturer documentation on the technical specifications authorised by existing BACS should also help remove this barrier.



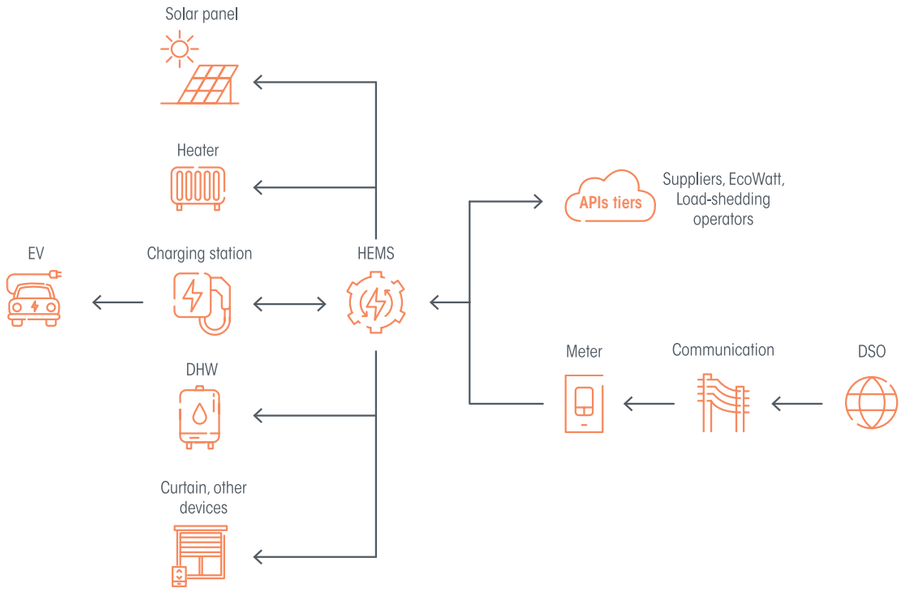
1.2 THE RECEPTION OF FLEXIBILITY SIGNALS IN SMALL TERTIARY AND RESIDENTIAL BUILDINGS WITH A POWER LIMIT OF < 36 KVA

Tertiary and residential < 36 kVA buildings can be equipped:

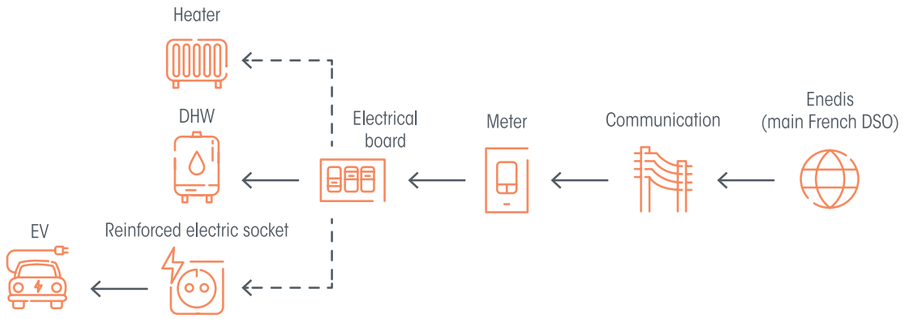
- Either with a HEMS, or directly with equipment such as sensors/smart activators, controlling them use by use.
- Or simply with a Linky meter.

The three flexibility signals (supplier, aggregator, DSO/TSO) must be transmitted by either cloud and API or via a Linky meter, as shown in the diagram below.

Flexibility signal reception in residential and tertiary < 36 kVa buildings — with HEMS



Flexibility signal reception in residential and tertiary < 36 kVa buildings — without HEMS



For buildings not equipped with HEMS, the Linky meter is capable of transmitting signals to the electricity supplier's grid (index, no prices in €).

This makes it **possible to control use with the supplier grid via the meter's dry contact: the hot water tank to date.** The Linky meter can also monitor seven additional uses through virtual contacts, the information is transmitted by the ICT and interpretable by the power manager.

However, **there are several problems with the activation of flexibilities via virtual dry contacts:**

- Although theoretically the Linky meter should allow for monitoring 8 different uses, in practice "almost" the only management that is effective is that of domestic hot water tanks.
- To supervise other uses, it is necessary to deploy a system in the distribution board such as an energy management system, capable of reading the meter virtual dry contacts. Very few of this type of installation have been deployed..
- Aggregators do not currently have access to these virtual contacts.

For buildings equipped with HEMS, the flexibility activation data from suppliers, aggregators, DSO/TSO may come from:

- **The ICT outlet for supplier and DSO/TSO data,** capable of emitting a notification on the instantaneous extracted power level every two seconds, which for a HEMS could encourage one use or another, without requiring an increase in the subscribed power for example or without tripping the installation.
- **An API made available by suppliers, aggregators, DSO/TSO.** This option is not yet widely developed due to the absence of automatic and standardised transmission of information from suppliers and aggregators.

1.3 MAKE CONTROL SOLUTIONS "FLEX READY"

RECOMMENDATIONS BY TSG

To be eligible for the Flex Ready brand, the BACS must be capable of reading and interpreting data:

- Clock (time scale): adaptation of instructions with a granularity of 15 min. minimum, bidirectional, reception and emission.
- Max power (kW): bidirectional, reception and emission.
- Price (in €): unidirectional, reception.
- Subscribed power (kW): unidirectional, reception.
- Carbon footprint (metric tonnes CO2 equivalent, to be refined according to calculation methods): unidirectional.

The BACS must be capable of consulting the API at least once a day.

"Flex ready" control solutions could also enable, as an option:

- Monitoring of the power demand for the building per use and per zone, in addition to monitoring the consolidated energy consumption after the fact.
- Communication of the building's load shedding capacity and proof of this shedding through the provision of this data by a standardised API.

Consequently, stakeholders wishing to sign up to this process facilitating the development of flexibility are encouraged to propose an API corresponding to the following criteria:

- For electricity suppliers (15-minute ISP, subscribed power, price, carbon footprint of the electricity).
- For shedding operators (15-minute ISP, power to be shed, advance notice required, price of KWh paid to the customer or equivalent). It should be noted that a Flex Ready BACS as described above will, at the very least, result in remuneration of consumption modulations on the NEBEF (Block Exchange Notification of Demand Response).
- For TSO/DSO (system safeguard signal, local flexibility needs, and if possible information on "CO2").

A proposal for an API is being worked on within this frame of reference and is available in the white paper. These proposals and examples of API could also be used by the international normalisation work groups.

These control solutions must therefore be capable of interpreting standardised data from stakeholders (one or more suppliers, shedding operators, DSO/TSO).The need for conformity among control solutions to interpret standardised data, and the standardisation of data from "signal emitters" is the technical cornerstone to this whole activity.This is what will make it possible to adapt usage programming instructions depending on the electricity system, to make it possible to develop flexibility on an industrial large scale.

This recommendation focuses for the moment more specifically on the BACS to be deployed and in the future could focus on all other systems for controlling electricity consumption.As far as existing installations are concerned, the extremely low volume of power managers deployed will, however, remain a topic to be examined to evaluate the upgrading required and the costs involved.

The capacity for power management solutions (in particular for large tertiary buildings) to interpret and prioritise signals from the 3 electricity supply stakeholders, commercial aggregator/shedding operator, TSO and DSO) would allow us to identify "Flex ready" systems. **The stakeholders decided to register the "Flex Ready" collective brand. Its governance and reference documents are being determined by the relevant stakeholders.**

To limit the risks of installing management systems that are not suitable or outdated, the current BACS decree could be updated in the future to ensure that the solutions made obligatory meet the criteria of the aforementioned "Flex Ready" communal brand, as encouraged by the EPBD ratified by the European Parliament in April 2024.

In regard to HEMS and automated equipment (charging stations, smart radiators, etc), the need to facilitate the reception of signals from suppliers, aggregators and network administrators is also crucial. However, as these sources are less regulated than those of > 70kVA buildings while being more scattered, the extension of the "FLEX READY" brand is yet to be discussed with the sector stakeholders, including questioning the name.

Imposing such a "flex-readiness" either through a regulation, or by contract through a collective brand regulated by a unique frame of reference, co-created by all stakeholders, encourages the reading of pricing information from suppliers by all power management solutions (whether centralised or not).

The whole sector agrees that **a large proportion of the structural and dynamic flexibility required can be mobilised through pricing offers (also known as implicit flexibilities): reduction of consumption in volume, structural optimisation of the shape of the load profile via fixed pricing signals.** The explicit flexibility capacities, relying on shedding operated by third party stakeholders, are also essential for meeting short-term demand-response which is less predictable for the electricity system.

1.4 HOWEVER, TO BE CAPABLE OF SHIFTING DAILY CONSUMPTION AWAY FROM PEAK CONSUMPTION HOURS, THE CURRENT PRICE STRUCTURE MUST EVOLVE

Through this flex-readiness, TSG proposes power control solutions, the essential condition for the development, commercialisation and adoption of incentivised pricing, adapted to the characteristics and constraints of different categories of users.

The aim is therefore to:

- Improve the appeal of ToU offers such as "Peak / Off-peak", in relation to "Basic" offers.
- More explicitly reflect the time and seasonal character of the costs of using electricity transport infrastructure.
- Adapt the periods of these offers not only to the new context of stabilising the electricity system, while considering local network challenges (Off-peak solar hours due to the increase in photovoltaic production, seasonal differences, differentiation between weekdays/weekends…) but also the capacity of user adaptation (particularly relevant for professional contracts, where periods can vary greatly from contract to contract).

For pricing that provides for the less predictable needs of the system, requiring transmission of a dynamic signal to the customer reflecting the tension in supply and demand in the electricity system, in the short or very short term, TSG encourages suppliers to innovate with their pricing policies:

This would involve using several types of pricing signal:

- Market price for electricity (the D-1 SPOT price or the Intraday price (adjustment mechanism). Prices adding a "flat" rate and a rate indexed on the SPOT market could also exist for certain customers capable of closely managing their uses, this type of offer is not yet widely available in the tertiary market.
- "Fine" signalling, less volatile than the SPOT signal, reflects the tension situation (for example, PP1 days indicated by RTE, Tempo days indicated by RTE; EcoWatt days…). There are several mobile "fine" offers corresponding to the days of the year with the highest consumption and prices. There is not currently any offer based on the periods of lowest prices corresponding to the days and time periods with the greatest renewable production when the prices are lowest, or negative, known in the profession as "Off-peak solar hours."

2. PROVIDE PUBLIC AND PRIVATE BUILDING ADMINISTRATORS WITH TECHNICAL EXPERTISE FOR THEIR TERTIARY CONSUMPTION FLEXIBILITY PROJECTS

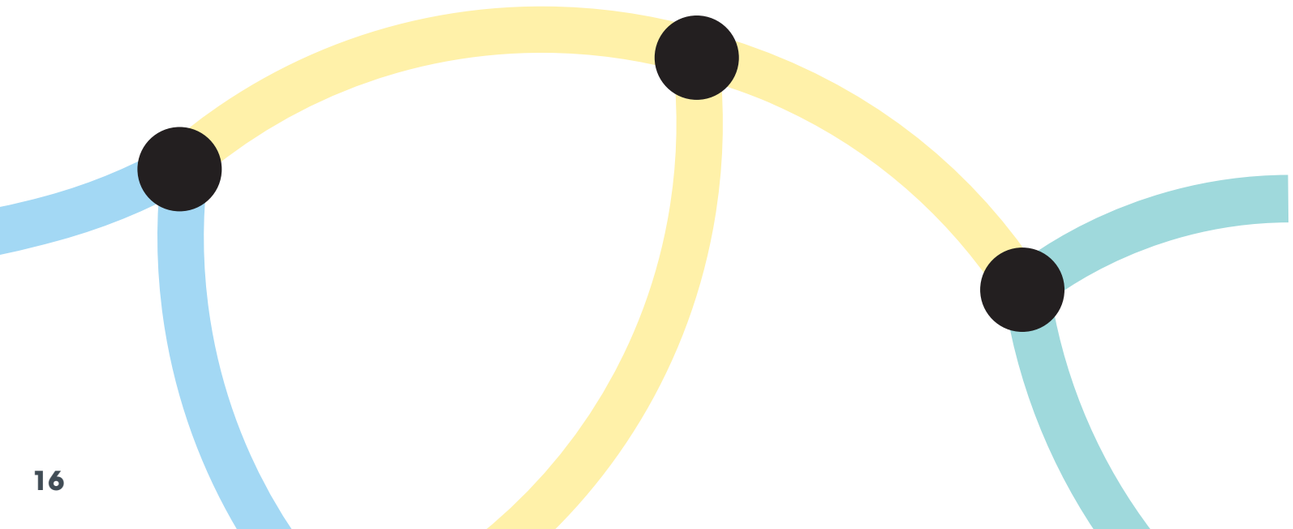
It is essential to contribute to the visibility of these initiatives among French and European institutional lessors, businesses in the ecosystem, and public institutions.

Public buildings administrators (local energy unions, public authorities, municipalities) and private buildings administrators (businesses, private landlords) **face many different challenges in the energy management of their buildings**, and in particular in the value creation of potential flexibilities:

- **Installation maintenance is rarely operated by manufacturers, installers or IT integrators**, due to a lack of personnel with the necessary time or technical expertise required for the energy management of buildings. This means that building administrators must use an operator or their own resources who hardly have the necessary thorough knowledge of the building.
- However, **the definition of an operating and maintenance contract adapted to the real estate realm requires a thorough understanding of the challenges of demand response,** which is not always fully understood by local authorities or private stakeholders.
- More globally, bigger tertiary buildings tend to regularly change administrators, yet **installations and energy calculation plans are often insufficiently followed up.**
- **This tendency towards externalisation and subcontracting can lead to an underestimation of the costs and human resources related to monitoring requirements.**

Think Smartgrids strives to make the smart grid ecosystem's expertise available to building administrators wishing to invest in more precise regulation of the energy consumption in their buildings and greater access to flexibility.

It came naturally for the **association to partner with the FNCCR** while writing this report by surveying numerous local energy unions to better understand their needs and draw up a concrete plan for the application of the recommendations in this report.



PROPOSED ACTION PLAN

Période	Object	Actor
Q4 2024 Ongoing	Writing documents regulating the FLEX READY communal brand – reference documents, governance, …	• GIMELEC, TSG, • Other involved stakeholders: DSO, TSO, Smart Building Alliance
Q4 2024 - S1 2025	Writing specifications for projects on the deployment of flex ready control systems.	TSG and its members.
2025 and beyond	Beginning of wide-scale experimentations around the flexibility of tertiary buildings through a call for tenders on one or more local authorities. Such a project should steer investments towards data chains identification and activation. It must be replicable on a larger scale.	• TSG, FNCCR, Caisse des Dépôts, BdT/BPI. • Energy syndicates. • Other real estate and property stakeholder, …
	Analysis of the deployment of power management solutions depending on the qualities of the buildings in the experiments carried out. Working closely with the "Electricity consumption flexibilities barometer". This working group gathers the building, power system and manufacturers ecosystem. It is conducted by RTE, French TSO.	Stakeholders involved in experimentation(s) and "Electricity consumption flexibilities barometer".
2026	Creation of a WG dedicated to coordinating recommendations on a European scale, in particular in compliance with the New Network Code on Demand Response through participation in public consultations (ACER, etc) and by strengthening links with supranational stakeholders. The suggested solutions for standardising data exchanges must be considered at the very least on a European scale, as it would be impossible to guarantee economic viability of the technologies developed uniquely for France.	TSG For action (non-exhaustive list): ENSTO-e, ACER, CENELEC,

GLOSSARY

API : Application Programming Interface is an interface developed by a stakeholder to facilitate the access to data via the internet, for other stakeholders. The API can either be "public", when the owner gives access to the interface and its data to any other stakeholder, or "partner" when the owner provides access only to certain other stakeholders.

BACS : Building Automation and Control System, as described in the French BACS decree, is a system for optimised regulation of building energy uses depending on requirements in terms of the well-being and uses of its occupants (to consume what's needed while avoiding waste). BACS is also defined via the ISO norm 52120.

HVAC : Heating Ventilation and Air-Conditioning

DHW : Domestic Hot Water

EMS : Energy Management System

WG : Work Group

BMS : Building Management System

DSO : Distribution System Operator

TSO : Transmission System Operator

HEMS : Home Energy Management System

THINK SMARTGRIDS FEDERATES AN ENTIRE ECOSYSTEM

The Think Smartgrids association unites a diverse range of stakeholders, including grid operators RTE and Enedis, leading French energy manufacturers and suppliers, major digital service providers, numerous French SMEs, ETIs, and cutting-edge startups in energy and digital technologies. Additionally, the association engages with academic and research institutions to foster innovation and collaboration.

ASSOCIATE MEMBERS

OBSERVING MEMBERS

PARTNER MEMBERS

Academia, research institutes and laboratories

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